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PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA

INNOVATIVE PROCESSES IN AGRO-INDUSTRIAL COMPLEX

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В сборник включены статьи по актуальным проблемам агрономии, ветеринарии, зооинженерии, производства и переработки сельскохозяйственной продукции, экономики и экологии в аграрном секторе.

Материалы предназначены для специалистов АПК, преподавателей, научных сотрудников, аспирантов и студентов аграрных, биологических, экологических и экономических направлений.

Перевод предоставлен авторами или осуществлен коллективом Аграрно-технологического института РУДН.

The collection consists of articles on actual problems in agronomy, veterinary science, zooengineering, production and processing of agricultural production, economy and ecology in agrarian sector.

Materials are intended for specialists of agrarian and industrial complex, teachers, research associates, post-graduate students and students specialized in the agrarian, biological, ecological and economic directions.

The translation of articles is made by authors or by staff of Agrarian Technology Institute Peoples' Friendship University of Russia.

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WELCOMING
by dean of the Agrarian Faculty
Dr.in Ag.Sc., prof. Plyushchikov V.G.

Dear colleagues and friends!

The Agrarian Faculty of Peoples' Friendship University of Russia annually holds the International Conference on **«Innovative Processes in Agro-Industrial Complex».** Each year the conference attracts many agrarian specialists from different parts of the world. This year we received participants and papers from 30 countries from almost all continents Europe, Asia, Africa, North and South America.

Our conferences are the right choice for agronomists, biologists, zooengineers, veterinarian doctors, chemists, food quality specialists, standardization experts, environmental protection specialists, landscape designers, land and cadastre specialists, agricultural economists and managers and many others who are in a way connected with agribusiness.

Nowadays the universities of Russia enlarge their focus from being educational institution to becoming an international educational-research center. Thus our Peoples' Friendship University of Russia and in particular Agrarian Faculty made several purposes to achieve this goal: we created inter-faculties research scientific center with latest world best equipment, developed and signed agreements on cooperation with foreign partners including creation of double-degree programs, designed short-term trainings for improving qualification of specialists. These are core directions of development – joining education, science and business.

At faculty the wide range of additional professional services is presented. The developed infrastructure: from Agrobiological school for under-graduates to the Courses of additional professional education with more than 70 special programs.

The high-tech innovative research at faculty is taking place in **laboratories:** in the field of clinical veterinary science: including ultrasonography installations, the digital roentgenogram, computer tomography of animals, the endoscopic equipment for different types of animals; n the field of animal husbandry including genetic sequencing, the PtsR-analysis; in the field of assessment of lands and the land registry: GPS/Glonas positioning of agricultural units, automatic data collection, innovative methods of the analysis of substances and materials, drawing up electronic cards; in the field of standardization and certification: including innovative methods of research on determination of quality and safety of food products, the histologic analysis; in the field of landscape architecture and design: workshop of landscaping design with the set of special programs for design and introduction in practice the design decisions.

At faculty the scientific and entrepreneurial creativity of students is widely developed – 3 small innovative enterprises (SIE) with participation of RUDN and particular students are working in the field of micro-propagation of plants; assessment and agroexamination of insured events; veterinary services.

The annual scientific and practical conference "Innovative Processes in Agro-Industrial Complex" unites talented researchers from various countries. We are open for the whole world, we wait for reports and articles in the field of innovations in the agrarian and industrial complex in any language.

I wish to conferees health, cheerfulness, innovative thinking and further creative achievements!

SECTION 1A

ENHANCEMENT OF AGRICULTURAL CROP PRODUCTION AND PROCESSING TECHNOLOGIES. BIO-RESOURCES (PLANT PRODUCTION)

IMPROVEMENT OF TECHNOLOGY OF CULTIVATING MOTHER PLANTATION LAYER OF CLONAL ROOTSTOCK UNDER IRRIGATION CONDITIONS

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Objective: research of the effect of impulse sprinkling over growth, development and yielding capacity of clonal rootstock mother plantation.

Object: mother plantation layer of clonal rootstock MM 106

Research methods. Research of the effect of impulse sprinkling technology over growth, development and yielding capacity of mother plantation layer of clonal rootstock was carried out within the experimental and production area of Kazakh Scientific and Research Institute of Water Economy (Taraz city, the Republic of Kazakhstan) in 2009-2011.

The area has been under mother plantation since 2007. The planting plan is 1,8×0,2 m.

The following technological schemes for mother plantation watering (variants) have been viewed for the period of research.

Variant 1 (IS-1) – impulse sprinkling with maintaining 75-85% HB soil moisture level in 0-50 sm soil layer throughout the whole vegetation of mother plantation.

Variant 2 (IS-2) – impulse sprinkling with maintaining 75-85% HB soil moisture level in 0-50 sm soil layer prior to hilling of the mother plantation and in 0-35 sm layer after mother plantation hilling.

Variant 3 (IS-3) – impulse sprinkling with maintaining 75-85% HB soil moisture level in 0-50 sm soil layer prior to hilling of the mother plantation and in 0-20 sm layer after mother plantation hilling.

Variant 4 (OS) – ordinary periodic sprinkling – control.

Experimental watering by variants was carried out during the day time for determination of peculiarities of micro climate changes in the plants environment and assessment of its effect over growth, development and yielding capacity of mother plantation of clonal rootstock. Root system of most fruit crops is known to grow most actively at the air temperature 15-20^{0}C, whereas its growth stops at the air temperature exceeding 30^{0}C (Yakushev and etc., 1988).

Under the conditions of foothills in the south of Kazakhstan day temperature exceeding 30^{0}C is most frequently recorded from June to September annually and reduction of these temperatures within thermally intensive period of plants vegetation enables activating the process of root system development within the vegetation period on the whole.

Variant 1 with maintenance of optimal moisture level 75-85 % HB, and arrangement of mother plantation root system in the soil layer (0-50 sm) during vegetation has been studied for assessment of this technology effect over growth, development and yielding capacity of mother plantation under equal conditions of development for mother bushes and root layers.

Variant 2 with maintenance of optimal moisture level 75-85 % HB, and arrangement of mother plantation root system in the soil layer (0-50 sm), followed by hilling of mother plants in the layer 0-35 sm for restricting mother plantation water regime has been studied to assess the effect of this technology over growth, development and yielding capacity of mother plantation.

Variant 3 with maintenance of optimal moisture level 75-85 % HB, and arrangement of mother plantation root system in the soil layer (0-50 sm), followed by hilling of mother plants in the layer 0-20 sm for further restricting mother plantation water regime has been studied to assess the effect of this technology over growth, development and yielding capacity of mother plantation.

Water supply through impulse sprinkling secured the non-stop water supply to plants in accordance with daily deficiency of water consumption and the approved level of soil moisture in the designated soil horizon.

Variant 4 is the control one to be compared with the studied variants of mother plantation impulse sprinkling.

As for ordinary sprinkling irrigation rate was supplied on a periodical basis with consideration of the values of plants water consumption deficiencies between the water spreading. In this case soil moisture changed intermittently providing its optimum approximately in the middle of irrigation interval.

Experiments were carried out in four-time replication. Experiment was established with account of particular characteristics of experiments in the nursery garden (Dospekhov, 1976). The plots located within the areas restricted by the radius of action of impulse sprinklers and intermittent sprinkler units were taken as replications for each variant. The plots were estimated to include 25 bushes of mother plantation. Total number of experimental plants made out 100 bushes. The accountable plants were arranged in 2 rows. 2 bushes of mother plantation were arranged on the row ends as plant protection. Side protective strips were arranged between the experimental variants. Variants location was carried out by randomized replication method.

Temperature, air moisture and wind speed in the mother plantation bushes location area were monitored in the process of research. Moisture dynamics and penetration to soil, growth, mother plantation development stages, water regime of plants, quality of root layer and other factors were closely monitored.

Results.

Having monitored temperature and relative humidity of air in the topsoil during the day it was concluded that majority of changes occur from 13:00 to 17:00 for both impulse and ordinary sprinkling.

Difference of air temperatures between the variants of impulse sprinkling and control reached $2,7^0$C, and difference between the values of relative air moisture made out 11-21%. The maximal difference of these indexes occurred prior to ordinary sprinkling. During irrigation of control air temperature reduced, reached the values of the impulse sprinkling area within the next 1-2 days, afterwards, exceeded these indexes. Relative air moisture during irrigation period of control was also higher during irrigation and the following 2 days in comparison with impulse sprinkling. It was further observed at lower values.

No significant differences in the values of temperature and relative air moisture were observed on the variants of impulse sprinkling because of identity of their operation mode.

Monitoring water regime of plants carried out on the experiment results demonstrated that water content in the leaves of root layers within the impulse sprinkling areas exceeded that in the leaves of root layers within the area of ordinary sprinkling.

On the results of monitoring water-absorbing capacity of leaves it was concluded, that under conditions of impulse sprinkling their less water absorption is recorded. So, water-absorbing capacity of all variants changed from 0,20 to 0,35 g/g of dry weight upon impulse sprinkling and increased to 0,4-0,43 g/g of dry weight within the control area. The highest difference was observed on the day before ordinary sprinkling.

Depending on the conditions of mother plantation growing intensity of layer leaves water yield is different as well. Leaves of layers from the variants within impulse sprinkling area had the highest water yield intensity (up to 38-58%). The leaves of plants from the control area of ordinary sprinkling showed lower water yield indexes (21-42%). On irrigation days within the control area and the following 1-3 days leaves water yield exceeded water yield of leaves from the impulse sprinkling area by 36%.

It was determined that the highest values and transpiration of mother plantation layer leaves occurred upon the impulse sprinkling (up to 82 t/m^2 per 1 hour). Value of leaves transpiration from the ordinary sprinkling area was lower than the values obtained from impulse sprinkling areas and did not exceed 63 g/m^2 per 1 hour.

The study revealed that impulse sprinkling technology depending on the used technological irrigation scheme secures the designated level of soil moisture with account of the designated moisture layer.

Restriction of water regime conditions for the mother plantation root system through reduction of moistening horizon on the variants 2 and 3 enabled increasing of standard root layers and their rooting score due to optimal conditions in the root system formation environment.

Variants 2 and 3 turned out to be the best variants, certainly surpassing the control one in standard root layers. Root layers from these variants had moderate growth and the highest percent of standard layers of total number of grown shoots (65,4-69,6%). The best in standard layers was variant 3 where their yielding reached 69,6%.

Conclusion. On the results of research it was concluded that the highest yielding capacity of mother plantation occurs under the conditions of impulse sprinkling. The maximal yielding of standard layers is observed upon maintaining optimal moisture level in the active layer of mother plantation root system (0-50 sm) prior to hilling of the grown layers, following by hilling of layers in 0-20 sm layer with restriction of water regime for mother plantation bushes.

THE CONCEPT OF SOLVING SOME PROBLEMS IN AGRICULTURE ON IRRIGATED LANDS OF THESOUTHERN ARAL SEA AREA– IN KARAKALPAKSTAN

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Climate in Karakalpakstan is extremely continental, dry and has high temperatures in the summer and quite low temperatures in winter. The relief is flat, which contributes to the unhindered passage of winds from the north and northwest. Karakalpakstan classified as a zone of deserts and semi-deserts and the precipitation here is about 100 mm per year of rainfall, evaporation about 1200-1250 mm. That is the reason why the precipitation does not contribute to moistening the soil for growing crops. In addition, natural pastures and tugai forest ecosystems have been degraded in recent years when due to lack of moisture water deficit took place. As a result, the soil surface is laid bare and exposed to wind erosion and deflation. The soil in irrigated zones of Karakalpakstan are alluvial meadow-, meadow-takyr, meadow marsh and meadow-desert serozems. The peculiarity of these soils are as foowing: low humus horizon (0.2-0.4 m), low humus content (0.4-1.0%), high carbonate content and the presence of water-soluble salts.

The problems of the Aral Sea hinterland and coastline have become a serious social and environmental problem. Active human intervention in the nature, in particular cutting the unique tugai forests for the development more new land for agriculture, the construction of new canals and reservoirs in the headwaters of the Amu Darya has led to excessive water intake and a complete cessation of inflow to the Aral Sea. As a result, most part of the Aral Sea dried out and the most of the rich biodiversity tugai forests have been degraded, so now remained only 10 percent of tugai forests from that existed in the 60s of the last century.

It is known that everything in nature is interconnected and disfunction of one component inevitably leads to violation of others. All of these adverse factors has an impact on the reduction of soil productivity in irrigated agricultural land. Now it is the time to look back and analyze mistakes and to begin immediate correction of this error.

The main causes of the problems in agriculture in Karakalpakstan are the lack of water for irrigation in dry years, soil salinity, low organic matter in soil and lack of tractors and plowing

machinery at planting time. In order to obtain good harvest, farmers mainly have resorted multiple plowing, abundant irrigation and excessive use of chemicals. The content of humus in the soil has been steadily declining due to frequent mechanical processing and lack of applying organic fertilizers.

In this connection, we consider necessity to use alternative technologies that contribute to replenishment of the loss of organic matter, the restoration of soil productivity due to the activation of natural soil processes, conservation of scarce water resources and material resources. Such an alternative to existing agricultural technologies could become no tillage technology, which is increasingly used around the world, thanks to the advantages in the conservation of natural recourses and saving material resources, that is very important now, when the cost reduction comes to the forefront, because energy prices have steadily increased.

The transition from conventional agrotechnologies to no tillage in the conditions of Karakalpakstan should be carried out in the following order:

- To ensure the smooth surface of the field careful land levelling in the field is need, which is easily done with the help of laser land leveling. This levelling provides a uniform germination of crops and water saving up to 15-20 percents. After the laser land levelling deep ripping with depth of 35-50 cm is nessasary. After that sowing plants that leaves the after harvest crop residues that creates surface mulch, in our conditions - winter wheat and triticale.
- After harvesting grains all plant residue is left on the field to provide the most comprehensive soil cover. Now, when the soil is covered with crop residues, we can start planting any crop using the seed drills for zero tillage.
- As for soil salinity, soil washing before planting each crop is necessary.
- In the absence of plowing in our conditions there is a risk of clogging the fields by weeds. Therefore, before sowing plants Entoglifos (active ingredient - the glyphosate 50%) in rate of application 5-6L/ha are recommended.
- It is imperative to monitor the soil moisture and carry out watering when needed.
- When using zero tillage it is necessary to provide drainage to lower groundwater level.

No tillage allows us to restore the soil productivity due to the activation of natural processes, to reduce material costs and labor recourses for the cultivation of agricultural products, will prevent the water and wind erosion. It is necessary to note that when using zero tillage in the first years crop yields are typically lower than with conventional tillage, but despite this, the profitability is higher since the zero tillage reduces costs for the cultivation of agricultural products.

BARLEY FUNGAL DISEASES DEVELOPMENT UNDER DIFFERENT TILLAGE

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Abstract

The experiment was carried on barley when seeds (var. Mikhailovsky) were deseased by fungi *Fusarium* sp., *Alternaria* sp., *Bipolaris* sp., *Penicillium* sp.; and plants in the field were diseased by *Blumeria graminis*, *Drechslera teres*, *Bipolaris sorokiniana,* different tillage was used. Results trended for increasing prevalence of root rot within minimal tillage; leaf and stem disease showed no relation to studied factor.

Introduction. Spring barley is important food, forage and technical crop. It is used for produce pearl barley, flour, coffee substitute, combined feed. Also this culture is raw-material for brewing industry.

Minimal and no till technologies are increasingly widespread in Russian Federation at the recent years. From the phytosanitary point of view they require a detailed and comprehensive study as the tillage methods directly affect the number of infections remaining in soil (O.O. Beloshapkina et al, 2012). In the plant protection within intensification conditions one should also pay attention to such quality indicators as contamination and seed germination (S.A. Dushkin et al, 2012).

Purpose of the research was the complex phytosanitary evaluation of seeds and sowings of spring barley *(*var. *Mikhailovsky)* and analyzing how tillage methods effect.

Material and methods. We have evaluated the contamination of the spring barley *(*var. *Mikhailovsky)* seeds and plants by the phytopathogenic fungi at the experimental field station of RSAU – MTAA under the different tillage methods. Laboratory assessment of the germination and seed infection was carried out by roll method and in Petri on moist disks and agar. The composition of the pathogenic mycobiota was studied using the microbiological method on the PDA and the subsequent microscopy using reference books. Field surveys of root rot, leaf and stem diseases performed using route surveys in the main stages. We took into account the prevalence (P, %) and development (R, %) using the standard formulas.

Results. Analysis of spring barley seeds before planting showed that the germination of untreated seeds ranged between 83-93% and was in average 88.68%, and its contamination by microorganisms stood at 89%.

The species composition of the pathogenic mycobiota of the seeds, refined by the microbiological method, characterized by the different rates of prevalence. Its main component were the *Fusarium* fungi, which have been met in 49.81% of the seeds. There were also *Alternria* (32,53%) and *Bipolaris* (29,70%) fungi. The part of *Penicillium* fungi was significant and 44.87% of the seeds were infected by them. The rest of the fungi (*Cladosprium* sp*., Botrytis* sp., and others.) met in 1-3% of the seeds (Figure1).

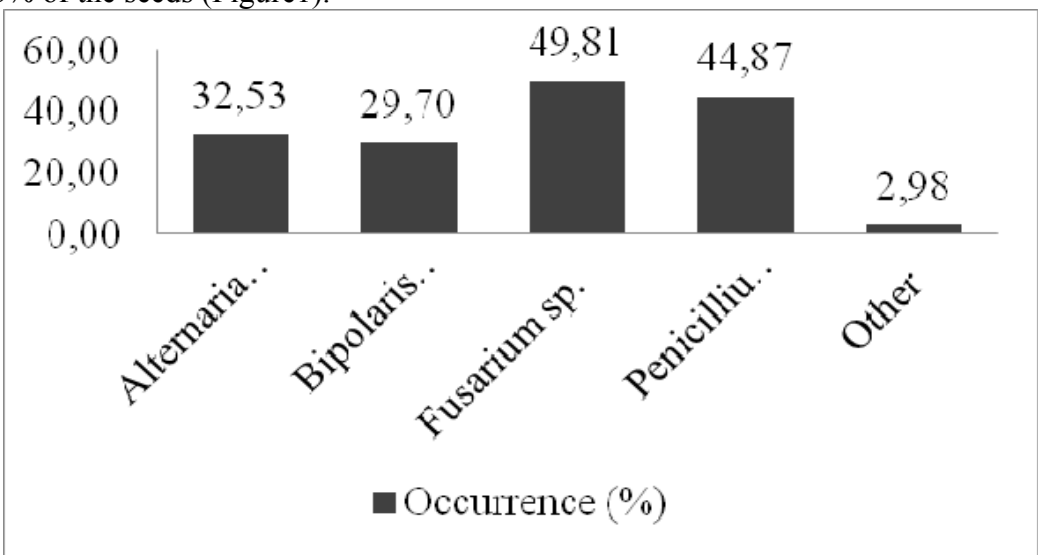

Figure 1. Occurrence (%) of pathogens on the spring barley seeds (var. *Mikhailovsky)* (RSAU-MTAA, 2014)

The primary task of phytomonitoring in field was to evaluate the prevalence of root rot of barley. The first survey was held in the third decade of May at the end of the emergence phase, the second - in the phase of wax ripeness in July (Table. 1)

Statistically significant differences between the prevalence of root rot in different tillage methods have not been identified in 2014.

Table 1

Prevalence (%) of spring barley root rots at different ways of tillage (RSAU-MTAA 2014)

Tillage	Ontogenesis phase	
	Emergence	Wax stage of ripeness
Plowing	7,98	13,24
Minimal tillage	9,96	16,37
LSD_{05}	2,45	3,52

However, for several years it has been a tendency to increase this indicator on the areas with minimum tillage. Visual estimate followed by microscopy determined that the main causative agents of root rots in the experimental field of the University were *Fusarium* and *Bipolaris* fungi.

Counts of leaf and stem diseases in the crop of barley showed the predominance of dark brown spot (Bipolaris sorokiniana (Sacc.) Shoemaker), net blotch (Drechslera teres Ito.) and powdery mildew (Blumeria graminis DC. F. Hordei Em. Marchal), the prevalence and development of which were different and varied also with the phases of plant ontogenesis.

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The dark brown spot appeared in the phase of tillering, booting, and reached a maximum spread in the phase of the grain forming and was in average 28.15% for plowing and 30.05% for minimum tillage (LSD05 12.80). The incidence of the net blotch reached its maximum in the same phase: 8.31% and 2.17% respectively (LSD05 6.72). The highest prevalence of the powdery mildew was at head emergence phase and has been 9.50% for plowing and while 7.50% for minimal (LSD05 4.7).

The tillage method did not statistically reliably affect the diseases prevalence, but influenced on their development. Starting from the phase of booting for the powdery mildew and from the grain formation phase for other diseases we have noted the development a dark brown spot for plowing was 6.17 % and under the minimal tillage - 9.51 (LSD05 1.55). For the net blotch and powdery mildew the figure was 3.70% and 5.52% (LSD05 1.61); 2.17% and 3.38% (LSD05 0.70) respectively.

Conclusions

- Barley seeds (var. *Mikhailovsky)* were infected with *Fusarium, Alternaria, Bipolaris, Penicillium* fungi in crops we noted *Blumeria graminis, Drechslera teres, Bipolaris sorokiniana.*

- There is a tendency to increase the prevalence of root rots under the minimal tillage.

- Development of the leaf and stem diseases was statistically lower than on the fields with plowing; for the dark brown spot under the plowing R = 6,17%, and under the minimal tillage R = 9,51%, for the net blotch R = 3,70% and 5,52%, for the powdery mildew R = 2,17% and 3 38% respectively.

COMPLEX ASSESSMENT OF THE INFLUENCE OF GROWTH STIMULANTS AND NITROGEN-FIXING OF MICROBIOLOGICAL PREPARATIONS ON PRODUCTIVITY AND ECONOMIC EFFICIENCY OF CHICK-PEA CULTIVATION.

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Abstract

In the presented article, the author considered the main questions about efficiency and economic efficiency of cultivation of chick-pea variety Privo with the use of non-roots growth factors and microbiological preparations. B5 (strain 065) and B6 (megafol+plantafol) were economically effective and profitable among all studied stimulators.

Introduction. The most important task of agricultural production is to find ways to increase the productivity of agriculture. Successful decision is inextricably linked with ecological and agrochemical issues of conservation and reproduction of soil PLO-hydrogen.

Modern technologies of cultivation of crops should provide high yields of crop production with good quality while maintaining and improving soil fertility, which is associated with science-based use of mineral and organic fertilizers, agriculture biologization.

For the first time in the North of the Astrakhan region the effectiveness of non-roots application of growth stimulants (Megafol, Plantafol, Lignohumate) in chickpeas was determined in different phases of plant development (branching, budding, flowering) and the seedbed inoculation of different microbial agents in irrigated conditions for the organization of high-grade mineral nutrition.

The purpose and objectives of research

The aim of the study was to investigate the influence of various growth factors and microbiological preparations on efficiency of chickpea varieties on light-brown alkaline soils of the Northern Caspian.

The objectives of our study were to:

1. Study the effectiveness of chickpea seedbed inoculation by microbial agents of associative nitrogen fixation and of foliar treatments by growth stimulants for economically valuable features and productivity;

2. The calculation of the economic efficiency of the developed technology elements.

The object of research and study material

Chickpea variety Privo. The plant may have a height of 20 - 50 cm, has small pinnate leaves on both sides of the stem. In one pod 2-3 grains contain. Flowers can be white or reddish-blue.

Research methods

1. Analysis of the climatic conditions was carried out according to the weather station Chernoyarsky.

2. Determination of yield by the general procedure (Moiseychenko, 1996).

3. The seed harvest was taken into account, followed by a biological method, based on the 14% -s' humidity and a 100% purity.

4. Mathematical data processing was performed by the usual method (Armor, 1985).

5. Economic evaluation of the studied agricultural practices according to the routing.

Growth promoters

1. **Plantafol** - an ideal fertilizer for foliar application on a wide range of crops. Manure has an excellent solubility and entered through the sprayers with all types of nozzles. For foliar feeding almost the entire growing period. It complements the root feeding and promotes plant drow during

unfavorable weather conditions (frost, drought, excess moisture, and others.) Especially to enhances the effectiveness of the drug enters the adhesive.

2. **Megafol** - liquid antistress biostimulant new generation produced from plant amino acid content progormonalnyh compounds, the components obtained by enzymatic hydrolysis of high-protein vegetable substrates. Megafol can be used with all pesticides, stimulating metabolism, it makes it easy to overcome herbicide stress of cultivated plants, while the weeds are more susceptible to the effects of the herbicide. When combined with foliar fertilizer enhances the action (Plantafol), playing the role of the transport agent.

3. **Lignohumate** - high-tech and (ballastless) humic fertilizer with trace elements in chelated form with the properties of a growth stimulant and antistress agent. Lignogumat has a broad spectrum of activity on plants. Its properties are shown on all major crops.

Microbiological preparations for the culture of chickpeas: 522, 527, H-27, 065.

In the experiment studied two options stimulate growth and development of chickpea in one case before sowing seeds were treated with different preparations of microbiological preparations at a rate of 600g / ha.

In another, at different stages of plant development out foliar treatment with growth stimulants were carried. Option + megafol plantafol. Plantafol (10:50:10), the consumption of the drug 25 g / 10 liters of water. With a combination of a master or plantafolom megafola consumption of 0.5 l / ha. Hydraulic fluid tank mixture -250 l / ha. Varinat Lignohumate. Consumption of the product - 100 g / ha. Working fluid flow of 300 l / ha.

Experience scheme

The trial plots systematically triplicate (Dospechov, 1985; Moiseychenko, 1996). The total area under experience are 150m2. Area one accounting plot - 45 m2. The area under the option - 6.42 m2, 1 repetition - 2.14 m2.

Research results

After analyzing the productivity of chickpea varieties instill on such indicators as the number of seeds in the plant the best options were B3 (strain 527), B4 (strain H-27), B5 (strain 065), where the figure ranged from 64.00 to 71.66 pcs., mass seed in variations: B4 (strain H-27) 4,08g and B5 (strain 065) 4.37 g. Economic efficiency calculations showed that chickpea cultivation under irrigation with different preplant seed treatments, as well as versions with different growth promoters are economically efficient.

Analysis of economic efficiency of application of microbiological preparations and growth stimulants in irrigated chickpeas cultivation showed that they contributed to the higher costs and the cost of production while increasing cost-effectiveness and economic efficiency Rub. / Rub. input costs. The best economic performance among the studied variants in chickpea varieties preplanted seedbed inoculation microbiological preparations were obtained from options B4 (strain H-27) and B5 (strain 065). The yield increase ranged from 0.10 to 0.22 t / ha relative to the control variant. The profit on these options ranged from 30414.7 to 34614.7 Rubs. / Ha. Maximum profit on the options had B5 (strain 065) 34614.7 Rubs. / Ha, 130.0% margin. Economic efficiency Rub. / Rubles was 2,3. On variants with foliar treatments with growth stimulants at cultivation of chickpea yields on it was almost equal from 1.66 to 1.71 t / ha the value is approximately the same: profitability from 113.5 to 115.1%. Economic efficiency Rub. / Rubjon. embedded costs on average is 2.1.

Findings

The results of the cultivation of chickpeas with foliar application of growth simulators and microbiological preparations were in such indicators as the number seeds per plant the best options had B3 (strain 527), B4 (strain H-27), B5 (strain 065), where the rate ranged from 64.00 to 71.66 pc. The weight of seeds best variations had B4 (strain H-27) 4,08g and B5 (strain 065) 4.37 g. Weight of 1000 seeds was also maximal at these cases and the average was from 217.3 to 220.0. The highest yields among the options studied using microbiological preparations had B5 (strain 065): 1.75 t / ha, which is significantly higher than the control options.

The maximum profit had B5 (strain 065) 34614.7 rub. / h, margin 130.0%, economic efficiency was 2,3 Rub. per Rub. imput. Highly profitablity in 31819.7 rub. / ha and 113.5% of feasibility were within the options of foliar application of growth stimulators B6 option (megafol+plantafol).

THE POTENTIAL YIELD OF CORN IN GUINEA-BISSAU

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Abstract

With maize being one of the most promising culture in Guinea-Bissau, in this article we attend to analyse its potential yield in the country. Using climat and soil conditions in Guinea-Bissau, we plan the potential yield of corn in those conditions.

Introduction. Gvineya-Bisau – one of the poorest countries in the world. The majority of population (80%) occupied in agriculture. Agriculture brings 60% of GDP. Corn is one of the most promising crop for the expansion of crops in the country, but its potential for cultivation and rational technology still little studied times (Yakovlev, 1986).

Object and methods

The potential of maize cultivation in the country have been calculated on the basis of the programming approach harvest (Kayumov, 1989).

Results and discussion

The potential yield of corn in the first stage was designed by the arrival of PAR and moisture.

$$Y_{bio}=(R*K) / (4*103*102*103)$$

where Y bio - biological yield dry weight, t / ha; R - the number of incoming PAR during the growing season, kcal / ha; K - utilization of PAR sowing%; 4 * 103 - the amount of energy released by burning 1 kg of dry matter biomass kcal / ha; 103 - translating kg per tonne; 102 - including interest rate (K) use PAR sowing.

Y bio = (2.87 * 109 * 2) / (4 * 103 * 102 * 103) = 14.35 t / ha

Y d.v.u. = 80% Y biol = 14.35 t / ha * 0.8 = 11.48 t / ha

where **Y d.v.u**. - Really possible yield, t / ha

The ratio of primary products to the side for the corn is 1: 2**,**

Y d.v.u. cont. = 11.48 3 = 3.84 t / ha.

where **Y d.v.u. cont**. - Really possible harvest of main products, t / ha

Translating to a standard humidity obtain Y std. humidity. = 3.84 * 100 / (100-13) = 4,41t / ha, where V typ. humidity. - The maximum possible biological yield of main products standard humidity t / ha; 100 - the total weight of the product,%; 13 - standard humidity of the main product,% (http://www.countrystat.org/home.aspx?c=GNB, http://www.fao.org/statistics/databases/en/).

Next is the calculation of the yield coefficient of water consumption (Kayumov, 1989). For maize this figure is 300. The maximum possible harvest (IDP) solids in water availability for crops of maize calculated by the formula;

MBA = A / CP1, where: A number of productive plants of water in the soil, t / ha; Kp1-coefficient for water consumption of maize (CP1 = 300). To find and annual rainfall (650 * 10 = 6500 t / ha) was multiplied by the non-production costs, runoff and evaporation (30) and divided by 100%. Thus the average annual rainfall is directly used by the culture:

A= 6500 t/ha*30:100%=1950 t/ha

We find the presence of productive soil water: 6500-1950 = 4550 (Tabl.1).

Table 1

Water supply plant in Guinea-Bissau

The amount of rainfall during the year		Consumption in the runoff and evaporation		Number of productive plant water
mm	t/ha	%	t/ha	t/ha
650	6500	30	1950	4550

The maximum possible dry matter content of the crop water supply: MBA = 4450: 300 = 14 t / ha

Really possible harvest will be 8% of the maximum possible harvest: DVU = (MVU * 80%): 100%

DVU= (14 t/ha *80%)/100%= 11 t/ha.

The ratio of basic products (grains) to the side in maize is 1: 2. Really possible harvest grain dry matter will be 3,6 t / ha. When converted to a standard moisture content of 12.5% we get the opportunity to harvest corn:

(3,6 t/ha *100)/ (100-12,5%) = 4,11 t/ha.

The potential yield on the passage of PAR is 4.41 t / ha, and the moisture is at 4.11 t / ha. Since moisture is a limiting factor, the potential amount of harvest is 4.11 t / ha. Thus, during the irrigation yield can be increased only by 0.3 t / ha.

Findings

The analysis estimated the potential productivity of the land for the cultivation of corn country, calculated the potential yield of this crop, seeding rates and fertilizer requirements that are needed to achieve the potential of the crop. The potential yield of corn in a Guinea-Bissau can be up to 4.11 t / ha. In irrigated conditions, this value can be increased only by 0.3 t / ha, which makes irrigation economically inefficient.

INFLUENCE OF MINERAL FERTILIZERS ON THE YIELD AND QUALITY OF SORGHUM FODDER CROPS IN BRYANCK REGION

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Abstract

We studied the influence of different levels of mineral fertilizers on yield and quality of forage mass from sweet sorghum, sorghum hybrids and grass sorghum on gray wooded soils in the south-west of Central Non-chernozem zone of Russia (Bryansk region). We have identified the high efficiency of application asofoska, borofoska and mineral nitrogen topdressing on productivity of sown sorghum forage crops.

Introduction.

At present, the current state of the country's food resources are not adequately meet the genetic potential of agricultural animals and birds. In this regard, improvement and development of forage production is one of the most important socio-economic problems of the country APC. Increase of feed production can be achieved through expansion of the crops that are high in

carbohydrates and energy. Sorghum, due to the low demands for nutrients and soil, can insure the corn during critical climatic conditions. Competitive advantages of sorghum to corn crops: high yield, lower seed rate, ecological plasticity, possibility of later planting dates and harvest, high aftermathability (2-3 mowings). Sorghum has universal use, its economic use is very flexible.

The purpose and objectives of research. The aim of our experiments was to determine the efficiency of mineral nutrition level in the cultivation of sorghum forage crops in terms of gray forest soils of Bryansk region.

The following objectives are to be determined: the study the effect of fertilizers on crop yields of aboveground mass sorghum crops; determine the quality of aboveground mass sorghum forage crops depending on the level of mineral nutrition; to develop the most effective agronomic techniques for field cultivation of sorghum forage production in the Bryansk region.

Terms, objects and methods of research. Investigations were carried out in the field of stationary experiment of the Department of Grassland, breeding, seed production and horticulture Bryansk SAU located 25 km south-west of the city of Bryansk. The development and improvement resource-zonal elements of technology of cultivation of fodder sorghum were conducted by field and laboratory experiments: study the effect of fertilizers on productivity, structure and biochemical composition of sorghum crops in the period from 2012 to 2014. Production experience and testing of scientific research for the cultivation of sweet sorghum, sorghum-sudan and Sudan grass hybrids were carried out in grain and fodder crop rotations SEC "Agri culture" of the Bryansk region, JSC "Uchkhoz Kokino" Vygonichsky region, SEC "Kistersky" Pogarsky district of the Bryansk region in the area from 4.5 to 100 hectares by year of test.

In the experiments we used the sorghum crop breeding varielies of All-Russian Research Institute of sorghum and soybeans "Slavic field" (Rostov, Russia), sweet sorghum hybrids breeding Institute of maize and sorghum of "Porumbeni" (Republic of Moldova), Sudan grass variety Kinelsky 100 (originator institution - Volga Research Institute of breeding and seed production, Kinel, Samara region). The objects of the study were promising hybrids: sweet sorghum Slavic garden F1, and F1 4 Porumbeni Porumbeni 5; sorghum hybrids sudankovye-Slavic field of 15 F1, Slavic field 18 and Manor F1; Sudan grass (Sudan grass, sorghum, herb) grade Kinelsky 100. Predecessors data were winter crops, annual grasses. The preparing was soil was as the common areas. By the combined processing unit RVK-3,6 complex mineral fertilizers: NPK - background 1 - N60P60K60 and borofoska - Background 2 - P60K60 were applied. In the phase of 4-6 leaves nitrogen fertilizing ammonium nitrate - N30, N60, N90 were implemented.

Each variant (genotype, hybrid) sown was by drill CH-16A on 4th rows: length 70 m, the distance between rows - 60 cm. The area of each option - 740 m2, the discount - 50 m2, repetition - quadruple, systematic arrangement of the plots.

Research methods - field, laboratory and statistical. The observations, measurements, accounting, analysis and calculations were carried out according to conventional techniques.

The results of research. As a result of experiments, we showed a different response of the studied hybrids of sorghum to the levels of mineral fertilizers and nitrogen fertilizing. In experiments on crop yield variants with the introduction of nitrogen fertilizers in fertilizer varied quite widely. The average for the three years of research on the productivity of the studied hybrids background 1 mineral nutrition - N60P60K60 + nitrogen fertilization (N30-90) compared to the control variant (without fertilizer) was increased to 1.4-1.7 times.

The highest yield of green mass of more than 70 tons of green mass from 1 hectare of sweet sorghum crops formed the Slavic garden F1 in a variant with dressing (N90) on the background with the introduction of NPK. Sweet sorghum hybrids Porumbeni 4 and 5 Porumbeni in this variant of the experiment were less: 61,5-65,6 t / ha of green mass or 15,0-16,4 t / ha of dry matter. Among sorghum hybrids, sudangresses better responsiveness shown hybrid Slavic field of 15 F1 - 55,5 t / ha of green or 13.8 t / ha of dry matter. The application of PK and nitrogen fertilizers on sweet sorghum Porumbeni gave 4 to 65 t / ha and sorghum hybrid Slavic-sudankovy field 18 F1 had more than 52 tons of green mass from 1 hectare. According to the results of statistical processing of the

experimental data revealed that the highest significant difference observed in experiments was between fertilizers and unfertilized variants.

In our experiments, different backgrounds mineral nutrition significantly affected the biochemical composition, the content of sugars in the stalks and nutritious food crops of sorghum. Data analysis allowed to establish a sufficiently broad interspecific differences in biochemical composition. Thus, the content of crude protein stood out well-leafy sorghum hybrids sudan hydrids Slavic field 15 F1 and Slavic field 18 F1 to sweet sorghum hybrid Slavic garden F1 also showed a high content of crude protein in the background with a nitrogen fertilizing N90 (8,8 %), which is 3.1% higher than the control. In addition, it was noted the highest content of nitrogen-free background made borofoski P60K60 fertilizing with nitrogen N90. The content of crude fiber depended on the genotype (hybrid) and modified studied backgrounds. The above-ground mass of different control options hsd a higher concentration of fiber and made more than 29-30%. On variants with nitrogen fertilizing fiber content slightly decreased to 27,4-28,0%. A similar trend was observed for this indicator among the sorghum-sudankovyh hybrids as a tall and leafy plants. With the application of nitrogen fertilization fiber content of sweet sorghum plants decreased to 27.5%. Application borofoski positive effect on the content of sugars in the stems, which is in the range 14,1- 18.6%, and in embodiments using nitrogen fertilizer is a tendency to reduce the concentration of sugar (from 18.0% to 12.6%).

As a result of the development of elements of the adaptive technology of cultivation of sorghum grassy awarded following a pattern that mineral fertilizers in combination with a herbicide and nitrogen fertilizing fenizan contributed to getting a high yield crop. On average, 3 years of research has formed the largest yield in the variant technology T3V (with NPK and nitrogen fertilization N90) and amounted to 33.23 tons of green or over 7.3 tons of dry mass per 1 ha. This technology (T3B) featuring a large number of preserved plants to harvest, crops are less clogged, formed a high yield crop.

Thus, as a result of studies found the effect of fertilizers on the growth, development and productivity of sorghum plants. The data indicate a fairly high level of realization of productive and adaptive capacities sorghum crops in view of their agro-biological features and a number of agronomic cultivation techniques in the gray forest soils of the Bryansk opolja. Set fairly wide interspecies differences in the biochemical composition and the effect of fertilizers on the content of crude protein, fat, fiber, ash and BEV.

THE METHODOLOGY OF THE FIELD TRIALS OF PREDATORY BUGS OF PICROMERUS AS A BIOLOGICAL CONTROL AGENT OF THE COLORADO POTATO BEETLE ON POTATO PLANTS

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Environmental benefits of biological control organisms harmful is that it allows you to reduce or under certain conditions, to completely abandon primene¬niya crop protection chemicals. Due to the fact that very often the Colorado potato beetle, acquires resistance, or resistance to chemicals, or chemical method, in general, concerning the fore biological plant protection method. In the biological plant protection methods are widely used bacteria, fungi, and other entomophagous. (Potato-plants.narod.ru)

According to many domestic (Shutova, 1962; Koval, 1970, Victor, 1974; Gusev et al., 1975; Sorokin, 1977; Gilyarov, 1980) and foreign (shands, Simpson, 1972; Heinisch et al., 1979; Pre-

UTT, 1980; Ekbom, 1980; Mertins, 1980) specialists, one of the main methods of pest management can and should become a biological control based on the use of natural regulatory mechanisms. (Bogush, 1980)

In Russia there is still no audio specialized firm, which would produce a wide range of biological agents, many greenhouse complexes are forced to turn out such funds themselves. (Biocontrol.narod.ru). Among these biological control agents of plant protection practice, the use of plants against pests in the fields, entomophagous insects. (Potato-plants.narod.ru)

Opening of the main mechanisms to improve entomophages destroying the Colorado potato beetle, in the second period of his generation, in combination with data on the mechanisms of formation of food links entomophagous predators are important for understanding the mechanisms of regulation of pest populations vagrotse-nozah and necessary for the development of the foundations of the practical use of polyphagous hischnikov.v pest control (including - Colorado potato beetle). (Yakovlev, 1958)

Among entomophages used on crops and Solanaceae including potatoes, often used predatory bug Picromerus bidens L. (potato-plants.narod.ru)

Pikromerus - large predatory stink bug. Widely distributed in the Palearctic, penetrated into North America. Unlike most of the defenders, winters on stage diapausing eggs that allows to accumulate entomophage in the required amounts, for a long time store and forward at any distance. Length 12-13 mm. Powered oko¬lo 250 species of insects, including larvae and sucks ima¬go leaf beetles (Colorado potato beetle et al.), The larvae of sawflies, guse¬nits scoop et al. Fertility sa¬mok about 300 eggs per individual. Bedbug eggs do not develop without a long period of ohlazhde¬niya (embryonic diapause). (Abashkin, 2015)

The technique of mass production pikromerusa and its use against leaf-eating pests. In the field, the effective application of bug contribute sufficiently large size, high aggressiveness, the optimal ratio between search capabilities and migration activity. Group attack mode and power allows small bugs ages cope with relatively large insects. Entomophage successfully tested in the centers of one of the most dangerous of leaf-eating pests such as Colorado potato beetle Leptinotarsa decemlineata Say., Potato Ramenskoye district of Moscow region (together with the Russian National Station of Plant Protection) and leaf-eating scoop on peppers indoors in Lyubertsy and Lenin Moscow Region. Pikromerus introduced into production in biolaboratories agrokombinats "Moscow" and "Belaya Dacha" in the former Soviet Union. (Biocontrol.narod.ru/picromerus.htm)

Also conducted field trials (2009-2014g.g.) Predatory bug pikromerusa Picromerus bidens L. In Moscow and Tver region, to identify the maximum biological effectiveness against the Colorado potato beetle Leptinotarsa decemlineata Say., To which the bug is specially grown in the laboratory (FGBU "VNIIKR ") at a temperature of 250C. Studies predatory bug pikromerusa, monitor the development of bedbugs, the definition of fertility by counting eggs in egg production and viability of eggs laid was carried out in special wooden cages in the laboratory. In this case, male and female pikromerusa older adults or contained in them jointly.

Laying bug pikromerusa located in Petri dishes with moistened cotton swab after collection in cages, have been stored in a refrigerated cabinet at 13-140S. After storage, the Petri dish with egg production were placed in conditions with a temperature of 250C. Monitor the development of bedbugs, the definition of fertility by counting eggs in egg production and viability of eggs laid were carried out in special wooden cages in the laboratory. In this case, male and female pikromerusa older adults or contained in them jointly.

After the appearance of the egg-laying, bugs were placed on the leaves and stems of plants in different amounts in different age stages and in various combinations predator - prey. Planting bugs I-st and II-th age on the leaves and stems of the plants was carried out using a soft brush. In the allocation of bugs in the process of oviposition, oviposition attached to the leaves and stems of plants. Observations of insect and record changes in the plants in the field, conducted at intervals of 2-3 days per week.

Migration ability pikromerusa during field trials of 2011., And studied at the designated 3 sections consisting of four ridges 10 plants. Before the release was made pikromerusa marking areas with wooden pegs at a distance of 1 m from each other. During the test was used 3,000 eggs bug pikromerusa. Originally planned to be placed on the leaves of plants 1, 2 and oviposition bug pikromerusa 1, 2 Colorado potato beetle larvae. However, due to the influence of high temperature weather, bug pikromerus in egg-laying stage died. Therefore, the second landing was made pikromerusa bug in stage I-th age. During the accounting, held 3 times a week (at the same time), the plants were examined from all sides and noted the number and age of murdered larvae and adults of the Colorado potato beetle and moving pikromerusa individuals in search of food. The average number of the Colorado potato beetle per plant at the time of issue is: 1-2 adults, 5-6 larvae of I-II and III-rd ages.

During the tests, planting bugs pikromerusa occurred by seasonal colonization (Y.I. Meshkov, "FGBNU VNIIF"; O. Volkova, "FGBU VNIIKR"). This method, in which the bug produced only as needed, when the first signs of the presence of pests and depending on the number of pests on the plant. This is due to the fact that the agricultural lands of the central zone and the non-chernozem, due to very low temperatures, the bug does not hibernate. By the next occurrence of the centers of the Colorado potato beetle, bugs pikromerusov, also grown in wooden SATCOM in the laboratory.

Due to the fact that the Colorado potato beetle is difficult to control, the fight against Colorado potato beetle has become a global problem of agriculture, which can be solved by the development of highly effective pest control, which in turn is possible with in-depth knowledge of biology, ecology, and other features of the Colorado beetle. These data allow us to effectively fight with him at different phases of development.

Very important objective evaluation of different methods to prevent crop losses from pests and, in particular, chemical and biological. (Zakharenko, 1995)

DESIGN AND IMPLEMENTATION OF SOIL AND AMELIORATIVE INFORMATION SYSTEM (GIS) IN IRRIGATED AREA

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Abstract

By digitizing of the existing cartographic materials and space images an information system parts of the territory rural districts of Akdala and Bereke is created. Using established information system thematic maps of studied properties of soils created.

Introduction. At present, the irrigated areas drastically worsened the problem of reclamation state, increased the area of so-called "idle", "worthless" lands. According to the Agency of Land Management at the Republic of Kazakhstan currently in the territory of the four southern regions of the country from 1.55 million hectares of irrigated land are not used 236.9 thousand hectares, or 15,2% (Otarov A., 2014). Moreover, even among the land used annually as a result of their extensive use with the loss of humus, basic nutrient elements, deterioration of the physical, chemical and biological properties of soils appear more fields that give consistently low yield. Further move the lack of regular monitoring and as a consequence the ignorance of the true current state of irrigated lands makes the problem worse.

The newly organized crushed peasant farmers, do not even have a simple land-use maps not to mentioning soil, soil-reclamation and other thematic maps. If there are some cartographic

materials, they are very outdated, compiled by traditional methods using only the topographic base and do not meet modern requirements. In compiling such maps data acquisition system often did not have a clear structure, the temporal and spatial data binding provides practical quality.

Therefore, at the present time, the creation of soil information system, including spatial tied computer database of the basic properties of soils and modern digital thematic maps is one of the actual direction of sustainable agriculture. In addition, it is the only way to do previously collected soil retrospective data available for scientific analysis and practical use. The principal feature of GIS is that they make it possible not only to optimize the storage and processing of the results of research, but also significantly increases the informational, scientific and practical significance of modern and historical data.

In this regard, the main purpose is to create a pilot irrigated area of geographic information system (for example, an array Akdalinski irrigation massif). In Kazakhstan practically there are no scientifically based methodology for information systems of such irrigated areas, for today that also determines the relevance of the work.

The purpose of research - to create an information system of irrigated massif and on its base to develop the techniques of restoration of soil fertility.

Terms and methods of research. The object of the research is the soil cover Akdalinski array irrigation, which is located at the headed part of the ancient Akdala - Bakanasskoy delta of the Ili River. Here, the leading crop is rice, also some crops are cultivated in rotation: indispensable precursor of rice – alfalfa and cover as crops - spring wheat and barley. Rier Ili is the main source of irrigation in the district.

Work done by using GIS techniques, specialized software MapInfo Professional and morphological and profile research methods that are essential in soil diagnosis.

Heavy metals were determined by atomic absorption method by atomic absorption spectrometer AA - 6200 company «Shimadzu» (Japan). To determine the total forms of heavy metals using acid digestion, mobile form was recovered by ammonium acetate-buffered solution with pH of 4.8.

Statistical processing was performed by conventional methods of mathematical statistics, described using the program package of analyzes «Excel - 97» and «Atte Stat».

Results. By digitizing existing maps and satellite images was created the electronic foundations of the information system of the object of the study. By performing the traditional terrestrial soil survey was created geographically referenced electronic database of the basic properties of soils. Using the data were compiled corresponding thematic maps of humus, nitrogen, mobile forms of phosphorus, potassium, heavy metals (Cu, Ni, Pb), pH and salinity. Based on analysis of the studied soil properties was revealed that limiting factors o the level of fertility of the soils studied factors are very low humus content, excessive content of toxic salts and high, exceeding the MPC soil content of mobile forms of environmentally hazardous Ni and Pb.

Findings

By digitizing existing maps and satellite images at information system of the territory Akdalinsky and partly of Berekensky rural districts. The database information system has available analytical data on the humus content, hydrolyzable forms of nitrogen, mobile forms of phosphorus and potassium, soil pH, the degree of soil salinity and content of mobile forms of acute for Akdalinski array heavy metals - Cu, Ni and Pb.

Using the created information system the analysis of the tendencies of soil groups distribution (on specific properties) was made, the thematic maps of soil properties were created.

FORMATION OF SYSTEMIC RESISTANCE TO SOIL DROUGHT IN LETTUCE INDUCED BY ELICITORS OF RHIZOBACTERIA *PSEUDOMONAS SPP.*

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Summary

Microbial elicitors derived from bacteria *P. putida* F19 and *P. aurantiaca* B-162 induce ISR-type systemic resistance in lettuce under soil drought conditions and after discontinuance of such conditions.

Introduction. Two strains of nonpathogenic rhizobacteria *P. putida* F19 and *P. aurantiaca* B-162 have been isolated and are actively studied by the Research Laboratory of Molecular Genetics and Biotechnology of the Belarusian State University. These strains have complex antagonistic activity, are able to promote growth and ensure protection of crops against diseases of both bacterial and fungus etiology, as well as to prevent nematode infestation of plants. Such strains induce ISR-type systemic resistance against various phytopathogens in many crops (Kuleshova et al., 2011).

The plants treated with elicitors undergo a number of physiological changes improving metabolism under environmental stresses. Specifically, permeability of membranes of their cells, and ratio of photosynthetic pigments are changed, antioxidants are synthesized, protective agents are accumulated. All these promote survival of plants under biotic and abiotic stress conditions.

The Aim of this Work is to study the role of the microbial elicitors derived from *P. putida* F19 and *P. aurantiaca* B-162 in formation of ISR-type systemic resistance in lettuce under such abiotic stress condition as soil drought and after its discontinuance.

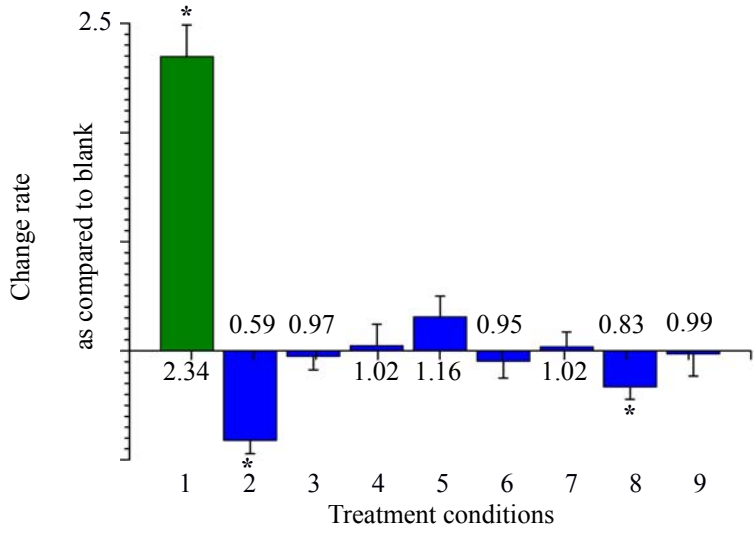
Lettuce (*Lactuca sativa*), Lollo Bionda variety, was **the subject** of experiments with regard to induction of systemic resistance in plants to drought. *P. aurantiaca* B-162 live cultures (A) (10^6 CFU/plant), *P. aurantiaca* B-162 pyoverdines (Pvd A) (200 μg/plant), *P. aurantiaca* B-162 pyoverdines (Phz A) (50 μg/plant), *P. aurantiaca* B-162 dry cells (CA) (100 μg/plant), and *P. putida* F19 live bacteria culture (P) (10^6 CFU/plant), *P. putida* F19 pyoverdines (Pvd P) (200 μg/plant), *P. putida* F19 dry culture (CP) (100 μg/plant) and mixture of *P. putida* F19 and *P. aurantiaca* B-162 dry cultures (CC) (100 μg/plant) were used as elicitors.

Methodology. The simulation of soil drought was carried out upon growing the lettuce *in vitro*. The plants were treated with elicitors on 22^{th} – 31^{st} day of growth. Soil drought was simulated by means of cessation of watering immediately after application of elicitors. The measurements were taken on the 16^{th} – 23^{rd} day of draught. Plants treated with water were used as a blank.

In order to determine the cell plasmatic membrane permeability to free nucleotides, weighted portions (0.1 g) of plant leaves were put into tubes, washed with distilled water, and then poured with 5 ml of distilled water and incubated for 1 hour at 20 °C (under normal conditions) and 50 °C (under stress condition).

Change of the cell membrane permeability to free nucleotides was registered based on optical density (OD) of incubating medium at the wavelength of 260 nm and expressed in percentage to the blank.

Results and Conclusions. When using elicitors for the lettuce, Lollo Bionda variety, grown under soil drought conditions, no reliable evidence of increase in the biomass of lettuce was registered, and even its reduction 0.83 – 0.59 times for some treatment options was noticed, see Figure 1.



Experimental conditions: 1 – without elicitors, regular watering; 2 – A, drought, 3 – Pvd A, drought, 4 – Phz A, drought; 5 – CA, drought; 6 – P, drought; 7 – Pvd P, drought; 8 – CP, drought; 9 – CC, drought; * – the results are reliable at $p < 0,05$.

Figure 1 – Effect of different elicitors on vegetative mass of the plants of Lollo Bionda lettuce under soil drought conditions

However, during the experiments it has been established that treatment of the plants being under soil drought conditions with elicitors results in change of cell membrane permeability to low-molecular compounds. All elicitors stabilized membranes of lettuce plants at 50 °C.

As it is shown in Table 1, increase in permeability has been found only in untreated plants that have been grown with regular watering.

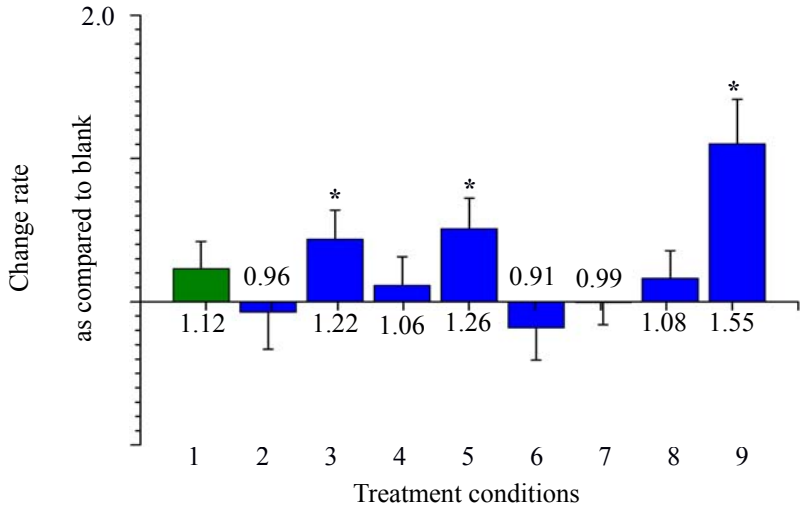
Table 1

Effect of elicitors on cell membrane permeability to low-molecular compounds in lettuce under soil drought conditions

Defined parameters	Watering	Drought							
	K	elicitors							
		A	Pvd A	PhzA	CA	P	Pvd P	CP	CC
Relative OD_{260} at 20 °C	0.00	1.34	1.5	1.25	2.00	2.06	1.50	8.25	2.25
Relative OD_{260} at 50 °C	0.32	0.49	0.22	0.57	0.51	1.07	0.22	0.27	0.38

Stabilization of membranes upon treatment with elicitors is one of the most important factors of formation of ISR-type systemic resistance in plants, makes it easier to tolerate the impact of external factor, and helps to change metabolism after discontinuance of the stressor effect more effectively. Thus, as it shown in Figure 2, upon modification of the experiment with continuation of regular watering after discontinuance of drought for 25^{th} – 33^{rd} day, the reliable evidence of increase in the biomass of lettuce has been registered: 1.2 times with *P. aurantiaca* B-162 pyoverdines, 1.25 times with *P. aurantiaca* B-162 dry cells, and 1.55 times with mixture of *P. putida* F19 and *P. aurantiaca* B-162 dry cultures. The antioxidant activity of such compound may be the underlying mechanism of induction of systemic resistance by pyoverdines in lettuce under abiotic stress conditions (Kuleshova, Maksimova, 2006). Owing to residual hormone activity, *P. aurantiaca* B-

162 dry cells are able to change the metabolism of lettuce cells and have a favorable effect on increase in its biomass. Increase in production of lettuce by 50 % in case of treatment with mixture of *P. aurantiaca* B-162 and *P. putida* F 19 dry cells as compared to increase in biomass by 25 % in case of treatment with *P. aurantiaca* B-162 dry cells may be explained by synergistic effect of the elicitor mixture used. Similar phenomenon is typical for ISR, and was previously described by M. Figueredo for haricot (Figueredo et al., 2008).



Experimental conditions: 1 – without elicitors; 2 – A; 3 –Pvd A; 4 – Phz A; 5 – CA; 6 – P; 7 – Pvd P; 8 – CP; 9 – CC; * – the results are reliable at $p < 0,05$.

Figure 2 – Effect of different elicitors on vegetative mass of the plants of Lollo Bionda lettuce after continuation of regular watering

Conclusions. Thus, it was established that microbial elicitors derived from *P. putida* F19 and *P. aurantiaca* B-162 participate in formation of ISR-type systemic resistance in lettuce, Lollo Bionda variety, under soil drought conditions and after discontinuance of such conditions.

THE USE OF DRIP IRRIGATION SYSTEM IN THE CULTIVATION OF VEGETABLE CROPS IN THE SOUTH OF KAZAKHSTAN

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Abstract

The use of drip irrigation system, in comparison with the usual traditional way of watering is relevant and modern approach to water and energy savings and allows to obtain higher yields of vegetable crops, while maintaining soil fertility.

Objective: To establish the effectiveness of the use of water-saving drip irrigation technology when watering crops.

Object: water-saving technologies of drip irrigation of crops.

Research Methods:

Selection of pilot area (PA) for developing water saving technology of crops cultivation under drip irrigation was carried out taking into account its typical for the southern region of Kazakhstan climate, soil, hydrogeological, geomorphological and economic conditions.

Studies were conducted on PA KazNIIVH "Besagash" Zhambyl district of Zhambyl region (Taraz, Kazakhstan) in 2012-2014.

The effectiveness of the use of water-saving technologies were carried out in comparison with surface irrigation on the following crops:

2012 - cultivation of onion on 1 ha (Balgabaev 2012).

2013 - cultivation of carrots on 0.9 ha (Kalashnikov, 2013).

2014 - cultivation of beet on 0.5 ha (Kalashnikov, 2014).

Cultivation of vegetables under drip irrigation involves the use of the most advanced technologies, and as shown by the studies, obtaining high yields is only possible with the mandatory implementation of all farming activities. They are demanding to nutrients and water regime, soil fertility, respond well to fertilizer.

The results:

In the study of irrigation regimes, it was found that the most effective is to comply differentiated irrigation according to phases of plant development and the level of pre-irrigation moisture of the soil. Table 1 shows the levels of pre-irrigation moisture of the soil and the depth of moisture, with corresponding to the phase of plant development in onion, carrot and beet, as well as the average values of irrigation norms for middle-clay soils at PA.

As evidenced by these data, the optimal value of the pre-irrigation moisture of the soil must be no lower than 70-85% for all crops.

The total water consumption of crops during the growing season is as follows:

- at cultivation of onion - 6800 m3, which is almost 2 times less than the rate of irrigation with surface irrigation, which is more than 12,000 m3. The yield under drip irrigation was 82.2 t / ha, with surface - 54.3 t / ha;

- at cultivation of carrots - 5400 m3, which is almost 1.5 times less than the rate of irrigation with surface irrigation, which is more than 8800 m3. Yield of carrots was 68.6 t / ha under drip irrigation of 52.5 t / ha;

- at cultivation of beet under drip irrigation - 4750 m3 / ha, which is almost 1.8 times less than the rate of irrigation with surface irrigation, which is more than 8000 m3. Yield of beet under drip irrigation was 32.0 t / ha, with surface - 20,6t / ha.

Table 1

Irrigation norm bow under drip irrigation

Phase of plant development	Preirrigation soil moisture, %	Depth of humidification, м	The irrigation norm, m3/ha
onion			
Shoots start-at bulbing	85	30-35	65-75
Formation and the beginning of bulbs ripening	70	35-40	140-155
Maturation of bulbs	75	35-40	130-150
carrots			
Seeding-start the formation of root crops	80	40-45	120-150
Formation of root - technological ripeness	70	45-50	180-220
beet			
Seeding-start - formation of root crops	80	35-40	70-100
Formation of roots - technological maturity	70	45-50	180-200

The achieved level of productivity of vegetable crops under drip irrigation became possible as a result of complex technical measures. In drip irrigation fertigation system used readily soluble fertilizers: ammonium nitrate, monopotassium phosphate, potassium nitrate, magnesium sulfate, calcium nitrate and phosphoric acid, which is reflected in the level of marketability of root crops, which amounted to 88-92%. Number of nutries distributed by periods of cultivation - the phases of plant growth and development, taking into account peculiarities of agrochemical and agro soil properties.

Thus, under drip irrigation ensures maximum productivity and efficiency of irrigation water use, compared with other methods of irrigation under consideration.

The effectiveness of the use of drip irrigation technology can be set by comparing the one-time (investment) and current (operating) costs and results of crop production on irrigated land.

One-time costs depend on various factors producer (firm) of drip irrigation systems: the type of drip tube configurations and degree premeditated irrigated land, water source, equipment, etc., etc.

Investment for the acquisition of drip irrigation systems are rather high and, as noted above, depend on various factors - and ranges between $ 2000-3000 per 1 ha.

You must also take into account the annual operating costs, such as:

- Split plot;
- Installation of drip irrigation systems;
- Staff salaries;
- Chemical products for washing drips during operation and after;
- Current repair system;
- Decorstaction and storage of all the elements of the system during winter;
- Watering using diesel power or electricity (if any).

The above costs add up to $ 1000-1200. However, despite the high cost of the system and operating costs the payback period is not so great. The results show that the resulting yield of vegetable crops:

- At cultivation of onions system pays for itself in 1-2 years;
- At cultivation of carrot and beet in 2-3 years.

Conclusions: The introduction of drip irrigation sistem providing water to plants according to their water consumption is relevant and modern approach to the issues of water and energy conservation (especially in areas with shortage of irrigation water), creating optimal water and nutrient conditions in the root zone getting early quality crop, processing automation of irrigation, preservating soil fertility.

THE POTENTIAL OF POTATO'S PRODUCTION IN THE REPUBLIC OF CHAD

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In the Republic of Chad, agricultural production is the dominant sector in the economy of the country. It represents 46% of GDP, and in fact this sector employs about 85% of the population [1]. Low agricultural productivity is due not only, to the fact that more than two thirds of the territory of the country is located in the arid and semi-arid regions of the African continent, but also the weakness of the organization of the production and its technological lateness. The main cause of this situation is due to the low literacy rate of the population, low development of social infrastructures, poverty, technical and technological insufficiencies of primary producers. The

consequence of all these causes is not only the absence of the economic development potential of production, but also a low level of nutrition, lack of food reserves and famine in the case of drought.

Unfavorable climatic conditions, the poor soil fertility in agricultural areas of central and southern Republic of Chad and the low technological level of production significantly limit foods culture. This set consists of sorghum, millet, maize, groundnuts and cassava. The yield of these cultures is less than one ton per hectare. In the southern regions, where it rains more, it is possible to successfully cultivate wheat, cotton, sweet potatoes, rice, potatoes, sugar cane, but the yield of these cultures is considerably below level of potential.

Analysis of environmental conditions and assessing the physiological characteristics of the existing potato suggests that this culture can enter into the major of food culture, because it has a number of objective conditions and incentives. Chad is situed in the depth of the African continent and has no outlet to the ocean and also a poor transportion system. This determines the need to organize local food production using a set of adapted cultures and technologies for local conditions.

One of the cultures that can guarantee the food supply of the local population is potato. This culture was brought to the country by the French colonizers, but the lack of adequate training of the population to the technology of its culture, it has been not widespread. Currently, the dynamics of the production of potatoes is as follows [2]:

Years	1970	1980	1990	2000	2010	2013
Gross yield, t	12000	13000	16882	21409	50200	53000

A wide range of potato's yields in the country from 600 kg to 20 tones per hectare is mainly due to the level of availability of humidity, soil fertility, the quality of planting materials and the level of agricultural technology. Almost all high-quality planting materials are imported from France and the Netherland. A seed production unit of potato still has to be created on the basis of the use of foreign experience.

Potential areas for the cultivation of potatoes, in our opinion, are the foothills of the second climate zone (central) - the Sahel and across the southern third of the country, as the Sudanian zone, which represents 10% of the territory of the country.

The lightening in Sahelian area for the zones of growing potatoes must be determined by the availability of water for irrigation. This can be a river and groundwater from shallow depths. In the Sudanian zone, cultivation of potatoes can be done in the humidity of the raining season without irrigation and also in the dry season by irrigating the soil. The shallow of fresh water can allow use of wind turbines and pumps.

Application of irrigation allows for three harvests a year if farmers are trained in relevant soil preparation and culture rotation technologies. The application of culture rotation with short growth period, for example, rice, onion, garlic, helps set the stage for the next cycle of the production of potatoes in the same year.

Improving potato's production technology in the Republic of Chad can be done with adaptation of climatic conditions (timing of planting), and the use of local resources to improve soil by using organic fertilizers and to reduce soil humidity loss by irrigation, to cover the soil with straw and dry grass.

The organization of local associations of potato producers and other cultures can accumulate existing anonymous funds for the construction of wells, purchase of motor pumps, planting materials, fertilizers and phytosanitary products [3]. It is very important for the association members to have a mutual knowledge in fertilization and experience in the field of agricultural production.

SUPERCRITICAL DIOXIDE-CARBON EXTRACTION OF PINE NUT OIL AND MEAL

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Abstract

In this article the processing of supercritical CO_2 fluid extraction of pine nut to obtain oil and meal was studied in details. The results were as follows: Extraction was processed by 5% alcohol as entrainer under 35MPa pressure at 45 ℃ for 3h, and CO_2 flow rate was at 25kg/h. The yield of pine nut oil was 51.7%, and meal was also obtained with 21.9% oil and 30.6% protein.

The pine nuts contain many nutrients for human health. Pine nuts contain no cholesterol, and is characterized by all the essential amino acids, polyunsaturated fatty acids, proteins, vitamins, and minerals. Pine nut is rich in substances that are antioxidants, ie, substances that prevent the aging process, including tocopherols (赵景 联, 1998; 于 海 伟, 2003; Forest Encyclopedia, 1986). Thus, we can get oil from cedar nuts, and at the same time to use the cake.

The purpose of research. Production of oil and oil cake from the pine nut, improved technology for production of cedar oil, cedar oil output increase.

Objects and methods of research. As the object of study was chosen pine nuts. With extracting supercritical fluid CO2 got cedar oil and cedar oil cake. During the experiment, the main parameters are temperature, pressure, extraction time and expense of CO2. Determination of optimal parameters by a single factor and orthogonal experiments. Out pine nut is defined by the formula:

$$\phi = \frac{a - b}{a} \times 100$$

Φ - oil yield , %; a - weight before extraction, г; b - weight after extraction, g.

Results and discussion.

During the experiment, selected extraction time, the extraction pressure, temperature, speed of CO2 as factors orthogonal experiment was conducted to determine the best technical parameters. Table level facts and orthogonal table analysis results of the experiment are shown in Tables 1 and 2.

Table 1

levels and the facts of the experiment

level	Pressure MPa	Time	Speed CO2, кg/t.	T℃,
1	30	2.5	20	40
2	35	3.0	25	45
3	40	3.5	30	50

Table 2 shows that the different facts influence the yield of oil, but the degree of influence is different: The effect of pressure was greatest, and then the temperature, the extraction time, the effect was minimal rate CO2. The optimum combination of parameters is A3B2C3D2, ie when at the following levels: the pressure of 40 MPa, temperature 40 ℃, the rate of CO2 25 kg / hr., 3.5 hours, the highest oil yield and reaches 51.7%.

After extraction cake obtained, which has loose structure. The cake contains 21.9% fat, 30.6% protein.

Table 2

Analysis results of the orthogonal experiment

№	A Pressure MPa	B Time	C Speed CO2, кg/t	D T℃,	The output of oil%
1	1 (30)	1 (2.5)	1 (20)	1 (40)	32.6
2	1 (30)	2 (3.0)	2 (25)	2 (45)	35.1
3	1 (30)	3 (3.5)	3 (30)	3 (50)	27.3
4	2 (35)	1 (2.5)	2 (25)	3 (50)	40.2
5	2 (35)	2 (3.0)	3 (30)	1 (40)	47.8
6	2 (35)	3 (3.5)	1 (20)	2 (45)	48.4
7	3 (40)	1 (2.5)	3 (30)	2 (45)	48.0
8	3 (40)	2 (3.0)	1 (20)	3 (50)	44.1
9	3 (40)	3 (3.5)	2 (25)	1 (40)	51.7
K1	31.7	40.3	41.7	44.0	
K2	45.5	42.3	42.3	43.8	
K3	47.9	42.5	41.0	37.2	
R	16.2	2.2	1.3	6.8	
The intensity of the influence factors on oil yield: A > D > B > C					

Conclusions.

Out of cedar oil is high by extraction with supercritical fluid CO2, when the factors are at the following levels, the output reaches 51.7%, ie at a pressure of 40 MPa, a temperature of 40 ℃, CO2 rate 25kg / hr., duration 3.5 hours. Under these conditions, the resulting crumbly cake, it contains 21.9% fat, 30.6% protein.

EFFECT OF PHOSPHORUS FERTILIZERS ON YIELD OF ALFALFA IN THE CONDITIONS SOUTH-EAST OF KAZAKHSTAN

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Abstract

Phosphorus fertilizers positively influences on productivity of alfalfa, increased influence of fertilizers especially in the second year, when the soil reduces the amount of movable forms of phosphorus.

Introduction. Despite special role of alfalfa in agriculture in the last decade it is insufficient attention do it. Not used its biological fodder potentials and agronomic features. In 1990, the sown area of alfalfa was about 5098 thousand. ha, and the current level is reduced to 2 145 thousand hectares. To increase feed production, improve feed quality, use these efficienty are guestons of nigh importance to enhance of livestock production. At present and in the next decade livestock industry identified as a priority in the agriculture of the Republic of Kazakhstan. Increasing the number of cattle requires the creation of stable fodder base, based on high-yielding varieties of and good cultivation technology. However, the composition and quality of the forage does not often meet the requirements of high-grade animal feed. Science and experience of highly profitable farms

show that one of the important ways to increase the production of play protein feed is to cultivate alfalfa (Parsaev E., N. Filippova, 2013).

One of the important way increase crop yield is improving mineral nutrition. The system of alfalfa fertilizing determined biological characteristics of the culture, the value of the planned crops, soil and climatic conditions and security of alfalfa cultivation agronomic background. The main feature of alfalfa - the cyclical nature of its growth and development, that is within. When growing alfalfa rainfed crop in case of her under the cover of other cultures, except fertilizers envisaged to cover crop (Drozdov V.V. et al., 2014).

In experiments carried out in Bulgaria, under irrigation, which used a higher dose of fertilizer, also it found that alfalfa strongly respond to phosphorus fertilizer (online resource).

So, in the years 2013-2014, we conducted a study of cultivation of eggplant under drip irrigation with different norms of fertilizers.

Purpose - to study the effect of phosphorus fertilizer on yield of alfalfa in a south-east of Kazakhstan.

Terms and methods of research. Research work carried out at the Department of experienced station "Breeding and Seed Production of forage crops" Kazakh Institute of Agriculture and crop production.

The climate is continental: summers are hot and winters are cold, the amount of annual rainfall is 414.0 mm, of which the main part (about 200 mm) comes in the spring. Soil of test sites light brown.

The studies were performed in accordance with the common procedures, recommendations, instructions in crop research in Kazakhstan.

The objects of research was alfalfa varieties of Serbian Institute of Agriculture and Horticulture - Banat, Nera, Med and Alpha, Niyagara, as well as domestic and recognized varieties Kokoray. Seeds of alfalfa were sown in 2013, with norm 16 kg / ha, distance between rows - 15 cm. Dimensions plots - 15m2 (15m * 1m). Experiments - 3x, the total number of plots - 54.

To study the effect of phosphorus fertilizers on crop yields, double superphosphate (P2O5 - 47%). Was used 3 standards were taken of phosphorus fertilizer: P2O5 - 60 kg / ha, P2O5 - 90 kg / ha, P2O5 - 120 kg / ha.

Number of grass-cuttings in the first year - 3, and the second year - 4.

Results. Under irrigation in the two years average yield of alfalfa cultivars fluctuated at 125-160 kg / ha. Typically, in two years the minimum yield was obtained in the first year, and the high - in the following year. Observations found that during the growing season the yield of alfalfa gradually falls by each mowing. In addition, the yield of alfalfa grown on light-brown soil is determined by the number of hay.

We noticed the significant impact of phosphate fertilizer of the number of alfalfa mowing in the second year. In the first year, significant additional yield obtained only at plot with P2O5 - 120 kg / ha. During second year of vegetation alfalfa derived from 6 to 35 t / ha extra yield on fertilized variants. It should be noted that the highest yields were obtained at the option of P2O5 - 120 kg / ha.

The research results show that phosphorus fertilizer has a positive effect on productivity, increases the effect of fertilizers especially in the second year, when the amount of mobile forms of phosphorus in soil reduces. In the first year, the number of available forms of phosphate in the soil for the plants are at sufficient level, due to the good nutrition of alfalfa is not noticeable fluctuation of yields on options for fertilizer.

The composition of the mobile phosphates in light-brown soil is closely related to the presence of exchangeable sodium in the soil. In these cases, after of alfalfa cultivation prevents a sharp decline in phosphates. After the growing season, as well as mowing alfalfa in the soil remains a large amount of organic waste. Effect of phosphate fertilizer on the weight and growth of the root system of alfalfa is very high.

Findings

The research results show that phosphorus fertilizer has a positive effect on productivity, increases the effect of fertilizers especially in the second year, when the soil reduces the amount of mobile forms of phosphorus.

TYPE AND RATE OF SOIL SALINITY IN RUMAITHA/MUTHANNA PROVINCE OF IRAQ

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Abstract

Sodium chloride and sodium bicarbonate are very toxic for plants and they are very mobile. To prevent their accumulation in upper layer of the soil it requires using frequent irrigation schedule. In other case, toxic salt quickly accumulates in root zone killing the plants.

Agriculture is a very important branch of the national Economy in Iraq. It is the second largest contributor to GDP in Iraq after the oil sector. It is the main source of rural employment and provides livelihoods for poor and food insecure people.

However, in the past two decades this country and agricultural production in Iraqi have gravelly suffered from wars and social unrest. Destruction of irrigation and drainage systems, environmental and soil pollution, abandoning of arable land are not only results of those unfortunate events in the country. According to the Government of Iraq, 92% of the total area of Iraq is at risk of soil degradation and further spread of desertification [2]. At present time increasing soil salinity is the major contributor to soil degradation.

Salinity of soil and of the water used for irrigation in Central and Southern Iraq is a major constraint to agricultural production [1]. To understand the nature of the phenomena we need to look at geology of the territory and take into account agricultural practices used in the far and nearest past. There are several reason of low productivity and high instability of agricultural production in Iraq. In order of severity and complexity they are:

- Soil salinity,
-Deficit of water suitable for irrigation,
-Inadequate net and state of irrigation and drainage system,
-Technological backwardness,
-Lack of professional education of land users,
-Soil pollution.

One of the main objects of present studies is to determine nature and rate of soil salinity caused by current agricultural practices. Among them are type of land use, technologies of soil management and irrigation.

For the purpose of research three typical fields in the area of Rumaitha/Muthanna province of Iraq were selected. The experimental area is situated on the plain of 300-400 m from right bank of the river Euphrates. Elevation of the land is from 1.5 m to 2 m above the usual level of the water in the river. For experimental purposes three plots were chosen which lay in line 100 mapart each one from another.

Plot 1 – waste land (there was no any cropproduction since 2003.

Plot 2 was under barley and rice production since 2004. These crops were produced in sequence each year: barley was produced in winter time, rice -in summer time with periodical irrigation. Waterfrom the riverwas supplied to crop plots by a motopump.

Plot 3 was under alfalfa production during last three years.

At typical place on each plot one pedon was excavated up to the depth of ground water. Visible horizons on the profile of each pedon were singled out and described; separate soils samples were taken from each horizon. Physical and chemical analysis of soil samples using standard procedures of soil analysis [6]. were performed at the Soil Laboratory of Agricultural Faculty of People`s Friendship University of Russia.

The main results of soil analysis are presented in tables 1, 2 and 3.

Table 1

Total salt content in different layers of soil (% of dry soil)

Wasteland		Barley-rice		Alfalfa	
Depth, cm	Content, %	Depth, cm	Content, %	Depth, cm	Content, %
0 - 2	29.05	0 -10	2.44	0 – 10	1.42
2 – 15	8.31	10 – 30	0.53	10 – 35	0.46
15 – 30	3.42	30 – 43	0.20	>35	0.45
30 – 48	0.85	>43	0.15		
>48	0.84				
Mixed* (0-10)	4.3		1.77		1.43

*In mixed soil sample collected on the field

Table 2.

Content of chlorides (% Cl of dry soil)

Wasteland		Barley-rice		Alfalfa	
Depth, cm	Content, %	Depth, cm	Content, %	Depth, cm	Content, %
0 - 2	1.26	0 -10	0.55	0 – 10	0.41
2 – 15	1.17	10 – 30	0.04	10 – 35	0.05
15 – 30	0.66	30 – 43	0.05	>35	0.05
30 – 48	0.42	>43	0.09		
>48	0.42				
Mixed* (0-10)	0.7		0.06		0.52

High, some time, extremely high levels of soil salinity as well as of the water used for irrigation in Central and Southern Iraq are major constraints to agricultural production. The first reason of it is geological nature of the territory. Soil formation materials are mainly represented by carbonate rocks, gypsiorthid, calcareous and gypsiferrous materials enriched by soluble salts. So, the Mesopotamia Fluvial Basin is an inexhaustible store of soluble salts, and the rate of soil salinity is greatly influenced by arid climate. Evaporation brings salts to the arable layer making it dead root zone. Then, as it is shown in the tables above, land use and agricultural production practices used in the area are responsible for big differences in rate and type of soil salinity.

Abandoning of the previously arable land, due to high rate of evaporation, which brings all soluble salts to upper layers of the soil, converts land into a waste land (table 1). Rehabilitation and reclamation of such land by future generations will require big human efforts and financial and technical resources. Such land, possibly, will never be suitable for cultivation.

Table 3.

Content of sodium (total % Na_2O)

Wasteland		Barley-rice		Alfalfa	
Depth, cm	Content, %	Depth, cm	Content, %	Depth, cm	Content, %
0 - 2	17.2	0 -10	1.45	0 – 10	1.31
2 – 15	3.60	10 – 30	0.66	10 – 35	0.39
15 – 30	2.21	30 – 43	0.25	>35	0.2
30 – 48	2.21	>43	0.48		
>48	1.51				

Analytical data given in the tables above show deterioration of soil quality mainly due to the increase of total salt content and content of toxic salts (chlorides + bicarbonates). Soil samples from three plots at the experimental field all showed increase of soil salinity from lower layers to the surface of soil as well from lower plot (alfalfa) to the side of wasteland where soil is extremely saline. The change in soil salinity with depth is mostly affectedby the soil management and frequency of irrigation. Soil salinity of the abandoned land (wasteland) increases towards the surface in exponentially manner. Growth of salinity of top soil samples strongly confirms the role of evaporation.

High percentage of water soluble and insoluble salts which create unfavorable physical and chemical properties of the soil and unfavorable conditions for plant growth (table 2, 3). Prevalence of chlorides and bicarbonate of sodium, in the first place, magnesium and calcium allows classify salinity as chloric one. Sodium chloride and sodium bicarbonate are very toxic for plants and they are very mobile. To prevent their accumulationin upper layer of the soil it requires using frequent irrigation schedule. In other case, due to extremely high rate of evcaporation,toxic salt quickly accumulates in root zone killing the plants.

Such soils can be used for crop production applying with frequent and abundant irrigation; what is not followed frequently.

References.

1. Buringh P. 1960. Soils and soil conditions in Iraq. Baghdad: Directorate General of Agricultural Research and Projects, Ministry of Agriculture.

2.Fact sheets. How Environmental damage causes food insecurity in Iraq. UN, Iraq. June, 2013. Government Day 2013

3.Jassim, R.Z. and Al-Jibouri, B.S., 2009. Stratigraphy. In: Geology of the Iraqi Southern Desert. Iraqi Bull. Geol. Min., Special Issue. p. 53 – 76.

4. Rahi KA; Halihan T. 2009. Changes in the salinity of the Euphrates River system in Iraq. Regional Environmental Change 10:27–35.

5.Sabah Y. Yacoub Stratigraphy of the Mesopotamia plain Iraqi Bull. Geol. Min. Special Issue, No.4, 2011: Geology of the Mesopotamia Plain p 47-82.

6.Nagornyy V.D. Soil and Plant Analysis. 2013. RUDN, Moscow

CONSTRAINTS TO NITROGEN FIXATION BY LEGUMES IN AFRICA

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Leguminous crops grown in different ecological zones of the continent, even on poor soils are important for agricultural systems in Africa. They participate in nitrogen biological fixation, entering into a symbiosis with a wide variety of bacteria *Rhizobia* and *Bradyrhizobia*.

In Africa, in addition to local legumes such as cowpeas, Chinese ground beans etc., embedded culture, like soybeans, peanuts, peas and beans are also important components of traditional farming systems.

While all of these legumes have become a major part of the farming system in Africa, enriching the soil with nitrogen, the effectiveness of their formation of nodules and fixation of N_2 may be limited by various factors, such as the plant nutrition, genetic and environmental factors.

These factors affect the host plant and its symbiotic bacteria, as it was shown in the works of various authors.

The main factors are (Dakora, Keys, 1997):

- Temperature
- The fertility of the soil
- High humidity
- High nitrogen content
- Genotype of plant
- Drought

The drought is one of these factors. It is mostly seen in the soil of the Sahel region of Africa. In drought conditions the number of functioning nodules on legumes reduces, which cause their disintegration (Pankhurst, Sprent, 1975). All of that are caused by the reduced activity of nitrogenase and respiratory ability of bacteria. Drought can also directly affect the durability of rhizobia bacteria in soil conditions. However, there is evidence that some soybean varieties are capable of fixing N_2 under water stress (Sail, Sinclair, 1991).

In addition to the drought, high temperatures is also commonly encountered in Africa. It can reduce nitrogen fixation. Nevertheless, even if few legumes are tolerant to high temperature, this might still negatively affect their symbiotic activity. Interestingly, some species adapted to this zone are able to achieve significant indicators of nitrogen fixation at the high temperature of the soil. An example of this is the species *of Acacia* in Sudan and other African countries (Habish, 1970).

The number of N_2 fixed by legumes crops in Africa can be very significant (table 1). However, these values differ considerably from different species and place of cultivation because of genetic factors, difference in strains of bacteria and cropping systems.

Table 1.

The content of fixed nitrogen in African countries

Leguminous crops	Country	(N) fixed (kg N /ha * year)	Source
Soy	Nigeria	15-125	*Eaglesham (1982)*
Cowpeas	Kenya	24-39	*Ssali and Keya (1984)*
	Ghana	201	*Dakora et al. (1987)*
	Nigeria	122	Eaglesham *et al. (1981)*
Peanuts	Ghana	32-134	*Dakora (1985b)*
Beans	Kenya	17-57	*Ssali and Keya (1986)*

The fertility of the soil also plays an important role in the fixation of N_2 by legumes. This can be explained, using reports (Ahn, 1970), proving that soil in Africa suffer from unequal distribution of nutrients and minerals that negatively affects plant growth, symbiotic activity and nodules' formation.

Thus, nutrient deficiency reduces nitrogen fixation in farm conditions. It can be assumed that negative results, obtained sometimes from inoculation with *Rhizobium* or *Bradyrhizobium* in African soils, can be caused by the unequal distribution of nutrients in soils, which prevents the leguminous crops-bacteria system to fully express its symbiotic potential.

The heterogeneity of the soil in Africa also affects the nodulation and fixation of N_2 through different content of nitrogen in the soil, because high content of N_2 in the soil negatively affect its fixation (Peoples, Herridge, 1990).

Biological nitrogen fixation is also dependent on farming systems. The monitoring of nodulation in different farming systems, involving corn and three legumes showed changes in the dynamics of nodules per plant depending on the farming system (fig. 1).

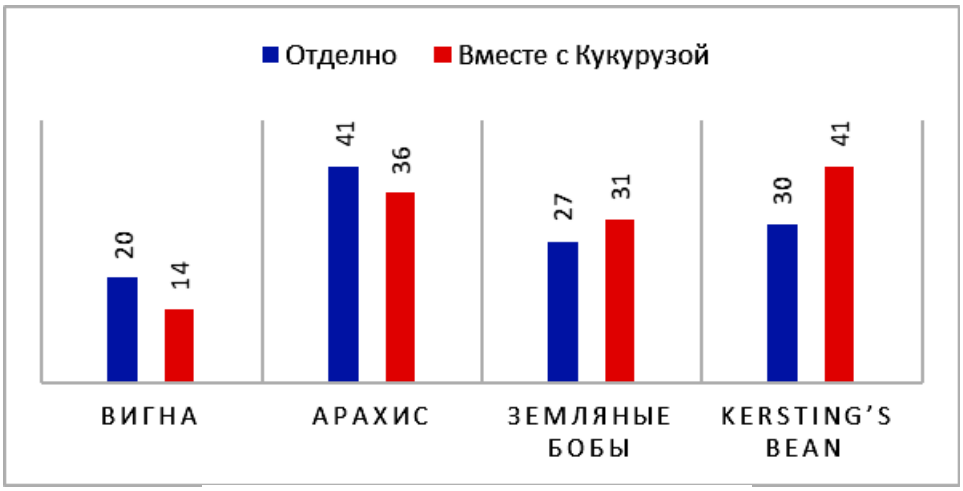

Figure. 1 The number of nodules per plant

Cowpeas and peanuts showed a reduction of nodules when associated with corn. In contrast, the ground beans and Kersting's bean (*Macrotyloma geocarpum*) formed more nodules. With some species, their symbiotic activity increases, when they are associated with cereals, because cereals provide stiff competition for soil nitrogen, which causes the bean to rely only on its own nitrogen fixation (Rerkasem et al., 1988; Eaglesham et al., 1981).

Despite these limitations, the role of biological nitrogen fixation in agriculture in Africa is still very high. Therefore, we need to work hard in other to resolve these problems. It is believed that the big part in solving a problem is in his understanding, so our task is to study all these restrictions, their mechanisms and find solutions with the use of modern technologies of genetics and biotechnology.

References

– Dakora F. D. (1985a) Biological nitrogen fixation in Ghana. In Biological Nitrogen Fixation in Africa (H.Ssali and S. O. Keva. Eds). DD. 59-71. Rhizobium MIRCEN, Nairobi.

– Haque I. and Jutsi S. (1985) Potential and limitations to biological nitrogen fixation contribution from forage legumes in Sub-Saharan Africa. In Biological Nitrogen Fixation in Africa (H. Ssali and K. O. Keya, Eds), pp. 340-371. Rhizobium MIRCEN, Nairobi.

THE DRIP IRRIGATION IN EGGPLANT BY USING DIFFERENT NORMS OF FERTILIZERS UNDER THE CONDITION OF SOUTH-EAST OF KAZAKHSTAN

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Introduction. Kazakhstan has the largest land with the total area of the land of 272 million hectares. Moreover, 222,6 million hectares of the land is used for agricultural uses which is almost 80% of the total area. However, agriculture in Kazakhstan is conducted under an extremely harsh environment, where the annual rainfall in major agricultural areas is only 200-300 mm (Eleshev R.E. and Kurishbaev A.K. 2013). Currently, Kazakhstan begins to face with water shortage problems, and it may be huge issue in 2040 (State program of water resources management in Kazakhstan, 2014). The development of the novel water-saving irrigation methods may be as solution for conservation irrigated water sources and increase crop yields. One way of achieving these goals is the introduction of modern irrigation techniques which is the drip irrigation. In Kazakhstan, drip irrigation is a relatively new technology (Zhakeyev M., 2014). Therefore, we conducted a study of cultivation of eggplant under drip irrigation with different fertilizer standards in the years 2013-2014.

The purpose of the research is to study the effect of drip irrigation system with fertilizers to irrigation water saving and productivity of eggplant in a south-east of Kazakhstan.

The terms and methods of the research. The research work was carried out in the experienced field of LLC "Kazakh Research Institute of Potato and Vegetable Growing", located in the foothills of the south-east of Kazakhstan and the northern slope of the ZaIli Alatau at an altitude of 1000-1050 meters above the sea level. The experienced field soil is dark chestnut, medium. The reaction of the soil solution is slightly alkaline (pH - 7.3-7.4). Soil bulk density is 1.1-1.2 kg / cm 3 and the lowest moisture content - 26.6%.

The climate is sharply continental. The average July temperature is 22-24ºC and January is 6-10ºC. The stable transition of air temperature is over 0°C in the spring occurs at the end of second decade and beginning of third decade of March, and in the fall is the end f first decade and the beginning of third decade of November.

The studies were performed in accordance with the following procedures, guidelines and instructions: Dospekhov B.I. Methodology of field experience, 1985; The methodology of experimental work in the vegetable and melon, 1992; Recommendations for spring field work in the south-east of Kazakhstan, 2008; Recommendations for the cultivation of crops under drip irrigation, 2003; Yudin F.A., Agrochemical Research Methods, 1980.

In the research were used: furrow irrigation (control), drip irrigation system (Naan Dan Jain, Israel). The length of irrigation furrows - 100 m, row spacing - 0.7 m, the diagram (method) landing (planting) – 70x30 cm and plant density by 47.6 thousand units per hectare.

The norm of irrigation in vegetation was identified by moisture deficit in the soil between the upper limit of humidity (lowest moisture content) and the lower limit of its formula I.A. Kostyakova. Accounting for irrigation water was produced by a flood-free overflow Chipoletti threshold of 50 cm.

The identification of the influence of fertilizers in conjunction with drip irrigation have been taken 4 norm of fertilizers: $N_0P_0K_0$ (control); single - $N_{50}P_{30}K_{40}$; double - $N_{100}P_{60}K_{80}$ and triple - $N_{150}P_{90}K_{120}$.

Results. The special measurements using a graduated cylinder and a stopwatch showed that 20 minutes of 1 dropper releases (delivers) an average of 0.5 liters of water for 30 minutes - 0,75 for 1 hour - 1.5 liters and 2 hours - 3 liters. On average calculated data, 1 hour drip irrigation tape one moistens soil surface to 20,4-21,9 cm in width, and 2 hours - 28,4-30,6 cm (diameter). Seepage of

irrigation water depth in 1 hour irrigation averaged 16-18 cm, and up to 2 hours - 26,5-28,1 cm. There is full soil moisture around the bush plants.

Irrigation rates of eggplant where a total amount of water consumed by plants during the growing period, the average for the years of research (2013-2014 years) was equal to - 3310 m3 / ha. The drip irrigation compared with furrow irrigation saves irrigation water on average in the amount of 1370 m3 / ha, which is 29.27%. In 1 ha was spent 4680 m3 of irrigation water.

When traditional watering weeds was 65 plants m2, and in drip irrigation, this figure has been reduced by 38 plants/m2 and amounted to only 27 plants/m2.

The average yield of eggplant under drip irrigation was higher by 24.19% comparing with furrow irrigation. Also, there is planned high return on fertilizer. An additional crop of eggplant from rising standards of fertilizers (single - $N_{50}P_{30}K_{40}$; double - $N_{100}P_{60}K_{80}$ and triple - $N_{150}P_{90}K_{120}$) amounted to 41.37%, respectively; 31.33 and 14.86% fruit eggplant.

Conclusion. The drip irrigation technology compared with furrow irrigation has provided savings of irrigation water on average in the amount of 29.27%. The use of the drip irrigation helped improve crop eggplant and reduce the number of weeds at 58.46%. It is also noted increased yields of eggplant by 24.2% under drip irrigation. Use different rules in conjunction with fertilizer drip system led to further control receives from 14.8 to 41.3% of the fruits of eggplant.

THE BIOTECHNOLOGICAL APPROACH TO IMPROVE SOYBEAN PRODUCTIVITY IN BURUNDI

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In a country with food security problems as Burundi, soybean can play a leading role in the process of solving this problem, considering that soybean is a culture with high protein content (40%) and high quality oil (20%). That's why it is considered as the world's major source of protein and vegetable oil.

In addition, soybean isn't only one of the main source of vegetable oil and protein for food, feed and industrial uses, but his capacity to fix atmospheric nitrogen can also help to reduce the need for farmers to buy fertilizer. Therefore, growing soybeans, you not only have an important food product, but you also enrich your soil with nitrogen.

Chinese merchants on the East Coast introduced soybean in Africa in the 19th century. There are indications that it was grown in Tanzania, Burundi's neighbor country, the, 1907.

In the beginning, bacterial diseases were the main obstacles in soybean cultivation in Africa. In addition, most varieties of soybean didn't form nodules in symbiosis with *rhizobia* bacteria in African soils and seeds quickly lost their viability, making it difficult for farmers to save them until the next growing season. However, over the past two decades, the International Institute of Tropical Agriculture (IITA) has made significant efforts to improve productivity of soybean by developing high-yielding, early maturing and able to symbiosis with *rhizobia* with other valuable agronomic traits (IITA, 1994).

Improved soybean varieties released in Burundi in 2008:

- ✓ Soprosoy (2-2, 5 t/ha),
- ✓ Peka 6 (2-3, 5 t/ha),
- ✓ AGS 329 (2-3, 2 t/ha),
- ✓ AGS 338 (-2.5 1.5 t/ha),

✓ AGS 339 (2-3 t/ha),
✓ AGS 292 (2-3 t/ha),
In 2012:
✓ 449/6/16 (22.7t/ha),
✓ Rial Nam (2-3,5 t/ha)

Soybean production is growing, as more and more farmers are aware of the potential of the crop, not only as a food crop, but also for his other abilities such as biological fixation of N_2. Soybean is also important to increase the income of small farmers, growing it, as commercial culture, for the domestic market (Figure 1).

However, the productivity of soybean, as seen in Figure 1 remains low, mainly because of the lack of high-yielding varieties (> 3-4t/ha), or due to biotic and abiotic stresses and lack of high-tech methods of cultivation.

This article will look at ways of improving the productivity of soybean with the use of biotechnological methods, using the world experience as an example.

New improved varieties - *introduction of new improved varieties is one way to increase the productivity of crops.*

While selecting new improved varieties, in addition to agronomic traits that increase productivity, attention should be paid to their resistance to diseases, which are becoming one of the most important obstacles to soybean production.

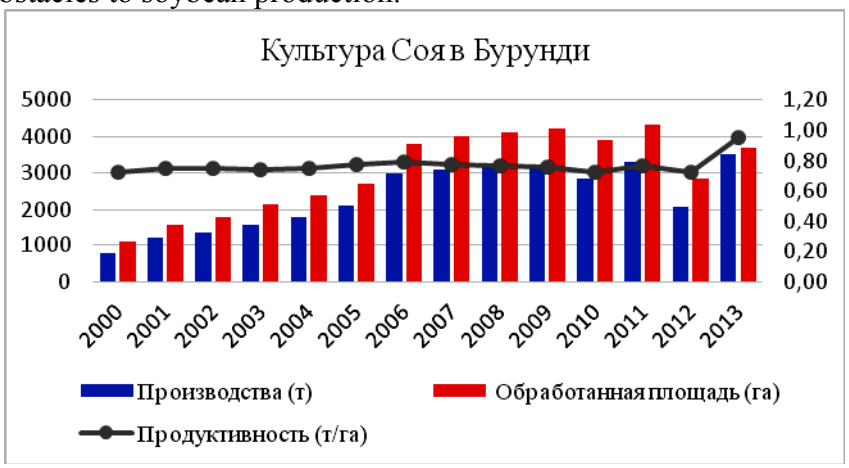

Figure 1. The situation of soybean culture in Burundi (left column - production in tons, right column – crop area in ha, line with dot – productivity in tons per ha)

Thus, there is a need for improved varieties that are resistant or tolerant to biotic and abiotic stresses limiting production. You can obtain new varieties with traditional plant breeding methods, but we suggest using world experience and apply biotechnological methods.

Currently, present-day breeder has additional tools offered by biotechnology for the development of new varieties of agricultural crops, including soybeans.

Although modern biotechnology may never fully replace conventional methods of breeding, it most likely will be used to enhance and improve the efficiency of plant breeding. Biotechnology tools help using genetic engineering to create varieties of soybean with unique genes, but the usual selection methods are still needed to get through sexual reproduction, in order to select those most suited to the intended use.

According to Frey (1996), before using biotechnology, plant breeders must take into account a number of factors:

- the need for and the benefits of using genes from disparate species only;
- the cost of traditional breeding methods and biotechnology;
- the relative ease with which you can manipulate the characteristics of plant with biotechnological techniques compared to conventional breeding;

- the use of the benefits of biotechnological inventions;
- the adoption of genetically modified crops by farmers, society and Government regulatory agencies.

In most cases, cost is a primary factor in determining whether to use biotechnology.

The debates usually surround the consumption of genetically modified varieties, not biotechnology itself. People usually don't mind plant biotechnology, such as tissue culture, marker-assisted selection (MAS-marker-assisted selection), QTLs, genomics, and so on.

In fact, there are other approaches, one of them being the molecular approaches to plant breeding. One of the best examples of the use of biotechnology is the creation of soybean varieties that are resistant to the herbicide glyphosate.

There are several other methods, such as genomics (study of the function and structure of genes), that help the researchers understand the structure and function of DNA of soybean to change properties that affect crop yield, resistance to pests and diseases, etc. In addition nowadays there are knowledge to develop genetic markers for selection or solve problems through the use of specially enhanced genes and promoters. For example, researchers at Indiana University have been able to use the tools of genomics, in combination with traditional methods of mapping, to identify the genes in soybean, responsible of the resistance to bacterial disease.

Thus, biotechnology is already been used to develop soybean varieties with high nutritional value, resistance to unfavorable conditions (diseases, pests, drought, etc.). However, despite all its possibilities, the use of biotechnology faces many challenges in our country. The main one being the high cost of modern technology, which limits their use in many poor countries in general and in Burundi in particular.

References

1 Dashiell KE, Bello LL, Root WR (1987). Breeding soybeans for the tropics. Pages 3- 16 in Soybean for the tropics. Research, production and utilization, edited by S.R. Singh, K.O. Rachie, and K.E. Dashiell. John Wiley and Sons Ltd., Chichester, UK.

2 Kitamura K (1995). Genetic improvement of nutritional and food processing quality in soybean. Jpn Agric. Res. Q., 29: 1-8.

3 Somers DA, Samac DA, Olhoft PM (2003). Recent advances in legume transformation. Plant Physiol., 131: 892-899.

FEATURES OF THE CULTIVATION TECHNOLOGY OF APPLE ORCHARDS IN THE TERRITORY OF THE VOLGOGRAD REGION

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Developed irrigation regime for intensive Apple orchard in the arid conditions of the Volgograd region. Show the dynamics of productivity in an Apple orchard in the years of study, depending on the depth of wetting and pre-irrigation soil moisture. Found a positive effect of the scheme of planting a garden, eliminating the periodicity of fructification.

Further sustainable development of horticulture industry of Russia depends on the efficiency of applied technologies of cultivation of industrial-type gardens. According to Rosstat, in 2013, the gross yield of fruits and berries in the Russian Federation in farms of all categories amounted to 2.93 million. tons. Gross yield pome crops in farms of all categories of the Volgograd region close to 112 thousand. t. therefore in current research modes drip irrigation intensive garden production

for further implementation, in order to improve productivity and expand the area of fruit and berry production in the farms of the Volgograd region, as our region is favorable for the cultivation of fruit production (Shuravilin, 2008; Kirichenko, 2013).

The experiments were conducted in the years 2012-2014 in intensive apple orchard (2011 landing) at support of "Volga-Agrosoyuz" Gorodishchenskoye district of the Volgograd region. The scheme of planting - 4 * 0.7 m, alternating grades in four series. Field experience is incorporated in fourfold repetition and included the following options: factor A - level of preirrigation soil moisture, factor B - horizon soil soaking, C - Class.

The experimental setup of the water regime (factor A) The following options are available: A1 - preirrigation maintaining soil moisture threshold differentially settlement layer at the level of 80% NV - "the beginning of the growing season - early flowering," 70% of HB - "blooms", 80% of HB - "the end of flowering - fruit ripening"; A2 - ... 90-70-80% NV; A3 - ... 80-80-80% NV; A4 - 90-80-70% NV.

On the horizon moistening factor (B) provides the following options: B1 power calculation horizon soil soaking 0.6 m; B2 power calculation horizon soil soaking 0.8 m.

With the factor (variety) studies are being conducted on two apple varieties ripening winter: C1 -Golden Delicious; C2 - Ligol.

Experienced irrigated land presented an array of medium-brown soil zone and hard srednesuglinistoj particle size distribution. The area of the experimental plot of 2.56 hectares. For garden irrigation use compensatory tube NAAN PC 16 / 2.2 Israeli company Naan Dan Jain., In increments of 0.5 m. Flow rate of one drip 2.2 l / h.

Calculation of irrigation standards take into account water-physical properties of the soil by the formula: $m_{pol.} = 100 \cdot h \cdot ά \cdot S \cdot (W_{HV} - W_{HG})$, m3 / ha, where h - depth of soil settlement, m; ά - adding soil density t / m3; S - the proportion of the area to be humidified, expressed as a decimal; W_{HV} - lowest moisture capacity of soil,% of dry weight; $W_{HG} = λ \cdot WNV$, λ - coefficient preirrigation soil moisture corresponding to the lower boundary wetting, in fractions of a unit. To maintain the humidity threshold preirrigation soil layer of 0.6 meters at 70% NV was carried glaze rate 125 m3 / ha, 80% HV - 84 m3 / ha, 90% HV - 42 m3 / ha; in a layer of 0.8 m respectively 168 m3 / ha, 112 m3 / ha and 56 m3 / ha. During the growing period, fertilizers were made with irrigation water dose of N76, P35, K84. We use only completely soluble fertilizer: ammonium nitrate (composed of N (nitrogen) - 34%), monopotassium phosphate (P (phosphorus) - 52%, K (potassium) - 34%), phosphoric acid (P (phosphorus) - 54%), potassium sulfate (K (potassium) - 50%, S (sulfur) -18%). This method of application of fertilizers contributed to early entry in the fruiting apple trees.

The main indicator of the need for moisture apple is the total water consumption. The highest consumption of water during the growing season was a variant A2B1 and A3V1 in the dry 2012 and amounted to 7690 m3 / ha in 2013 (wet) to form A4B1- 7150 m3 / ha in 2014 (dry) in the form A3B1 - 7060 m3 / ha.

The structure of water consumption important apple orchard influenced by weather conditions during the period of investigation. In 2012, the proportion of use of water from rainfall ranged from 21.3 - 21.98%, 2013 - 51,02-53,41%, 2014 - 13,83-14,20% of the total water consumption.

Table 1

Irrigation regime apple orchard, depending on pre-irrigation moisture of the soil and weather conditions during the growing season, the number of watering / irrigation norm, m3 / ha

Variant	Year of study	Phases of development			The number of irrigation / norm
		the beginning of the growing season - early flowering	Flowering	end of flowering - fruit ripening	
A1B1	2012	4/80	5/125	57/80	66/5505
	2013	1/80	2/125	36/80	39/3210
	2014	1/80	-	49/80	50/4000
A2B1	2012	10/40	5/125	57/80	72/5585
	2013	2/40	2/125	36/80	40/3210
	2014	2/40	-	49/80	51/4000
A3B1	2012	4/80	7/80	57/80	68/5440
	2013	1/80	3/80	36/80	40/3200
	2014	1/80	-	49/80	50/4000
A4B1	2012	10/40	7/80	37/125	54/5585
	2013	2/40	6/80	23/125	31/3435
	2014	2/40	-	30/125	32/3830
A1B2	2012	4/110	3/170	41/110	48/5460
	2013	1/110	1/170	27/110	29/3250
	2014	1/110	-	31/110	32/3520
A2B2	2012	6/55	3/170	39/110	48/5130
	2013	2/55	1/170	27/110	30/3250
	2014	2/55	-	31/110	33/3520
A3B2	2012	4/110	5/110	41/110	50/5500
	2013	1/110	1/110	27/110	29/3190
	2014	1/110	-	31/110	32/3520
A4B2	2012	6/55	5/110	27/170	38/5470
	2013	2/55	1/110	17/170	20/3110
	2014	2/55	-	25/170	27/4360

The apple orchard in the varieties Golden Delicious and Ligol on M9 rootstock significant difference in growth was not noticed. At the age of four years their height reaches 1.65 - 2.41 m and a trunk diameter of 7,8-9,1 cm. Flowering two varieties on a variant NV% 80-70-80 90-70-80% and HB was estimated at 5 points. Tasting score two fruit varieties to 9-point scale was assessed 8 - 8.8, indicating a high consumer qualities. Yield is a function of plant photosynthesis, and therefore these data are very important, it affects not only the quantity but also the quality of the crop. (Nichiporovich, 1982).

Table 2

Yield apple orchard on the variants of the experiment, t / ha

Horizon moisture, m	The level of pre-irrigation moisture of the soil,% NV	Research Year			Average
		2012	2013	2014	
Golden Delicious					
0,6	80-70-80	12,5	22,1	34,9	23
	90-70-80	12,7	22,4	35,2	23

	80-80-80	9,5	17,1	29,3	18
	90-80-70	8,9	17,4	26,6	17
0,8	80-70-80	12,9	24	36,9	24
	90-70-80	13	24,1	37	24
	80-80-80	10,1	18,9	30,2	19
	90-80-70	9,8	19,2	27,9	18
Ligol					
0,6	80-70-80	13,8	24,2	37,1	25
	90-70-80	14	24,5	37,4	25
	80-80-80	10,7	19,2	30,1	20
	90-80-70	10	19,2	27,7	18
0,8	80-70-80	14,3	26,7	38,7	26
	90-70-80	14,3	26,9	38,8	26
	80-80-80	11,5	21	33,4	21
	90-80-70	10,6	20,9	28,7	20

NSR_{05} factor A 0.32 0.23 0.30
NSR_{05} factor B 0.23 0.16 0.21
NSR_{05} factor C 0.23 0.16 0.21
interaction A* B*C 0.65 0.45 0, 60

While maintaining the threshold of pre-irrigation moisture of the soil at 80-70-80% of the HB in the layer 0.8, differentiated according to the phases of development of apple provides apple harvest to 38.7 t / ha.

ELABORATION OF CUCUMBER PROTECTION IN GREEN HOUSE FROM ROOT ROTS CAUSED BY FUNGI *RHIZOCTONIA* AND *FUSARIUM*

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Abstract

Antagonistic activity between bioagents and agents of cucumber root rot has been estimated. Possibility of joint application of bioagents and regulators Vitaros and Siliplant was discussed.

Introduction.

In the greenhouse cucumber affected by various diseases, including root rot, which lead to a decrease in crop yield and quality. One of the main pathogens of root rot of cucumber in greenhouses are fungi of the genus Fusarium and Rhizoctonia (Akhatov et al., 2006; Korsak, 2002).

The use of chemical agents, providing protection against these diseases is very limited, so you need to look for new protection methods allow to hinder the development of pathogens and, in addition, stimulate growth and development of plants and enhance their productivity. In recent years, promising targets for agro-biotechnology are antagonistic fungi and bacteria of the genus Trichoderma antagonists genus Bacillus. Furthermore, in greenhouses for growing vegetables, including cucumber, growth regulators are often used, which are based on biological hormones providing growth promoting effects on plants. Of particular interest is the use of fertilizers. All of them contribute to the resistance to disease and increasing crop yields (Beloshapkina et al., 2014; Korsak et al., 2013).

In this paper, the main goal was set: to evaluate the effect of biological agents, certain agrochemicals on growth, development, yield and susceptibility of cucumber plants root rots.

Materials and methods. The experiments were performed at the Department of Plant Protection and Plant Breeding Station in greenhouses them. NN Timofeva RGAU - ICCA on artificial and natural infectious backgrounds.

Objects of research: Courage F1 hybrid cucumber; a collection of strains and isolates of fungi of the genus Trichoderma, the regulator Siliplant, Vitaros protectant. The causative agents of root rot of cucumber - pure culture fungi Rhizoctonia, Fusarium.

To isolate pathogens and antagonists in pure culture, their maintenance using artificial media (IPS) - potato glucose agar (PGA).

And consider the impact Vitarosa Siliplanta growth of colonies of pathogens and biological agents; bioagents antagonistic activity toward pathogens amid agrochemicals, which at a certain concentration added to the culture medium. Antagonist activity of the test isolates were determined by delayed sowing.

In a pot experiment the natural and artificial infection was carried out taking into account the backgrounds of cucumber seed germination, biometrics (occurrence 1, 2, and others. True leaves, the number of leaves, leaf area, plant height); We take into account the volume of the roots moist and dry weight of the aerial parts and roots; the development and distribution of root rot. (Korsak 2002, Borisov, 2001).

Production experience in laying the film incubator breeding station on the territory of NN Timofeyev. It was carried out taking into account the yield of cucumber, development and distribution of root rot.

The results of research. For the experiments isolates pathogens having high aggressiveness towards host plants were selected. Among these appeared: Rhizoctonia solani isolate RS - 3 and Fusarium oxysporum from. FO - 12.

In all embodiments using Trichoderma showed a significant inhibition of the growth and development of colonies of the pathogen Rhizoctonia and Fusarium. Compared to the control in these embodiments, the indicator on the fifth day Accounting 2.7 - 6.5 times less than in the control. On 5, 7, and further suppression of the greatest days of registration was observed in Trichoderma isolates K - 2. Best results suppress pathogens have been observed in cases with biological agents and Bacillus subtilus Trichoderma Rol -K- 2. In embodiments with the introduction of environment Siliplanta showed significant inhibition growth of colonies of pathogens, fungi of the genus Trichoderma antagonists and bacteria Bacillus subtilus. At the same time, preparations Vitaros Siliplant and do not adversely impact on the antagonistic activity of biological agents.

In pot experiments we examined the effect of combined use of bacterial and fungal biological agents with agrochemicals and Siliplant Vitaros on growth, development, and infected plants cucumber root rot on artificial and natural infectious backgrounds at the Department of Plant Protection and Plant Breeding Station N.N.Timofeeva. All variants showed well-developed seedlings, mix them with the agrochemicals allowed to increase the percentage of germination and emergence of the first true leaf. The best results were obtained in variants with Bacillus subtilus and Trichoderma Rol -K- 2 in combination with a growth regulator Siliplant. All biological agents in combination with the seed protectant Vitaros showed similar results, which were slightly lower than in embodiments with Siliplantom.

The height and leaf area of the plant was fixed before the appearance of 3-4 true leaves in a phase of strong growth. Best option shown Bacillus subtilus and Trichoderma Rol -K- 2 in conjunction with Vitarosom and Siliplantom. They had a more developed leaf apparatus, other than that stated and the defeat of plants with root rot. Resistance to root rot performed well, such as the options, Bacillus subtilus and Trichoderma K- 2 with a combination of both agrochemicals and without them. They marked the lowest percentage of dead plants compared to the control and reference 2 times.

Thus, it was found that despite a slight inhibition of growth of colonies of fungi and bacteria antagonists with the joint use of agrochemicals such a technique has no adverse effects on growth and development of plants of cucumber, and also helps to reduce prevalence test culture. Consequently, it is possible to check the results obtained in the big seale trigless.

Production testing biological effectiveness of microorganisms antagonists was carried out in the greenhouse vegetable breeding stations NN Timofeyev. The station is a recognized leader in breeding brassica vegetable crops of the Russian Federation and CIS countries. It is engaged in seed production and sale of seeds to farmers, agricultural holdings, competitive selection of F1 hybrids and varieties of vegetable crops, research.

According to the results of this experiment the most effective combination of agrochemical and biological products were Vitaros + Bacillus subtilus and Trichoderma Rol-K-2, they showed the highest yield in comparison with the other options.

Conclusion. Thus, the Trichoderma isolate K-2 significantly inhibited the growth of Fusarium and Rhizoctonia colony on IRS CCA. Compared with the control, a colony radius of pathogens is less respectively 1,6-2,7 and 2.8-3.1 times that are significantly higher than in other embodiments. All tested biological agents, including agrochemicals and background contributed to a significant reduction in attacks of plants: less in 1.5-2.6 times in comparison with the control. Seed germination, plant growth indicators are higher in cases with joint use of Bacillus sp. and Siliplanta. All biological agents on the natural and infectious backgrounds restrained prevalence and development of root rot of cucumber in 1,7-2,9 times in comparison with the control. The plants were developed better when Bacillus sp and Siliplanta were used together with higher number of leaf area and plant height. Prevalence and development of root rot is much lower when sharing Siliplanta and Bacillus sp. Isolate 3 (11), respectively, 3.7 and 2.5 times as compared with the control. Yields in this embodiment is 27.1% higher than that in the controls, which was significantly higher than in other embodiments.

EVALUATION OF THE EFFECT OF FUNGICIDES ON FUNGAL DISEASES OF ROOTS, COTYLEDONS AND SOYBEAN SPROUTS

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The germination of soybean seeds and the number of surviving soybean plants to the time of occurrence of the blooming phase significantly affect the productivity of crops. The viability of sown seeds and developing seedlings are affected by many pathogens present in the soil or introduced into the soil together with seeds. These include Phomosis longicola, Rhizoctonia solani, Pytium spp. Phytophthora sojae, Botrytis cinerea, etc.

Seed germination begins when the seed absorbs the required amount of water, and the soil temperature will not be less than 5oC. In these conditions, all the pathogens on the surface of the seed coating or infiltrated into the cotyledons and the embryo through the flaws in the shell, as well as those that were in the soil and in contact with the seed start to grow. At this stage, the pathogens have not have a significant negative impact on cotyledons and the embryo, if the seedlings develop quickly. However, when delay seedling development due to low temperatures, lack of moisture or a deep placement, pathogens (Phomosis longicola; Bacillus subtilis; Diaporthe-Phomosis complex) begin to damage the cotyledons and embryo. If the seeds have not suffered at the stage of germination, emergence, they are subject to attack other fungal pathogens. Such pathogens

penetrate into the taproot and primarily in root hairs and then germinate in hypocotyl and infect cotyledons. The loss of both cotyledons immediately after reaching the surface of the soil leads to the death of young plants. Infection of cotyledons at a later stage, when the apical bud started to grow, leads to the formation of weak plants.

The most common soil pathogens that cause mass mortality of seedlings are Rhizoctonia solani, Botrytis cinerea, Pythium species, Phitophthora sojae. They are included in the complex of soil pathogens causing root rot of soybean. The main way to prevent injury to the seeds and seedlings of soybean fungal diseases are breeding resistant varieties and lines, the observance of crop rotation and selection of the optimal time of sowing, mainly taking into account the temperature of the soil. Also applied presowing seed treatment fungicide protectants. Seed treatment of soybean is an economically favorable method. The yield increase even in the absence of disease, only by improving the quality of seeds sown during etching is in the zone of sufficient moistening of 150-200 kg/ha, in the restricted area (AC) moisture - 50 to 70 kg/ha. Asepsis seed material can in advance before sowing. The greatest effect gives advance treatment (for 1,5-2 months) before planting. Early treatment with disinfectants protects the seeds from fungal and bacterial diseases, not reduce germination and increases the yield by 15 percent. In the proposed article investigated the fungicidal efficacy Benefis and Scarlet. Research conducted in the biological laboratory "Schyolkovo Agrochim".

Fungicidal activity of the preparations was studied in isolates of Pythium ultimum, Rhizoctonia solani and Botrytis cinerea. For the cultivation of mushrooms used a potato-sucrose agar (PSA). In one embodiment of the experience of sowing isolates(Pythium ultimum, Rhizoctonia solani) was carried out segments 5x5 mm in Petri dishes on a layer of medium, in another embodiment (Botrytis cinerea)-segments 10 x 10 mm. The Rate of lysis of colonies was determined after 5 and 7 days according to the degree of reduction of the colony as a percentage of net culture.

The same method was used paper disks for testing the fungicidal activity of pesticides. The surface of the agar were inoculated with a suspension of the pathogen. Then, on the surface of the agar was displayed filter paper discs impregnated with pesticides The findings were assessed by the diameter of the circle of the lack of growth of the fungus after 5 and 9 days. The necessary temperature regimes were maintained using a thermostat.

The results of the screening are presented in tables 1, 2.

Table 1.

Relative effectiveness of fungicides against Pythium ultimum, Rhizoctonia solani and Botrytis cinerea (according to the degree of lysis of the mycelium), %

Fungicides, Concentration, g/l		*Pythium ultimum*		*Botrytis cinerea*		*Rhizoctonia solani*	
		Exposure, days		Exposure, days		Exposure, days	
		5	7	5	7	5	7
Benefis	0,1	99	99	99	99	82,50	81,09
	0,01	60,23	60,89	58,61	54,25	40,94	42,35
Scarlet	0,1	99	82,56	99	99	74,06	74,52
	0,01	51,46	47,11	46,69	48,04	35,94	34,04

Table 2.

Relative effectiveness of fungicides against Pythium ultimum and Rhizoctonia solani , %

Fungicides	The concentration of the fungicides in 5 liters of working solution, l	*Pythium ultimum*		*Rhizoctonia solani*	
		Exposure, days		Exposure, days	
		5	9	5	9
Benefis	0,8	53,52	54,41	55,88	59,70
Scarlet	0,4	51,56	53,08	55,14	59,26

Studies have shown that the maximum efficiency in relation to the leading block of pathogens was observed in the pesticides Benefis. Against Pythium ultimum and Botrytis cinerea in a dosage of 0.1 g/l in the environment of PSA fixed sustained fungicidal effect. In the specified concentrations of fungistatic activity of the pesticides Scarlet against Rhizoctonia solani amounted 74,06% (% suppression of growth of the isolate). A tenfold decrease in the concentration of the pesticides in the medium was allowed to mention a wide range of values of inhibition of mycelium growth (from 34.04% to 60,89%). Research carried out by the method of disks coated with a drug dose of working solution, showed fungicidal effect of both pesticides. In 9 days after sowing area inhibizone growth of isolates of Pythium ultimum and Rhizoctonia solani increased as the pesticides Benefis, and the pesticides Scarlet. The results indicate a stable fungicidal activity of pesticides Benefis and Scarlet on the isolates of Pythium ultimum, Botrytis cinerea, Rhizoctonia solani using different screening methods.

OBTAINING OF HIGH CELLULOLYTIC ACTIVITY STRAINS FOR THE DEGRADATION OF AGRICULTURAL PLANT'S REMAINS

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Summary

For the purpose to obtain strains with increased cellulasic activity, the conditions of ultraviolet mutagenesis were selected. The ultraviolet mutagenesis resulted with getting of three *Bacillus* strains (#28-35, #31-8 and #21-15) with increased (1.4-2.1 times) cellulasic activity as compared to wild-type strains.

Introduction. The amount of arable land all over the world decreases every year. This problem requires urgent measures to maintain and restore soil fertility. There are very important materials, which remains on the fields after harvesting grain - stubble and straw. Cellulose decomposes in soil as the result of symbiotic interaction of different systems of cellulolytic microorganisms. But the low rate of cellulose hydrolysis can limit the development of microorganisms, which operate at different stages of the trophic chain.

So, additional measures are needed to accelerate the process of producing organic fertilizer from agricultural crop residues. That is why nowadays the interest of researchers to the increasing recycling of cellulose bacteria rises.

Working out to obtane new strains of bacteria, which can degrade cellulose, and finding ways of intensification of their processes hydrolysis of cellulose become relevant. From this point of view cellulolytic bacteria *Bacillus* spp. arouse interest. These microorganisms are important link in the carbon cycle in the nature and an essential part of the ecosystem. The object of our research is the strains *Bacillus* spp., which can increase destruction of agricultural plant's waste, because of the cellulolytic enzymes synthesis.

The purpose of this research is to get microbial producers with high cellulolytic activity, in the base of natural strains *Bacillus* spp., using UV-mutagenesis.

Methodology. Wild-type strains-destructors *Bacillus* spp. with cellulolytic activity, was isolated from natural sources in the Research Laboratory of Molecular Genetics and Biotechnology BSU
(Maslak D.V. et al., 2014). The strains with enhanced cellulase activity were obtained using stepwise UV-mutagenesis.

The wild type of bacterial strains were grown in 50 ml LB-broth in a round bottom flask on a laboratory shaker at 28 °C to a density close to 2×10^8 cells/ml. When the necessarily density was reached, cell culture was cooled on ice for several minutes to prevent further growth, and divided on portions 5 ml, then centrifuged to pellet the cells at 5000-6000 g for 5 min.

The precipitate was resuspended in 2.5 ml sterile solution of $MgSO_4$ (0.1 M) and transferred to a sterile Petri dish with a diameter of 90 mm. The bacterial suspension in the opened (lidless) Petri dish was placed under preheated ultraviolet lamp (253.7 nm, T8 UVC, 30W, G13, 220V, 50Hz).

Equal irradiation of the suspension was provided by swinging of the dish. After irradiation several tenfold dilutions of each sample were done immediately, and diluted suspensions at the best possible low light were placed on agarised LB-broth to determine the titer of viable cells.

Control sample suspension (without irradiation), at a dilutions of 10^{-6} and 10^{-7}, were plated on agarised LB-broth.

To select mutants with enhanced cellulase activity, grown colonies were plated on agarised mineral medium M9 with CMC (0.2 %) and glucose (0.2 %).

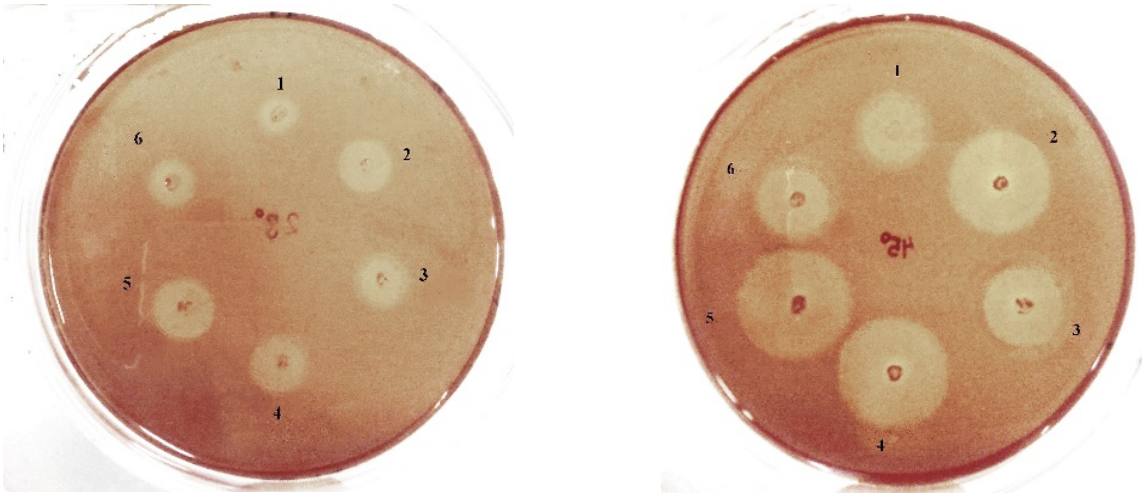
Cellulase activity of strains was evaluated by rating of the diameter hydrolysis zone of cellulose (colored with a 1% solution of Congo red) with the diameter of bacterial colony.

Results and Conclusions. The process of UV-mutagenesis has a number of features: the number of cells died during ultraviolet irradiation, may vary and depends of the exposure source and the experimental conditions; to provide mutagenesis it's important to use calibrated in the short-wave region UV-light source.

In order to select the optimum exposure time, strains *Bacillus* sp. C28, *Bacillus* sp. C31 and *Bacillus* sp. K21 was exposed to UV rays in the range from 10 to 150 sec at intervals of 10 sec. Normal survival of the cells for optimal transmission of mutagenesis should lie in the range from 0.1 to 1 %. That is why, bacterial colonies grown on agar with dilution 10^{-5}–10^{-6} were checked to get mutants with increased cellulase activity.

Using the data during the experiments, it was found that optimum duration of irradiation time for each of the strains was 60 sec.

The process of obtaining producers of cellulolytic enzymes consisted of several stages. Each bacterial strain, which was obtained during the stage of mutagenesis by UV-irradiation, was tested to find higher cellulase activity in comparison with the wild type.



a b

A) 16 h incubation at 28 °C; B) 16 h incubation at 45 °C;
1 - *Bacillus* sp. C28; 2 - *Bacillus* sp. 28-35; 3 - *Bacillus* sp. C31;
4 - *Bacillus* sp. 31-8; 5 - *Bacillus* sp. 21-15; 6 - *Bacillus* sp. K21.
Figure - The cellulase activity of strain-destructors of the *Bacillus* spp.

Samples with the highest cellulase activity, as a result of spontaneous or induced variability, were used at the following stages of mutagenesis.

Were selected 3 mutant strains, with increased level of CM-cellulose utilization: *Bacillus* sp. 28-35, *Bacillus* sp. 31-8 and *Bacillus* sp. 21-15 as a result of all steps of UV mutagenesis of natural cellulolytic strains *Bacillus* sp. C28, *Bacillus* sp. K31 and *Bacillus* sp. K21

As we can see from the table, the mutant strains ability to CM-cellulose degradation compared with the wild type increased at 1.4-2.1 times at a temperature of 28 °C and at 1.5-1.7 times at a temperature of 45 °C. Obtained strain *Bacillus* sp. 31-8 showed the highest cellulase activity, it was 5,2 RVU at 28 °C and 7.6 RVU at 45 °C.

Table

The degradation of CM-cellulose-destructor by strains *Bacillus* spp. at different temperatures

Strain (wild-type)	Cellulase activity, RVU		Strain (mutant)	Cellulase activity, RVU	
	28 ºC	45 ºC		28 ºC	45 ºC
Bacillus sp. C28	1,8	3,7	*Bacillus* sp. 28-35	3,8	6,5
Bacillus sp. C31	3,7	4,3	*Bacillus* sp. 31-8	5,2	7,6
Bacillus sp. K21	3,3	5,0	*Bacillus* sp. 21-15	4,7	7,6

Obtained strains with elevated levels of cellulase activity can be used to create biological agents to accelerate the degradation of agricultural plant's wastes.

FEATURES OF THE PRODUCTION PROCESS OF THE CROPS OF YELLOW MELILOT IN THE STEPPE OF THE KHOPYOR RIVER AREA

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Abstract

It was found that the assimilatory surface of yellow melilot is increased in the chernozem steppe of the Khopyor river area by fertilizing. The number of synthesized chlorophyll shows direction and size of photosynthesis in the fertilized variants with treatment of seeds with rizotorfin and molibdenium

Introduction.

The most important feature of green photosynthetic plants is the ability to absorb light energy and transform it into energy of organic compounds, which ultimately determine the formation of the crop. The formation of organic matter and the formation of crop yield are caused by the assimilation surface of the plant, which is represented primarily square leaves. It foliage primary role in the formation of assimilates, which occurs due to the growth and accumulation of organic matter (Tarasenko, 2013).

Consider the photosynthetic activity of crops of clover, which determines the activity agrophytocenosis. Formation crops in sufficient size leaf area, which depends on the optical density of planting is very important in terms of the absorption of light energy leaves for photosynthesis.

The purpose of the study - to establish the effect of fertilizers on the production process by regulating the clover yellow square assimilation surface.

The methodology of the research. Investigations were carried out on chernozem ordinary medium-humus, moderately, loamy in terms of "Agrarian Alliance" Balashov district of the Saratov

region. The humus content in the experimental plot was - 5.8%, nitric nitrogen - 4.2 mg / 100g, mobile phosphorus - 7.3 mg / 100g of exchangeable potassium and 32 mg / 100g; pH - 5.6; H - 3.0 mEq / 100g; base saturation - 90%. We use the variety of yellow sweet clover - Alsheevsky, seeding rate of 11 million. Pcs. / Ha. Fertilizers and defecate have made before sowing cultivation. Seed treatment rizotorfina and molybdenum-acidic ammonium performed immediately before sowing.

The experimental setup consisted of the following: 1. Control without fertilizer; 2. R60K60; 3. R60K60 + defecate in a dose ¼ Ng (2.1 t / ha); 4. R60K60 + presowing seed rizotorfina (PIC); 5. F + D + rizotorfina; 6. F + D + Mo + rizotorfina Area Account plot 50 m2, four-time repetition, location rendomizirovannoe.

The photosynthetic activity of plants in crops of sweet clover has been studied by the method of photosynthesis lab of the Institute of Plant Physiology (Nichiporovich, 1961). The amount of chlorophyll in the leaves found by alcoholic extraction using SF-26 spectrophotometer (wavelength: λ = 665 nm and λ = 646 nm); sugar content determined by the method of phenol (wavelength λ = 490 nm); the content of coumarin in the leaves of clover accounted for Smirnova-Galchinskiy.

Results of the study. Analysis of photosynthetic activity shows that between photosynthetic potential value of leaf area and yield is not always manifested a direct correlation. Increasing the productivity of the plant clover occurs when certain changes in photosynthetic activity of plants, among which the most affected by the photosynthetic capacity. The data in Table 1 show that the maximum photosynthetic capacity was formed on the version with P60K60 and defecate + presowing seed rizotorfina and molybdenum - 1.63 million. M2 per day / ha. In larger leaf area in crops grows mutual shading of leaves lower and middle tiers, thereby reducing photosynthesis and productivity. According to the research we can conclude that: the formation of the photosynthetic apparatus, exceeding 50 thousand. M2 / ha is not appropriate for growing clover feed. Its maximum surface area of leaves in clover up in the budding stage - early flowering (mid-June); this period is important for the timing of mowing.

Table 1

Basic indicators of photosynthetic activity of crops clover second year of life

Treatments	The maximum leaf area, thousands. $м^2$/ha	The productivity of photosynthesis g/$м^2$, day	The photosynthetic capacity, млн $м^2$ day/ha
Control	45,8	3,00	1,32
R60K60	50,6	3,11	1,50
R60K60 + defecate	55,7	3,49	1,58
R60K60 + presowing seed rizotorfina	49,7	3,24	1,55
R60K60 + D + rizotorfina	59,4	3,64	1,62
R60K60 + D + Mo + rizotorfina	59,6	3,66	1,63

Unique features symbiotrophic organisms, particularly bacteria of the genus and Rizobium of particular importance due to the possibility of using biological mechanisms of plant nutrition with nitrogen, which is especially important in agrocenoses with bean component. Since the phase of stem, nitrogen-fixing ability of the root system is increased. In the next phase of plant vegetation, nodule bacteria get carbohydrates, as the rate of photosynthesis in this period, the highest. Table 2 shows that in cases with treatment rizotorfina and Mo increased amount of chlorophyll.

It is known that in the process of photosynthesis, chlorophyll "a" provides a higher efficiency of conversion of carbon dioxide and water into organic matter. The ratio of chlorophyll "a" chlorophyll a «b» in clover is 5.12.

Table 2

Effect of fertilizers on the content of pigments, sugars and of coumarin

Variant, mln. th./ga	Total chlorophyll (a + b), mg / g dry weight of plants	The ratio of chlorophyll a / b	The content of sugars in the leaves, mg / g dry matter	Coumarin, point
Control	140,2	5,12	26	4
R60K60	148,4	5,40	38	4
R60K60 + defecate	162,0	5,40	50	3
R60K60 + presowing seed rizotorfina	166,9	5,36	54	2
R60K60 + D + rizotorfina	167,8	5,32	56	2
R60K60 + D + Mo + rizotorfina	176,2	5,19	60	2

It is generally known that the higher the concentration ratio chlorophylls «a» / «b», the lower the heat resistance of plants. Experiments have shown that the biological product rizotorfina and ammonium molybdate increased heat resistance of crops of clover, which has a positive impact on their productivity.

When determining in the leaves of clover sugars, it appears that their content was higher with embodiments rizotorfina seed treatment and Mo - 60 mg / g dry matter. Enhancing the experience made on the options - 26 on the control without fertilizer up to 50 mg / g for the version with a PIC without rizotorfina Mo.

The physiological role of coumarin is not fully installed (Smirnova et al. 2013). It is known that coumarin involved in the regulation of plant growth and absorb ultraviolet rays shielding young plants from excessive radiation. It is found that the lower the content of the fertilizer to three points of the glycoside, and the use of PIC rizotorfina and Mo - two points.

Conclusions. Thus, the amount of the synthesized chlorophyll shows the direction of the process of photosynthesis and its value toward the fertilized variants with preplant treatment of seeds and biologic molybdenum-acidic ammonium. Sweet clover sward when applying fertilizers increases the content of soluble sugars in the leaves and decreases the concentration of coumarin in plants.

ANALYSIS OF THE DANGEROUS METROLOGICAL PHENOMENA IMPACT ON THE AGRICULTURAL INDUSTRIAL COMPLEX OF THE REPUBLIC DAGESTAN

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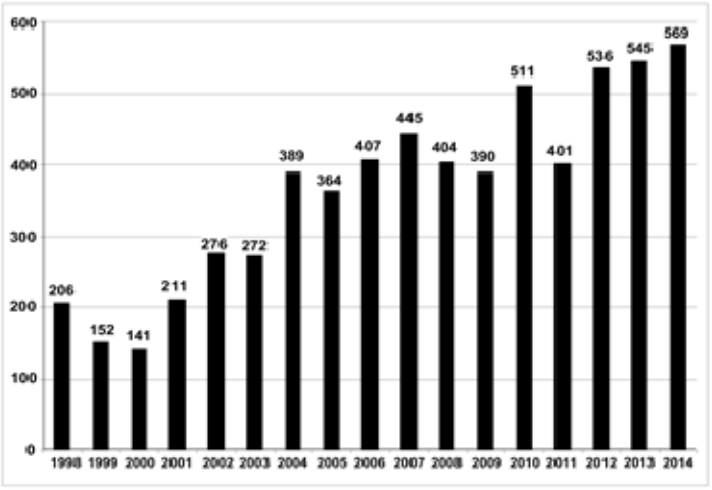
Introduction. Agricultural production is directly related to many agro-climatic risks. In emergency situation (ES) caused by agro-meteorological phenomena, agriculture of the Republic of Dagestan to suffer significant damage as a result of decrease or loss of crop waste.

Objective: to identify the most dangerous natural phenomena (DNP) weather on agricultural production of the Republic of Dagestan. Development of practical recommendations to reduce risks and damage caused by emergencies in the agro-industrial complex of the region.

Objectives: 1) Analysis DNP for agriculture in the Russian Federation over the past 16 years; 2) the Establishment DNP and its characteristics in the Republic of Dagestan; 3) Development of practical recommendations to reduce risks and damage.

The distribution of DNP in Russia, 1998-2014



Analyzing the statistics separately only DNP shows that in 2014 was registered 569 meteorological DNP. This is the highest number DNP for all 16 years of observations. In comparison with previous years the number of registered DNP in 2014 increased significantly, mainly because of global climate change. According to Roshydromet number of dangerous and extreme weather events on the territory of the Russian Federation is increasing annually by about 6% over the last 30 years has almost doubled. [2]

From 569 DNP in 2014, the North-Caucasian Federal district have 60 DNP that are listed in the table. On the territory of the Republic there are various dangerous agrometeorological natural events, in particular extreme cold, heavy precipitation, which often lead to floods, mudslides and avalanches, etc., All have a negative impact on agricultural production.

The greatest damage to agricultural production over the last 5 years the country suffered in 2012 due to severe frosts (the state of emergency was declared in 11 districts of the Republic).

Unprecedented for Dagestan frosts almost destroyed more than 80% of all the vineyards of the Republic. Due to severe cold damaged and half of all cultivated areas, and almost all seedlings pome and stone fruit crops of the Republic. [3]

№	Phenomena	**North-Caucasian Federal district**
1	Strong wind	11
2	Heavy precipitation	16
6	Extreme cold	1
7	Abnormally cold weather	2
8	Extreme heat	3
10	Hail	10
11	Icing phenomena	1
13	Freeze	3
15	Combination of phenomena	13
	Total - 2014	**60**
	Total - 2013	**43**

For the Republic of the state of emergency on meteorological phenomenon "Frost" is declared in the event that if in the period November-March minimum temperature: -30°C or lower

in lowland areas; -28°C and below in the foothill and mountain areas; -20°C and below in the coastal areas [3].

In most parts of the territory of the snow cover 50-100% of ZIM unstable due to small amount of winter precipitation. Maximum decadal snow depth-20-29 see [3]

Spring tide, as a phase regime of rivers begins in February, but dangerous rises in water levels in the Republic are found in May and June, when loss of a long period of intense rains and heavy snow melting in the mountains. This phenomenon for March - April is not typical. For 2015, there is a probability of occurrence of emergency situations is not above the municipal character associated with flooding of low-lying and coastal areas, human settlements and farmland. The wheat crops according to the monitoring of the North-Caucasian Department for Hydrometeorology and environmental monitoring in 2014-2015 proceeds at a satisfactory agrometeorological conditions. In the month of January in most parts of the region wintering culture was in a state of forced rest. Only in the second half of January 2015 in some areas in Dagestan when the temperature of the air in the daytime to 6...15 °The plant couldn't cope with unstable condition. Fruit crops and vineyards were in a state of winter dormancy. Conditions for overwintering were satisfactory. [3]

Maximum adaptation of agriculture for the conditions of the external environment, and to develop adaptive technologies of cultivation of agricultural crops taking into account the risks of possible adverse factors that give the opportunity to support the agro-ecosystem on a fairly stable level of stability and to prevent premature wear and destruction is needed [1].

For sustainable agricultural production in Dagestan it is necessary to introduce a system of farming, including comprehensive evidence-based organizational, agronomic, land reclamation, technical measures for the protection of plants from diseases, pests, weeds and other necessary measures, taking into account the risk of natural land use.

Need to develop a risk map of land use farms on the basis of loss of acreage for long-term data, to identify sites and areas within the boundaries of rotations, risk of loss of crops from DNP and emergencies, to promptly take organizational measures to protect selected areas according to the degree of risk.

Agricultural production related objectively to many, considered higher risk. One of the main methods of protection from such risk is insurance.

Conclusions: In 2014 from 85 regions about 10.5% DNP fall in the North Caucasian Federal district. The greatest damage to agricultural production over the last 5 years the country suffered in 2012 due to severe frosts. Unprecedented for Dagestan frosts almost destroyed more than 80% of all the vineyards of the Republic. From the severe cold was damaged and half of all cultivated areas, and almost all seedlings pome and stone fruit crops of the Republic.

Constraints of socio-economic development, is, in recent years, the negative trend of growth and development, DNP, is typical for the whole of Russia and the Republic of Dagestan. The main reasons for this increase are associated with climate change and increased DNP, also with certain difficulties in the implementation of national security policy of population and territories aimed at the present time for elimination of consequences of natural disasters, rather than on prevention and forecasting.

The modern state of agriculture of the Republic of Dagestan is largely due to the underestimation of the significance of the factor connected with natural disaster risk, which in the current economic, social, demographic structure of the region plays a major role. A differentiated approach to crop insurance crops, taking into account the risk of land use will increase the efficiency of state support insurance system and economic activity of agricultural producers of the Republic.

CONDITIONS OF APPLICABILITY OF TECHNOLOGY AND FACILITIES OF DISCRETE IRRIGATION

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Abstract

At the surface method of irrigation of crops increase of effectiveness water is reached by discrete technology of irrigation with application of facilities automation on well planned lands. It provides water saving and increase of efficiency of water use for irrigation.

Introduction.

In Kazakhstan, where more than 70% of all agricultural land located in areas of inadequate or unstable natural moisture, high and stable level of agricultural production can be achieved by irrigation of agricultural land. Out of production from irrigated hectare in 2-5 times higher than non-irrigated. Currently, more than 80% of vegetables and 20% forage and all the rice produced on irrigated land (Golchenko, 2003).

Objective: To assess the applicability of discrete irrigation technology

Object: irrigated land

Research results.

Analysis of the efficiency of irrigated agriculture and measures aimed at improving the conditions for the use of surface irrigation technology and evaluation of applicability of discrete irrigation.

Irrigated land in the world is one of the main factors of stability of agricultural production and food security.

Technologies with furrow irrigation accompanied by uneven wetting of the soil, large cost overruns of irrigation water and flood areas, which, in turn, leads to erosion, groundwater level rise and salinization of soils.

Annual economic damage per 1 hectare only for expenditure of water is 6 th. KZT, excluding the cost of forgone yield on soils (Farmer Information Service, 1999).

In the South and Southeast regions of Kazakhstan crop production is possible only with irrigation. For irrigation furrow irrigation and checks are mainly used and the effectiveness of irrigation depends on the premeditated field.

Especially important premeditated relief in the rice fields. As it is known, rice is the most important cereal crop, which in the gross value of the harvest per hectare among the field crops is considered to be one of the highly profitable.

The food security of the republic production of rice is given great importance. One of the main regions of cultivation and processing of rice is the Kyzylorda region. Total actual area watered is the area of 147.01 thous. ha of which under rice are 76.82 ths. ha or 52.3% of the total sown area (Farmer Information Service, 1999).

Volumes of production of rice-shals in Kazakhstan, keeping in mind the favorable climatic and geographic conditions, can be brought to 400-500 thous. tons or up to 240-300 thous. tons after processing, of which 80% can be produced in Kyzylorda region (Farmer Information Service, 1999).

However, in practice, the yield of rice crop on the field is still low. This is due to various reasons, among which an important place premeditated rice checks.

Planed field provides friendly shoots crop quality humidification plants throughout the site, saving irrigation water, avoiding unproductive water losses and deterioration of land reclamation. Irrigators in 1,5-2 time increase productivitys and effectiveness of agricultural practices.

Studies on the effect on the economic performance of the area of rice cultivation showed that the surface of the check marks a deviation from ± 3 to ± 5 cm damage from a shortfall of US $ 200 per hectare, each additional centimeter of the surface of the low-quality rice check planning gives damages of $ 100 US 1 hectare. In the event marks to ± 10 cm amount of damage will increase by 3-4 times.

Quality planning ensures efficient use of discrete irrigation technologies, aimed at saving and uniform distribution along the length of the current irrigation furrows.

One of the key points in the system of resource-saving technologies is laser land leveling, which is designed to pave the way for further transition to energy saving technologies.

Costs of leveling are high enough and far exceed the costs of conventional mechanical layout. However, the reduction of water consumption in the fields (25%), increased productivity, expressed in a uniform germination, growth, development and maturation of plants and higher yields, offset initial costs and help reduce land degradation (eg salinization). Moreover, laser leveling can be carried out not more than 1 time in 5-8 years (see table).

Table

Estimated costs during the planning of traditional and laser

Layout	Fuel cost, l/t.	Time plan 1 hec, t.	The amount of planning, time.	Fuel cost, l/ha.	Fuel expenditure , l/100ha.	Topographic uneven field average, sm	Overspending water due to non-uniformity of the field,м^3/100 ha.
Traditional	8	1.5	1-2 in year	24	2,400	15-20	200,000 m^3
Laser	8	5	1 in 5-8 years	40	4,000	1-2	20,000 m^3

On the well-planned land to ensure the quality of furrow irrigation implementing discrete technologies is recommended on slopes 0.0001-0.01. Soil permeability is desirable in the range of 4-10 cm / hour. Depending on the slope of the field the width of the aisless determined on the slope up to 0,005 it must not be less than 0.9 m; when a bias 0,005-0,7 m length of irrigation furrows shall be equal to 400-500 meters. Quantity of irrigation jet (the amount of water supplied to a groove) water flow exceeds the recommended irrigation conventional technologies.

The technology is based on the use of irrigation, followed by the current, alternate distribution of irrigation on two sites with an accelerated (but non-blurry) costs to complete making the calculation of irrigation norms, discrete - in several stages with the norm lag, and for a very short period of time. This places greater demands on the irrigation facilities, to their ability to cyclical supply jet lag with a given flow rate.

There are currently developed technologies discrete furrow irrigation for the most characteristic combinations of soil-reclamation conditions to ensure uniformity of soil moisture along the length of irrigation furrows, no loss of water discharge and percolation (Report on R & D (final) / KazNIIVH, 2008).

On the basis of summarizing the research in KazNIIVH developed various design automation hardware performs discrete irrigation technology irrigation on constituent elements of the irrigation network to ensure rational irrigation regime by complying with the given parameters of technology of cultivation of agricultural crops: Automated irrigation module (AOM); Technical means gidroavtomatizatsii water distribution (TSGV).

Conclusions. Improving the efficiency of used water by the surface method of crop irrigation can be achieved discrete irrigation technology with the use of technical means of automation of well-designed grounds. This technology leads to effective water conservation, improve the distribution of irrigation water, more efficient use of water for irrigation. All this is intended to lead to higher yields and generally environmentally improved agriculture.

EVALUATION OF WHEAT, RYE AND BARLEY PRODUCTION IN THE WORLD

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Introduction. Cereals farming is the basis of the agricultural production of any country. Cereals of first and second groups play an important role. These groups include wheat, rye, barley, oats, triticale, millet, rice, sorghum and corn. [1] These crops are grown in almost all countries of the world. This is due to their great value and diversity of use. The purpose of this paper is to study the current state of production of wheat, rye and barley in the world.

The results of the study. In 2013, 2.78 billion tons of cereals were produced in the world. Structure of production is presented in figure 1.

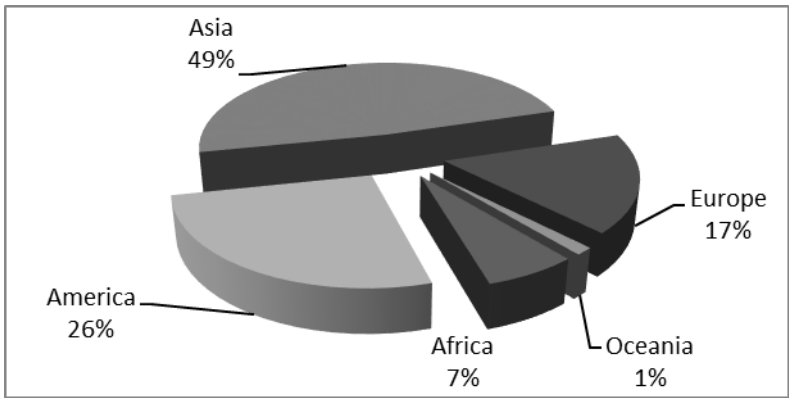

Figure 1. Structure of production of cereals in the world in 2013.
Source: FAO

As we can see, the main cereal production is concentrated in Asia, especially in China and India, where 551 and 293 million tons were received. In the Americas, the production of grain cultures is located in USA (436 million. tons) and Brazil (101 million tons). Among the European countries Russian Federation is the leader of production of cereals. In 2013, 90 million tons were raised. In Africa, production is concentrated in Nigeria, Egypt and Ethiopia. In Oceania, production is concentrated in Australia.

Examine the production of major crops. We start with wheat, which is considered the "most valuable and common food crop in the world." [2] Table 1 presents five countries - leaders in the gross yield of this crop.

Table 1

The leading countries in production of wheat in 2013, thous. tons

Country	1985	1995	2005	2013
China	85807	102211	96160	121720
India	44069	65767	72000	93510
USA	65975	59404	57106	57966
Russia	41200	30119	45500	52090
France	28784	30880	36922	38613
Canada	24252	24989	25547	37529
Australia	15999	16504	24067	22855
Germany	13802	17763	23578	25019
Pakistan	11703	17002	21591	24231

Turkey	17032	18015	21000	22050

Source: FAO

The strengths and the stronghold of wheat play an important role in the milling and baking industries. A large amount of protein in the grain and at least 14% of wet gluten is contained in strong wheat. Wheat cultivation spread along the coast of the Mediterranean Sea, in the steppe regions of the United States, in Argentina, there are small areas in Australia, South Africa and India.

In countries with a hot climate there are other types of wheat. For example, there is pobla in North Africa, Ethiopia, Republic of Yemen and India. In Syria, Asia Minor, China there is sometimes confined area of Mesopotamian wheat. In India and Pakistan in limited spaces globular wheat is grown.

Rye is an important cereal food crop. The total area of rye in the world is 5758 thousand. ha. Its main area is concentrated in Europe and the United States. (Table 2).

Table 2

10 countries - leaders in the production of rye in the world, thous. tons.

country	1985	1995	2005	2013
Germany	4326	4521	2793	4689
Russia	-	4098	3628	3360
Poland	7600	6287	3404	3359
China	1283	1200	554	650
Belarus	-	2143	1154	648
Ukraine	-	1207	1054	637
Denmark	564	494	132	527
Spain	272	168	129	382
Turkey	360	240	270	365
Austria	338	313	163	234

Source: FAO

Rye bread, rye brew, starch are produced with rye. It is used for the production of alcohol. In the form of steamed rye straw is used as roughage. Straw is prepared as a crystalline sugar, cellulose, furfural, vinegar, lignin, and also used in animal litter. [4]

Barley is also important cereal. As wheat, barley was domesticated in the era of the Neolithic revolution. Flour, barley and barley grits, coffee substitute .are produced of its grains. Barley is also widely used as concentrated feed. It has great importance for the brewing and alcohol industry. Barley straw is used for animal feed in the form of steam. In countries with hot climates barley sometimes is grown for green fodder and hay in mixtures with other cultures. [5]

In 2013, 49,781 thousand. ha were occupied with this culture were 49% of the acreage are in Europe, 22% are in Asia, 11% are in North, South and Central America, 9% are in Africa and 6% are in Oceania. The main producing countries are Russia, Germany, France, Canada, Spain, Turkey, Ukraine and others.

References:

1. Popov V.P. World crop: tutorial. - M .: People's Friendship University, 2007 – 744 p.
2. 2. Naumkin V.N. Shadrin A.S. Crop production. Textbook - M .: Lan, 2014 - 600 p.
3. Shpaar D. Cereals. - M .: Book on demand, 2014 - 654 p.
4. Fortunatov A. Agriculture and agronomy. - M .: Book on demand, 2013 – 20 p.
5. Posipanov G.S. Crop. Workshop. - M .: INFRA-M., 2015 -254 p.

SECTION 1B

ENHANCEMENT OF AGRICULTURAL ANIMAL PRODUCTION AND PROCESSING TECHNOLOGIES. BIO-RESOURCES (ANIMAL PRODUCTION)

THE PRODUCTIVITY AND QUALITY OF SEMI-FINE-FLEECE WOOL SHEEP

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Basic quantitative and qualitative indicators (fineness, length, standard deviations and coefficients of uneven thickness of the fibers) fine-wooled sheep population Aktala desired type was studied.

The results showed that such a development of length and thickness of the wool of sheep Aktala population contributed to their formation of staple and staple-scythe structure runes that is a reflection of the potential inherent in the genetic information of sales in certain environmental conditions.

An Ak-Talin district of Naryn region is located in the mountainous semi-desert zone. The scientists in this region have been doing the selection and research work on the isolation Ak-Talin type crossbred sheeps the Tien Shan breeds of semi-fine-fleece for more than thirty years.

The study of wool productivity of Aktalaa population semi-fine-fleece sheep showed that the wool clip are within the requirements of desired type with some features in the manifestation of a quality indicator wool fibers (Table 1).

Table 1

Wool clip of the desired type, kg

Groups of sheep	Ak - Chii (Musabaev K.)		Baetovo (Isakov N.)		Terek (Artykbaev B.)	
	n	M±m	n	M±m	n	M±m
tupping rams	4	6,21±0,17	4	6,50±0,24	4	5,93±0,15
teaser rams	6	5,00±0,09	4	5,17±0,10	3	4,87±0,11
ewes	204	3,25±0,02	155	3,42±0,03	92	3,36±0,26
yearling ewes	73	3,17±0,17	54	3,26±0,25	27	3,20±0,31
yearling ram replacement	25	4,15±0,07	15	4,40±0,15	15	4,00±0,09

By shearing wool the sheep Aktala population exceeds the requirements of the desired first class type. The following results were obtained by: tupping ram in breeding herds from 7.8 to 18.2%, ewes - from 1.6 to 6.9%, young ewes - from 13.2 to 16.4%, and replacement rams - from 3.8 to 10.0 %.

In the group sheep of selection herds are available the best animals for wool productivity that far surpass the average wool clip (tupping rams – 8.0 - 8.5 kg, ewes – 5.0 - 6.0 kg). This indicates the potential for increasing the wool productivity of sheep Aktala population under the existing conditions of feeding and housing.

It should be noted that, other things being equal, the value of the selection differential depends on culling of animals: the higher it is the faster are improved productive qualities of the herd. On the basis of these provisions, we have analyzed the dynamics of changes in the absolute and relative values of the selection differential in different herds.

The pressure of selection among animals' selection groups, especially among young ewe has created a significant advantage over the average level of their wool clip herds of Aiyl county and district.

It should be noted that in the last five years (2010 - 2014 years), the absolute and relative performance of the selection differential in all three herds breeding groups are improved. For

example, in N.Isakov's farmer group in 2010 selection differential relative to wool clip on Ayil county was 0.41 kg, and in the district - 0,57kg. Relative rates it is 16.4% and 24.4%. In 2014, these figures have reached 0.94 and 1.02 kg, (46.8% and 48.1%). The same trend changing the dynamics of this index is observed in other herds.

The desired type of semi-fine-fleece sheep Aktala population has crossbred wool type - staple structure. The wool is homogeneous, length not less than 12 cm, the fineness 50 - 58 microns, the equation for the rune, with good luster. Wool staple crimp is normal, distinctly marked, close to the semi-circle, mainly medium, but there are large, uniform along the length of the staple. The density of wool is satisfactory, overgrown the belly is poor (6 - 7 cm). Wool grease is mainly light cream.

Therefore with the purpose to explore the potential the main indicators of quality wool, what is the length and the fiber thickness. We analyzed samples of wool that was taken on the side of the sheep at bonitation. The analysis was performed on the device OFDA - 2000 (Australia).

Table 2

The length and thickness of sheep's wool

Groups of sheep	n	The length, cm			The thickness, microns		
		M ± m	δ	Cv%	M ± m	δ	Cv%
ewes	37	11,5±0,24	1,44	12,5	25,6±0,26	1,57	6,1
yearling ewes	20	10,4±0,36	1,63	15,7	24,9±0,51	2,27	9,1

The data in Table 2 show that the average length of wool crossbred ewes Aktala type is 11.5 cm with a range from 8.0 cm to 13.5 cm and yearling ewe - 10.4 cm scale fluctuations from 8.5 to 14.9 cm.

According to the technical specifications crossbred wool of the first class shall be not shorter than 11 cm, and the second class - 9 cm. By this indicator wool of ewes meets the requirements of the first class, and young ewes - the second class. The variation coefficient of fiber length is respectively equal to 12.5% and 15.7%, that indicating the presence of animals in a herd with longer hair.

The average diameter of the fibers of ewes is 25.6 microns and corresponds to 58 the quality of Bradford system and varies from 23.0 to 28.7 microns. The thickness of the yearling ewes fibers is average was equal to 24.9 microns or 60/58 quality.

The values of standard deviation and coefficient of uneven thickness of the fibers in the group constitute at the ewes - 1.57 microns and a 6.1% at the young ewe - 2.27 microns and a 9.1% respectively. The fleece crossbred animals are characterized by good equation of the thickness of the fibers in the staple.

Mean square deviation wool ewes with a thickness of 25.2 microns corresponding 58 quality of Bradford was equal to 5.84 microns, with a thickness of 27.69 microns, and 56 quality - 6.13 microns, and the coefficients of non-uniformity in the thickness of the fibers constitute 23.2 and 22 ,1%.

Mean square deviations wool yearling ewes with a thickness of 23.16 microns corresponding 60 quality 25.2 microns corresponding 60 quality was equal to 5.40 microns, with a thickness of 26.28 microns, and the quality of 58 -% .62 microns, with a thickness of 27.38 56 microns and quality - 5.73 microns, with a thickness of 30.10 microns and 50 quality - 8.00 m, and the coefficients of unevenness in thickness of the fibers are respectively 23.3, 21.28, 20.93 and 26.5%.

Thus, the change in the length and thickness of the wool in ewes Aktala population - it led to the formation of the staple structure fleeces in these sheep. This is a reflection of the potential opportunities which are incorporated in genetic information and are being implemented in certain environmental conditions.

MICROSATELLITES MARKERS AND THEIR APPLICATIONS IN AGRICULTURAL STUDIES

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Current developments in genetic studies and decreasing cost of genotyping have resulted in the rapid growth of the use of molecular markers. Microsatellites or simple sequence repeats (SSR) have become the markers of choice for a variety of molecular studies because of their versatility, operational flexibility, and lower cost than other marker systems (Kantartzi, 2013).

According to technical principles, there are three classes of molecular markers: (i) restriction fragment length polymorphisms (RFLPs), (ii) random amplification of polymorphic DNAs (RAPD), amplified fragment length polymorphisms (AFLP), microsatellites or simple sequence repeats (SSRs) and (iii), single nucleotide polymorphisms (SNPs). Amongst them, microsatellites have been utilized most extensively (Hoshino, Bravo, Morelli, & Nobile, 2012).

Microsatellites or simple sequence repeat (SSR) loci, which have been referred to in the literature as variable number of tandem repeats (VNTRs) and simple sequence length polymorphisms (SSLPs), are Found throughout the nuclear genomes of most eukaryotes and to a lesser extent in prokaryotes (Wang, Barkley, & Jenkins, 2009). They have been found inside gene coding regions introns, and in the non-gene sequences (Liu & Cordes, 2004).

Despite the fact that the mechanism of microsatellite evolution is still unclear, SSRs were being widely employed in many fields soon after their first description because of the high variability which makes them very powerful genetic markers. Microsatellites have proven to be an extremely valuable tool for genome mapping in many organisms, but their applications span over different areas ranging from ancient and forensic DNA studies, to population genetics and conservational management of biological resources. The major drawback of microsatellites is that they need to be isolated from most species being examined for the first time. This is due to the fact that microsatellites are usually found in noncoding regions where the nucleotide substitution rate is higher than in coding regions (Zane, Bargelloni, & Patarnello, 2002).

Genome mapping: In combination with other marker systems, SSR markers were quickly applied for genetic mapping in different plant species (including trees, major and minor crops, fruits and vegetables, ornamentals, and turf grass). So far there are over 80 genetic maps constructed involving the use of SSR markers from many plant species. SSR markers can be used also as anchor markers for joining large pieces of overlapped DNA fragments such as bacterial artificial clones (BACs). Physical maps will give us a real physical distance between markers or genes in bp (base pair) or kbp. SSR markers have been used to construct a whole genome physical map of model crop species. Microsatellite markers have been used for comparative mapping to trace the history of chromosome rearrangements during the evolution of plants, animals, and insects (Wang et al., 2009).

Genetic diversity and phylogenetic relationships: Microsatellites are also used in order to estimate genetic variation at molecular level in a germplasm collection which will help towards the correct choice of parents for crosses in a breeding program (i.e., hybrid breeding), mapping and tagging of genes or QTLs (quantitative trait loci) for agronomic and disease resistance traits, genome mapping, MAS of promising lines and Marker Assisted Backcrossing (MAB) during breeding programs, gender identification, studying the population structure and taxonomic and phylogenetic relationships (Liu & Cordes, 2004). SSR markers often are a powerful system for revealing interspecific or intraspecific phylogenetic relationships. For example, the genetic diversity and phylogenetic relationships from germplasm collections such as a temperate bamboo collection, a citrus variety collection and a cultivated and wild peanut collection have been assessed by SSR or

transferable SSR markers (Wang et al., 2009). Microsatellite DNA markers are among the most likely to conform to the assumption of neutrality and have proven to be powerful in differentiating geographically isolated populations and sibling species and subspecies (Miah et al., 2013).

Species, strain, and hybrid identification: Genetic identification of species or strains is sometimes required in an agricultural setting. Because of the major genetic differences among most species, their identification using DNA microsatellites is relatively straightforward (Liu & Cordes, 2004). The amount of genetic variation among strains may be limited, and may require DNA markers and techniques with higher resolution than traditional markers such as allozymes, RFLPs, or RAPDs. Microsatellites have been shown to provide sufficient power for the determination of strains in aquaculture fish species (Liu & Cordes, 2004). Microsatellites have also been used for hybrid determination and characterization of allelic contribution of each parent. Moreover, microsatellites have been used for mapping of specific genomic regions responsible for agronomic traits or mapping of specific genes (Agarwal, Shrivastava, & Padh, 2008).

Microsatellite Markers and Marker-Assisted Selection: The potential benefits of using markers linked to genes of interest in breeding programmes, thus moving from phenotype based towards genotype based selection, have been obvious for many decades .With the availability of large numbers of genetic markers for the species of interest, the effects and location of marker-linked genes having an impact on a number of quantitative traits could be estimated using an approach that could be applied to dissect the genetic make-up of any physiological, morphological and behavioral trait in plants and animals (Ruane & Sonnino, 2007).

THE INFLUENCE OF LENTIVIRAL VECTORS WITH INSERTS OF VARYING LENGTH ON THE EMBRYONIC DEVELOPMENT AND HATCHING OF TRANSGENIC POULTRY

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The use of lentiviral vectors to deliver exogenous DNA into embryonic chicken cells is considered as one of the most promising methods of producing transgenic birds. It is caused primarily highly effective of exogenous DNA transfer method and the associated relatively low cost of producing transgenic birds. Moreover, given the characteristics of the reproduction and development of chickens, namely the difficulties in accuracy determining ovulation, a large number of yolk in the oocytes, cytoplasm strong seal around the pronuclei, the use of lentiviral vector systems for producing transgenic birds is more preferable as compared with the conventional method of gene transfer into cells animals - microinjection.

The possibility of successful use of lentiviral vectors to produce transgenic birds has been demonstrated by several investigators [1-5]. In this context, within the framework of evaluating the effectiveness of using these vectors to genetically modify chickens, study the influence of the size integrated recombinant DNA on the embryogenesis of chickens and to obtain viable progeny as one of the factors that determine the ultimate effectiveness of transgenesis have been relevant.

The aim of the study. In this paper studied the influence of lentiviral vectors with inserts of varying length on the embryonic development and hatching of transgenic chiks.

Objects and research techniques. The objects of study were hatching eggs, embryos, and derived chicks. For the manipulation of embryos, the basis was taken lentiviral vector pWPXL 10510 base pairs in length, which is modified with six inserts: COD1, COD2, MOD1, MOD2, pW

1200, pW 2800. The lengths of the inserts 1500, 753, 1500, 753, 1200 and 2800 base pairs respectively.

The introduction of lentiviral gene constructs in the chick embryo in vivo was performed on 20-24 hour incubation to embryonic disc by cutting and subsequent gluing "window" at the blunt end of the egg (Figure 1). The experiment was carried in two stages: in the summer (June) and autumn (September), using 200 eggs each. For injection the viral preparation was used with the addition of polybrene concentration of 8 μg / ml.

Figure 1. Injection of hatching eggs

Results. As a result of incubation, the largest output of chicks was obtained by laying eggs in the autumn period (Table 1).

Table 1

The result of incubation

Factor	**The summer period**					
	the insertion that used					
	COD1	COD2	MOD1	MOD2	pW 1200	pW 2800
number of chicks from the incubation eggs	3	12	5	8	5	1
the eggs were laid for incubation.	33	30	31	30	30	31
	The autumn period					
	the insertion that used					
	COD1	COD2	MOD1	MOD2	pW 1200	pW 2800
number of chicks from the incubation eggs	9	9	6	6	9	6
the eggs were laid for incubation.	33	30	33	32	31	31

Basing on the analysis data and considering criterion of reliability t = 4,6, which corresponds to the probability of faultless prognosis P≥0,99, we can conclude that depending on the timing of the experiment is significant in the highest degree. It may be caused by toxic viral preparation on embryos (for injections were used preparations with equal period of production); or the influence of external factors on the incubation temperature conditions (several embryos died in the last days development in the summer period, showed signs of hyperthermia in the early stages of incubation, such as brain herniation and curvature of the beak). Greatest difference in chick hatchability between groups in the summer was seen in egg with the insertion COD2 compared with the eggs with the insertion pW2800 (P≥0,999), among other groups, as compared with the insertion

pW2800, also showed a significant difference in hatchability (R≥0,95). In the autumn, largest difference seen between the groups of eggs with inserts COD2 and pW2800 (R≥0,95).

Also was analyzed embryonic mortality (table 2 and 3).

Guided by the data in the tables, we can say that the death rate of embryos was advancing In the early stages of development in the summer and in the autumn. Based on the fact that the actual value of the Fisher criterion in the two tables do not exceed the values of F-critical, the size of the viral vector did not effect on mortality at various stages of embryo development.

Table 2

ANOVA, summer

Group	Account	Average	σ^2
COD1	30	4,33	15,26
COD2	19	6,53	33,15
MOD1	26	6	42,4
MOD2	22	6,77	34,47
pW1200	25	8,44	51,26
pW2800	30	5,9	35,96

	SS	***df***	***MS***	***F***	***P-value***	***F-critical***
between groups	242,81	5	48,56	1,39	0,23	2,28
inside the group	5096,12	146	34,90			

Table 3

ANOVA, autumn

Group	Account	Average	σ^2
COD1	24	6,25	31,93
COD2	21	7,10	54,59
MOD1	24	6,92	45,04
MOD2	23	5,52	39,26
pW1200	22	6,68	34,61
pW2800	22	6,55	40,64

	SS	***df***	***MS***	***F***	***P-value***	***F-critical***
between groups	35,88	5	7,18	0,18	0,97	2,28
inside the group	5306,109	130	40,81			

Account - the number of eggs that were autopsied, **Average -** the average day of embryo death, ***F-*** *the actual Fisher test*

Conclusions. These results indicate than the greater length of the insert, the stronger it affects the development of embryos and their hatchability, but does not affect their mortality in the incubation stage. So we can tell, that for manipulation on embryos should be selected vector of length not more than 1500 base pairs, which in this case corresponds to the inserts COD1, MOD1.

References:

McGrew M.J., Sherman A., Ellard F.M., Lillico S.G., Gilhooley H.J., Kingsman A.J., Mitrophanous K.A., Sang H. Efficient production of germline transgenic chickens using lentiviral vectors. EMBO Rep, 2004, 5:728–733.

Chapman S. C., Lawson A., Macarthur W. C., Wiese R. J., Loechel R. H., Burgos-Trinidad M., Wakefield J. K., Ramabhadran R., Mauch T. J. & Schoenwolf, G. C. Ubiquitous GFP expression in transgenic chickens using a lentivira vector. Development, 2005, 132: 935–940.

Scott B.B., Velho T.A., Sim S., Lois C. Applications of avian transgenesis. ILAR J., 2010, 51(4):353-61. Review.

Furlan-Magaril M., Rebollar E., Guerrero G., Fernandez A., Moltai E., Gonzalez-Buenda E., Cantero M., Montoliu L., Recillas-Targa F. An insulator embedded in the chicken β-globin locus regulates chromatin domain configuration and differential gene expression. Nucleic Acids Res., 2011, 39(1):89-103.

Byun S.J., Kim S.W., Kim K.W., Kim J.S., Hwang I.S., Chung H.K., Kan I.S., Jeon I.S., Chang W.K., Park S.B., Yoo J.G. Oviduct-specific enhanced green fluorescent protein expression in transgenic chickens. Biosci. Biotechnol. Biochem., 2011, 75(4): 646-9.

REVISITED OPTIMIZATION OF COMMERCIAL LAYING HENS' USEFUL LIFE

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Abstract

Optimization of the production period of the second group of chickens allow Leela extend their useful life for 3 weeks, and with the use of forced molting by 28 weeks, to increase egg production in per hen housed by 34.9 %.

Introduction.

To intensify eggs production in Russia it is necessary to look for some innovative methods to increase volume of works of poultry farms.

Nowadays they use biotechnological methods of regulating the animals' physiological processes more and more often. In particular, Ryazan scientists have determined biotechnological factors regulating adaptation reactions of forming the animals' resistance (Korovushkin, A.A., Nefedova, S.A., 2004), ecological-physiological mechanisms of animals' adaptation to human intervention (Nefedova S.A., 2011). But they have paid little attention to biotechnological methods of optimizing the commercial laying hens' useful life in our region. The scientists pay special attention to hens' mew: the change of laying hens' vitelline follicles ovary amid forced mew (Stremousov V.M., 1990), efficiency of commercial hens' forced mew different schemes (Andrushchenko N.A., 1999), chicken and egg hens' mew under the influence of calcium in the fodder and its nutrient value (Imangulov Sh.A., Dogadaeva I.V., Kavtarashvili A.Sh., 2000), force mew of commercial egg hens (Chernyak M.I., 2000), hens' forced mew (Kavtarashvili A.Sh., 2000).

As Mukhortov points out "hens' useful life prolongation is one of the ways to increase eating eggs production. Most poultry farms of Russia use hens for not more than one productive cycle. But from the position of market economy the one productive cycle use technology is less efficient than two or three years' technologies. For instance, if one hen prime cost is 55 rubles and the difference between the market price and prime cost of 10 eggs is 5.30 rubles then a hen must give 104 eggs for the payback. In a case of the hen's monthly mean productivity equal to 24 eggs

approximately 4.3 months of its use do not give any real profit. 6-7 months later they kill the hens that can still give eggs. When elongating the productive period of laying hens there is lessening of replacements need and production premises to grow them and the number of commercial eggs increases. The forced mew also promotes poultry rehabilitation" (Mukhortov O.Yu., 2005).

The aim of the work has been developing the optimal mode of laying hens' use in a case of changing the technological parameters of preparing the offspring for laying. The tasks of the investigations have included the hens' forced mew use experiment so that to increase the poultry productivity during the second cycle of laying.

We have chosen as the object of the investigation cross "White Lomann" that is one of early-maturing that makes possible to cut the time of stimulating the laying process. The hens have been kept at the being reconstructed farm JSC "Novoderevenskaya Poultry Farm" with modern equipment of Italian origin ("FACCO") having cage batteries in 4 layers. The feeding process is automatic with the help of hopper-shaped feeder and they remove chicken manure with a droppings belt. Watering is also automatic with the system having filters of primary and fine refining and they gather eggs with the belt conveyors and further transport them to lift elevator. The system of watering comprises three nipples per cage.

Methods of investigation. We have formed the following experiment groups of hens: group 1 has been kept according to the standard technology and group 2 has had the method of the forced mew and laying recycle. We have used altogether 5 840 laying hens.

Results of investigations. The optimal and economically grounded period of forcing the hens' mew is 62 - 64 weeks in a case of 60 % laying intensity: eggs productivity for initial and average laying hens has been 555 137 and 557 573 eggs; the culling number has been at the level 15.14 %; the total eggs number has been 2 225 421 and the time of using the laying hens has been 84 weeks (table 1).

Table 1

Forced Mew Use

Parameter	Poultry Group	
	I	II
Heads at the Beginning of the Experiment	2 920	2 920
Productive Period Duration, weeks	72	84
Eggs Number	1 110 275	1 115 146

The practical value of the work is offering the optimal age (14 weeks) of pre-laying period of the offspring and hens' forced mew (62-64 weeks) without prejudice for productivity and products quality during two cycles of laying. When using the offered technological parameters the prime cost of replacements aged 17 weeks and commercial eggs has declined by 7.7 % due to shortening the time of growing the offspring and increasing the laying hens useful life time.

Optimizing the productive period of the second group hens has let elongate their useful life for 3 weeks and in a case with the forced mew by 28 weeks and increase eggs productivity by 34.9 % with a view to the initial laying hen.

EFFECT OF MEDICINAL LEECH (*HIRUDO MEDICINALIS*) MAINTAINING REGIMES ON THE CONCENTRATIONS OF DISSOLVED OXYGEN

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Summary

The purpose of this study was to evaluate the effects of leech's maintenance in two types of aquaculture system including: a) a Usual Periodically Water Changing System, common in bioofactories, b) Recirculating Aquaculture System on concentrations of dissolved oxygen. The results showed that in all experimental groups belongs to recirculation system, the oxygen concentration did not change significantly during the period of experiment, while in the control group, the oxygen concentration, less than a day sharply reduced.

Keywords: medicinal leech, recirculating system, oxygen

Introduction:

The European medicinal leech, Hirudo medicinalis, is the type species in the family Hirudinidae, long famous for its bloodletting and other medical applications [1]. In recent years, they have been included in the IUCN Invertebrate Red Data Book [2]. The breeding of leeches for medical purposes has bright commercial potential and of late many entrepreneurs have embarked on the farming of leeches; but in their work they are little used modern technologies and methods [3]. And yet, the old method M.B cineva [4] is using at the biofactories in Russia and Europe.

Avoidance of polluted waters is a defensive response of animals. However, little is known about avoidance response of medicinal leech [5]. The behavioural responses of medicinal leech have a great biological importance and would allow a better understanding of the biology and ethology of leeches and would serve as a basis for improvement of the technology of artificial breeding of this spices.

The aim of the study:

The purpose of this study was to investigate the influence of various maintenance regimes of the medicinal leech, *Hirudo medicinalis*, on dissolved oxygen concentration in water.

Materials and Methods:

Experiment was carried out in the hirudo - and vermitechnology laboratory of Agrarian Faculty at People's Friendship University of Russia. The 10 months old leeches, bred under laboratory conditions with a body weight of 1.05 ± 0.02 gr were adapted to a new condition for one week. They were then randomly allocated in 12 glass tanks of 3 L (30 leeches per tank). The experimental tanks were connected to a zero-water exchange recirculating system with water exchanged rats 36 (T1), 48 (T2), and 60 (T3) time per day and compared with control group (T4) with the frequency of water exchange at the rate of once per 3 days. During the experimental period, the temperature ranged over 22 ± 1.1 C. The concentration of dissolved oxygen in the water is measured using a portable oxygen meter per day. The study was conducted for 15 days. All The data were analyzed using Microsoft Excel (Microsoft Inc, Redmond, WA).

Results and discussion:

The effect of various leech maintenance regimes on dissolved oxygen concentration in water are shown in Figure 1. According to the results, there is a significant effect of two types of aquaculture system (A: Usual Periodically Water Changing System, common in biofactories, B: Recirculating Aquaculture System) on concentrations of dissolved oxygen. As is evident from the diagram, in control group, concentration of oxygen in the water within a few hours after the

replacement of water had severely reduced. While in all the experimental groups belonging to the recirculation system, the concentration of dissolved oxygen in the water over a 15-day study period was not significantly changed and was maintained at an optimum level.

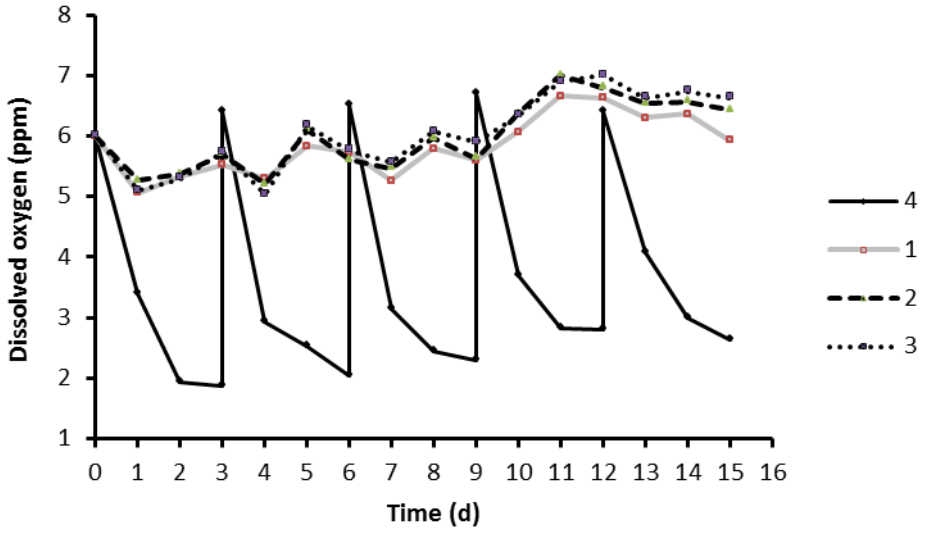

Fig 1. The concentration of dissolved oxygen in the experimental groups during the 15-day study
Legend: Experiment 1) 36, 2) 48 and 3) 60 times water exchanged rate per day; Experiment 4) with a frequency of water exchange at the rate of once per 3 days (control group).

Determination of optimal conditions is a key factor for successful breeding and reproduction of leeches. In this study, it was found that the recirculation system has a direct effect on the concentration of dissolved oxygen. As described in previous studies, medicinal leeches during the day tended to be placed motionless at the bottom of the tank [6-7]. However, in this study, because of low oxygen level and most likely poor water quality in the bottom of the tanks in control group, leeches were moved to the upper layers and outside of water, where the amount of dissolved oxygen was higher. While in all tanks with the circulating water, the amount of dissolved oxygen in the layers of water was almost the same, so leech preferred to rest in bottom of the water without movement.

References

[1] Phillips A. J., and Siddall M. E. Phylogeny of the New World medicinal leech family Macrobdellidae (Oligochaeta: Hirudinida: Arhynchobdellida) // Zool Scripta., 2005, 34 (6):559–564.

[2] Wells S. M., Pyle R. M., and Collins N. M. The IUCN Invertebrate Red Data Book. IUCN // The World Conservation Union. Cambrige, UK. 1983.

[3] ZHarov D. G. Sekrety girudoterapii, ili kak lechit'sya piyavkami // Rostov-na-Donu: Feniks., 2003, – 320 s.

[4] Sineva M. V. Biologicheskie nablyudeniya nad razmnozheniem medicinskoj piyavki // Zoologicheskij zhurnal., T. 28. - № 3. – 1494, – S. 213-224;

[5] Lapkina L. N., Flerov B. A., Chalova I. V., YAkovleva I. I. Ispol'zovanie povedencheskih reakcij molodi piyavki dlya biotestirovaniya // Voprosy sravnitel'noj fiziologii i vodnoj toksikologii,— YAroslavl': YAroslavsk. gosuniversitet, 1987, S. 11–17.

[6] Mihajlov S.V., Kustov S.Yu., Yaroshenko V.A. Sezonnaya i sutochnaya dinamika aktivnosti medicinskoj piyavki v akvatoriyah Krasnodarskogo kraya (Hirudo medicinalis L.) // Fundamental'nye issledovaniya., 2006, - №3. – S. 21–24.

[7] Rassadina E. V. Ekologicheski obosnovannaya biotekhnologiya vosproizvodstva Hirudo medicinalis L. v laboratornyh usloviyah // Dissertaciya na soiskanie uchenoj stepeni kandidata biologicheskih nauk. – Ul'yanovsk, 2006. – 199 c.

SECTION 2

VETERINARY SCIENCE

CHRONIC RENAL DISEASES OF CATS (IN FRENCH)

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Abstract

The deseases that cause mortality in cats are chronic renal diseases. The objective of this article is to overview actual concerning on how to use the histological analyses for the diagnosis of renal deseases of cats.

Results.

Les maladies rénales (MR) constituent la première cause de mortalité chez les Chats. L'utilisation des méthodes histologiques est premordiales pour connaitre l'évolution de ces MR .

L'objective de cet article est de revoir les actualités concernant les analyses histologiques utiliser pour le diagnostic des MR chez les Chats.

Le matériel utilisé est basé sur les études des vétérinaires en France et les résultats du laboratoire « Antagene » en France.

L'insuffisance rénale chronique (IRC) chez les Chats est liée pricipalement aux maladies suivantes : Polykystose rénale en particulier souvent rencontré chez les « Persans », Lymphome, l'Amyloïdose chez les « Abyssins », d'après les données du « Congrès Chat, N°328 du 17 au 23 avril 2014 » l'insuffisance rénale se classifie par des stades : stade 1, 2, 3, 4 selont les statistiques ils ont remarquer que L'IRC évolue plus lentement chez le Chat que chez le Chien. Au stade 2, le temps médian de survie est de 3,2 ans, mais 81 % des Chats ayant atteint le stade 2 n'évolueront jamais vers le stade 4. Au stade 3, le temps médian de survie est de 2,1 ans mais 37 % des Chats n'iront pas non plus jusqu'au stade 4. Au stade 4, l'espérence de vie est d'environ 3,5 mois.(1)

D'autre par le laboratoire « Antagene » en France fait des études sur la maladie d' Amyloïdose chez 4 races de Chat. Ils ont pris des prélèvements chez 93 Abyssins, 12 Somalis, 14 Siamois et 6 Orientaux de tout âge, avec ou sans statut clinique défini. Parmi eux, 31 ont été diagnostiqués atteints d'amyloïdose et 13 indemnes(2). Le tableau suivant montre les résuttats qu'ils ont obtenues :

Tableau 1

Indemnes	Atteints	
10	18	Abyssin
2	0	Somali
1	9	Siamois
0	4	Oriental

Le résultat sur l'étude histologique leur a permis de développer une toute nouvelle échelle de graduation pour la description histopathologique de l'amyloïdose(3). Ils ont mis en place une échelle attribuant un grade de I à V pour chaque individu au niveau glomérulaire (extérieur du rein), médullaire (couche plus interne du rein) et hépatique définissant l'état de l'Amyloïdose observée(4).

Conclusion:

En peu constater que la duré de vie chez les Chats atteints les maladies rénales chroniques dépend du stade de l'évolution de ces maladies rénales.

D'après les résultats de la recherche du laboratoire "Antagene" la maladie d' Amyloïdose est plus récente chez la race d'Abyssin que chez d'autres races de Chat.

Les résultats histopathologiques sur l' Amyloïdose ont montré qu'ont peu classifer cette maladie sur 5 stades qui permettes de savoir plus de détails sur l'état d' Amyloïdose chez chaque individu.

Références:

1. Pascale Pibot,Docteur vétérinaire, 2014. Congrès Chat en France. Maladie rénal chronique.
2. Anne THOMAS, Caroline DUFAURE de CITRES Laboratoire ANTAGENE 10 janvier 2015.
3. Anne THOMAS, Caroline DUFAURE de CITRES Laboratoire ANTAGENE 10 janvier 2015.
4. Anne THOMAS, Caroline DUFAURE de CITRES Laboratoire ANTAGENE 10 janvier 2015.
5. Myriam, Marie-Claude LAQUET, thése du doctorat № : 2007 – TOU 3 – 4102. Intérêt de l'analyse histologique rénale pour le diagnostic, le pronostic et le traitement des néphropathies chez le chien et le chat.
6. Tableu : 1 résultats du laboratoire ANTAGENE 10 janvier 2015.

MORPHOLOGICAL ASPECTS OF THE ENDOCRINE SYSTEM IN QUAIL

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Abstract

This article presents the results of researches, that we conducted , using the technique of macro- and micro- dissection , methods morphometry and solid geometry , followed by the data processing method of variation statistics . Thus, we examined the structural organization of endocrine quail since hatching to 420 days of age.

Results.

Using the technique of macro and micro-dissection, morphometric techniques and solid geometry, followed by the data processing method of variational statistics, we studied the structural organization of endocrine quails since hatching to 420 days of age.

The endocrine apparatus of quail, in accordance with their functions, allocate the central and peripheral organs. By the central endocrine glands include: neyroregulyatornye nucleus of the hypothalamus, pituitary and pineal gland. By the peripheral endocrine glands: thyroid, parathyroid (parathyroid) gland and the adrenal glands. Quail, like all birds, histology of the endocrine glands is similar to the endocrine glands of mammals. The hypothalamus or hypothalamic region of the diencephalon is the highest center of integration and regulation of autonomic functions. Quail localized centers in the hypothalamus that regulate pupil dilation, blood pressure, breathing, motor and secretory functions of the digestive tract, as well as body temperature. Morphologically it forms the bottom of the third cerebral ventricle and lies between the optic chiasm and the rear edge of mastoid bodies. It consists of a gray mound, median eminence, funnel and rear (nervous), pituitary, and in front, it borders with the region of the visual hills. The pituitary gland is located behind the quail optic chiasm to the sphenoid bone (in the pit sella). He is the unpaired gland elongated and consists of adenohypophysis and neurohypophysis. Next iron the intermediate part of the brain - is the epiphysis (pineal gland), small size, pyramidal shape. Occupied by the iron in the cavity between the cerebral hemispheres and the cerebellum, and the outside is covered with a connective

tissue capsule that divides it into segments. The interlobular connective tissue is sometimes observed accumulation of lymphoid tissue.

Among the peripheral endocrine glands thyroid quail occupies a special place because it is in contact with the last slice of the thymus (central organ of the immune system). It consists of two oval lobes, which are located at the entrance to the phrenic cavity. Outside the thyroid gland is covered by a connective tissue capsule, and, as in mammals, consist of follicles and interfollicular tissue. Inside the follicles is a colloid. Parathyroid gland located behind the thyroid as two millet grains, spherical shape, and often lies in the total thyroid capsule. The thymus (thymus) quails located along the neck, from the lower jaw to the heart and a beaded 6-8 cloves of grayish-pink. In each lobe was isolated cortical and medullary zone. The adrenal glands are located on medioventralno kidneys. They are triangular in shape, left adrenal gland is closed ovary.

The endocrine glands are functioning in close relationship with each other and with the nervous system, forming a single neuroendocrine system. The system is designed to maintain the constancy (homeostasis) of the organism and to ensure its connection with the environment.

HYPERGLYCAEMIA IN THE DOG: TREATMENT, SYMPTOMS AND CARET (IN ITALIAN)

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Il diabete mellito è una malattia comune nei cani. Il Golden Retriever, il Pastore Tedesco, lo Schnauzer Nano, il Keeshond e il Barboncino presentano una maggiore incidenza, ma tutte le razze possono esserne colpite. Le femmine generalmente sono più colpite rispetto ai maschi. L'età media di insorgenza è tra i 6 e i 9 anni.

Il diabete insorge a seguito di una produzione inadeguata di insulina da parte delle cellule insulari del pancreas. Alcuni cani possono presentare una predisposizione genetica per questo fenomeno. La distruzione delle cellule insulari si verifica anche in alcuni casi di pancreatite. L'insulina consente al glucosio di transitare nelle cellule, dove viene metabolizzato per produrre energia per il metabolismo. Una carenza di insulina si traduce in iperglicemia (glicemia alta) e glicosuria (livelli elevati di zuccheri nelle urine). La presenza di glucosio nelle urine fa sì che l'animale diabetico espella quantità elevate di urina. Ne consegue l'insorgenza di disidratazione e la necessità di bere grandi quantità di acqua.

Inizialmente, il cane che non metabolizza una quantità sufficiente di zuccheri presenta un aumento dell'appetito e il desiderio di consumare più cibo. Successivamente, in concomitanza con gli effetti della malnutrizione, l'appetito tende a diminuire.

Sintomi:

In sintesi, i segni corrispondenti alle fasi iniziali del diabete sono minzione frequente, assunzione di quantità elevate di acqua, aumento dell'appetito e perdita di peso inspiegabile. Gli esiti degli esami di laboratorio saranno caratterizzati da livelli elevati di glucosio nel sangue e nelle urine.

Nelle fasi più avanzate il cane sperimenta letargia, perdita dell'appetito, vomito, desidratazione, debolezza e coma. Le cataratte sono comuni nei cani diabetici. In ultima analisi, il diabete è una malattia che interessa tutti gli organi. I cani diabetici, se non curati, in genere presentano , sono soggetti alle infezioni e spesso sviluppano problemi neurologici.

La chetoacidosi diabetica è una condizione associata ad una grave iperglicemia, in cui i chetoni (acidi) si accumulano nel sangue. I chetoni sono sottoprodotti del metabolismo dei grassi.

Nella chetoacidosi diabetica, i grassi vengono metabolizzati per produrre energia poiché gli zuccheri non sono disponibili. La chetoacidosi diabetica è caratterizzata da vomito, debolezza, respirazione rapida e da alito che odora di acetone. Si tratta di una condizione estremamente grave per la vita dell'animale. Qualora si sospetti che il cane possa essere affetto da chetoacidosi diabetica, è essenziale recarsi immediatamente dal veterinario**.**

Trattamento del diabete nel cane

Un regime alimentare controllato e iniezioni quotidiane di insulina possono regolare la maggior parte dei cani diabetici, consentendo loro di condurre una vita attiva e salutare. I farmaci ipoglicemizzanti orali impiegati per trattare il diabete nell'essere umano non si sono dimostrati efficaci per la cura del diabete nel cane. Ma la ricerca sta proseguendo gli studi in questo settore.

Il fabbisogno di insulina non può essere formulato basandosi esclusivamente sul peso corporeo del cane, poiché il grado di insufficienza pancreatica varia da cane a cane. La dose giornaliera di insulina deve essere stabilita su base individuale. Nei cani a cui è appena stato diagnosticato il diabete, la terapia insulinica può avere inizio a casa. Dopo una settimana di trattamento, il cane dovrà essere riportato in clinica ove verrà effettuato un esame della curva glicemica (andamento della concentrazione di glucosio nel sangue). A seguito di tale esame, potranno essere rivisti il dosaggio e i tempi di somministrazione delle iniezioni. Sarà il veterinario a spiegare come preparare e iniettare l'insulina. E' possibile che al proprietario del cane venga richiesto di monitorare i livelli di glucosio nelle urine mediante la raccolta di campioni di urina e l'utilizzo di apposite strisce che indicano i livelli di glucosio nelle urine.

EFFICACY OF OZONE AS A NOVEL THERAPEUTIC AGENT FOR ENDOMETRITIS IN DAIRY COWS

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Abstract

The aim of this research was to investigate the frequency of endometritis (EM) in dairy cows and efficacy of ozone spray as a novel therapeutic agent for the EM. Dairy cows (n= 253) aged from 2 to 10 years were housed in farms in the north-western region of Croatia. Animals were divided into three groups based on the uterine findings and diagnose of either EM or clinically normal controls. The first and the second group comprised cows with diagnosed EM at days 25, 35 and/or 45 after parturition. The third group included animals without clinical signs of uterine inflammation. The first group of cows that suffered from the EM were treated with ozonated foam (Riger spray G) applied into the uterus of cows for 6 seconds. The second group of cows were treated with different antibiotics (AB) for intrauterine use. After the therapy, cows were inseminated with frozen-thawed semen by experienced inseminators upon the owner's call. The cows were examined by transrectal ultrasonography every 3 weeks after the insemination until the pregnancy was confirmed. The EM was diagnosed in 65 out of 253 cows, whereas 188 cows were without signs of the EM. The conception rate in the cows treated with either ozone spray or AB as well as in the clinically healthy controls were 2.13 (n=32), 2.21 (n=33) and 1.90 (n=188), respectively. The average time from the first insemination until pregnancy was similar for the first and the second group of cows. The days open period until pregnancy in dairy cows with the EM that were treated with ozone spray was the longest (131.22 days), while this period was shorter in the cows treated with AB (127.51) as well as in the controls (122.02). Therefore, the intrauterine ozone flush has a

potential to alleviate the EM as an effective treatment option within overall positive impact on the fertility in dairy cows.

Key words: *alternative therapy, antibiotics, ozone, uterus, cattle*

Introduction

Ozone is gaseous allotropic modification of oxygen (composed of 3 oxygen atoms) (Rubin, 2001). As a very strong oxidant ozone has bactericidal, fungicidal and virucidal activities bv damaging of bacterial capsule, blocking the replication of DNA, inhibiting fungal growth, producing protein hydroxides and hyperoxides, destructing of lipid molecules the in viruses capsids and blocking of virus replication). Medical ozone induces synthesis of specific cell membrane enzymes (superoxide dismutase, catalase and glutathione peroxidase) which protect the cell from damaging effects of O_2 free radicals (Hernández et al. 1995). Also, the ozone may influence the immune system by stimulation of lymphocytes, monocytes and neutrophils to release the cytokines (Larini and Bocci, 2005; Ohtsuka et al. 200; Travagli et al. 2009). There are some, relatively new products with a special blend of vegetal ozoned oil in a form of creams, gasses, syringes, pailletes, foam, boluses and tablets for use in the veterinary medicine (Travagli et al. 2009). The therapy by ozone is assigned into alternative medicine approaches. Bovine EM may prolong the days open until the first service, the days open until pregnancy, intercalving period, and the risk of cows being culled for infertility (Maizon et al. 2004; LeBlanc et al. 2002; Gilbert et al. 2005).

Preventive intrauterine use of ozone in foaming spray improved the reproductive efficiency of dairy cows of Holstein (n=404) and Simmental breeds (n=120) (Djuricic et al. 2011a; Djuricic et al. 2012a). After parturition uterus is exposed to bacterial colonization and proliferation of pathogenic species (Sheldon and Dobson, 2004; Gilbert et al. 2005). Puerperal disorders were diagnosed in 10% to 50% of cows with uterus infections (Gilbert et al. 2005). In average 32.6% of cows have various forms of cervicovaginal discharge (from muco-purulent to purulent) during the first two months post partum, but only about 25.9% of these cows have visible clinical signs (Gautam et al. 2009). About 50% of uteruses were colonized by pathogenic bacteria 31–45 days post partum and only 9% of uteruses were colonized by pathogenic bacteria 46-60 days post partum. The EM is commonly caused by coliform and Gram negative anaerobic bacteria, such as *Arcanobacterium pyogenes* and other bacteria (Dohmen et al. 2000; Azawi, 2008). The incidence of clinical or subclinical EM has been reported in 17% to 54% of cows, respectively (LeBlanc et al. 2002; Rajala-Schultz and Frazer, 2003; Gilbert et al. 2005; McDougall, 2006).

Material and methods

Dairy cows (n= 253) aged from 2 to 10 years were housed in free-stall barns with straw bedding in farms in the north-western region of Croatia. The herd's average milk yield was 5900 and 9100 kg per lactation. The animals were divided into three groups based on the uterine findings and diagnose of either EM or clinically normal controls. The first and the second group comprised cows with diagnosed EM at days 25, 35 and/or 45 after parturition. The third group included animals without clinical signs of uterine inflammation. The first group of cows that suffered from the EM were treated with ozonated foam (Riger spray G) applied into the uterus of cows for 6 seconds. The second group of cows were treated with different antibiotics (AB) for intrauterine use. After the therapy, cows were inseminated with frozen-thawed semen by experienced inseminators upon the owner’s call. The cows were examined by transrectal ultrasonography every 3 weeks after the insemination until the pregnancy was confirmed. Days open until pregnancy, number of days until the first insemination following partus and conception data were analyzed with statistical software program Statistica, 7.1, using ANOVA and Tukey's test post hoc analysis. Statistically significant differences were considered at $p < 0.05$ value or lower.

Results

The EM was diagnosed in 65 (27.65%) out of 253 cows, whereas 188 cows were without signs of the EM. The conception rate in the cows treated with either ozone spray or AB as well as in the clinically healthy controls were 2.13 (n=32), 2.21 (n=33) and 1.90 (n=188), respectively. The

average time from the first insemination until pregnancy was similar for the first and the second group of cows. The days open period until pregnancy in dairy cows with the EM that were treated with ozone spray was the longest (131.22 days), while this period was shorter in the cows treated with AB (127.51) as well as in the controls (122.02).

Discussion and conclusion

The advantages of the ozone use in relation to the use of AB for the treatment of different pathological conditions are as follows: (1) there are no appearance of resistant microbes, (2) usage without prescription, (3) absence of the residues in milk, meat and other tissues,(4) absence of adverse effects, and (5) there is no period of currencies (Djuricic et al. 2012a). The effectiveness of ozone is not decreased in uterus, while it is decreased or totally absent in case of some AB applied. Also, following AB therapy there are residua retained in meat (3 to 30 days or more), while for the ozone therapy there was no withdrawal time (Scrollavezza et al. 1997). Antibacterial drugs for intrauterine application, in comparison to ozone preparation, loss activity in lochia in the presence of pus, in anaerobic conditions, residua retained in milk and meat (Djuricic et al. 2012b). The intrauterine ozone therapy might have beneficial effects on the incidence of EM, and consequently on the improvement of reproductive efficiency as well as on lowering the costs of treatment of reproductive disorders (Scrollavezza et al. 1997; Marusi et al. 2000; Djuricic et al. 2012a). Therefore, the intrauterine ozone flush has a potential to alleviate the EM as an effective treatment option within overall positive impact on the fertility in dairy cows.

References

Azawi OI, 2008: Postpartum uterine infection in cattle. Anim Reprod Sci 105, 187-208.

Djuricic D, Dobranic T, Vince S, Getz I, Gracner D, Grizelj J, Prvanovic N, Folnozic I, Smolec O, Samardzija M, 2011: Shortening Days Open Using Intrauterine Ozone Therapy in Simmental Cows. Vet stn, Supplement 1, Book of Proceedings Zagreb (eds. J. Kos, M. Samardzija), pp. 149-152.

Djuricic D, Vince S, Ablondi M, Dobranic T, Samardzija M, 2012a: Effect of Preventive Intrauterine Ozone Application on Reproductive Efficiency in Holstein Cows. Reprod Dom Anim 47, 87-91.

Djuricic D, Vince S, Ablondi M, Dobranic T, Samardzija M, 2012b: Intrauterine ozone treatment of retained fetal membrane in Simmental cows. Anim Reprod Sci 134, 119-124.

Djuricic D, Valpotic H, Samardzija M, 2015: The intrauterine treatment of retained foetal membrane in dairy goats by ozone: novel alternative to antibiotic therapy. Reprod Dom Anim 50,236-239.

Dohmen AJW, Joop K, Sturk A, Bols PEJ, Lohuis JACM, 2000: Relationship between intra-uterine bacterial contamination, endotoxin levels and the development of endometritis in post partum cows with dystocia or retained placenta. Theriogenology 54, 1019-1032.

Đuričić D, Lipar M, Samardžija M, 2014: Ozone treatment of metritis and endometritis in Holstein cows. Vet arhiv 84, 103-110.

Gautam G, Nakao T, Yusuf M, Koike K, 2009: Prevalence of endometritis during the postpartum period and its impact on subsequent reproductive performance in two Japanese dairy herds. Anim Reprod Sci 116, 175–187.

Gilbert RO, Shin ST, Guard CL, Erb HN, Frajblat M, 2005, Prevalence of endometritis and its effects on reproductive performance in dairy cows. Theriogenology, 64, 1879–1888.

Hernández F, Menéndez S, Wong R, 1995: Decrease of blood cholesterol and stimulation of antioxidative response in cardiopathy patients treated with endovenous ozone therapy. Free Radical Biol Med 19, 115–119.

Larini A, Bocci V, 2005: Effects of ozone on isolated peripheral blood mononuclear cells.

Toxicol in Vitro 19, 55-61.

LeBlanc SJ, 2008: Postpartum uterine disease and dairy herd reproductive performance: a review. Vet J 176, 102-114.

LeBlanc SJ, Duffield TF, Leslie KE, Batean KG, Keefe GP, Walton JS et al. 2002: Defining and diagnosing postpartum clinical endometritis and its impact on reproductive performance in dairy cows. J Dairy Sci 85, 2223–2236.

Maizon DO, Oltenacu PA, Gröhn YT, Strawderman RL, Emanuelson U, 2004: Effects of diseases on reproductive performance in Swedish Red and White dairy cattle. Prev Vet Med 66, 113–126.

Marusi A, Ubaldi A, Fusari A, Marasi G, Isnenghi F, 2000: Haptoglobin response in dairy cow metritis treatement with lipohydroperoxides. XXI World Buiatrics Congress, Punta del Este Uruguay, 4-8 December 2000.

McDougall S, 2006: Reproduction performance and management of dairy cattle. J Reprod Dev 52, 185-194.

Ohtsuka H, Ogata A, Terasaki N, Koiwa M, Kawamura S, 2006: Changes in leukocyte population after ozonated autohemoadministration in cows with inflammatory diseases. J Vet Med Sci 68, 175-178.

Rajala-Schultz PJ, Frazer GS, 2003: Reproductive performance in Ohio dairy herds in the 1990's. Anim Reprod Sci 76, 127-142.

Rubin M. B. (2001): "The History of Ozone. The Schönbein Period, 1839-1868". Bull Hist Chem 26, 40-56.

Scrollavezza P, Ablondi M, Pogliacomi B, Guareschi D, Dall'Aglio R, Poldi R, et al. 1997: Ozone treatment in mastites, metrites and retention of fetal membranes in the cows. Atti 2°Intern. Symp. Ozone Application, Havana, Cuba.

Sheldon IM, Dobson H, 2004: Postpartum uterine health in cattle. Anim Reprod Sci 82–83,295–306.

Travagli V, Zanardi I, Bocci V, 2009: Topical applications of ozone and ozonated oils as antiinfective agents: an insight into the patent claims. Recent patents on anti-infective drug discovery 4, 130-142.

DIAPHRAGMATIC HERNIA IN THE HORSES

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Summary

Rupture of diaphragme is one of the most complicated types of closed injuries of a horse, which is preconditioned by pathogenesis, due to the absence of particular clinical signs and difficulty of diagnosing. The majority of cases prove to be traumatic faulse of diaphragmatic hernia. In order to refine the diagnosis, additional visual methods are used. In case if constricted diaphragmatic hernia is detected, the only treatment method is emergent surgery. In order to achieve favourable outcome, prompt surgical treatment of diaphragmatic defect is recommended.

Introduction.

Diaphragmatic hernia (HERNIA DIAPHRAGMATICA) - This movement in the chest abdominal organs (loop small and large intestine, omentum, liver, etc.) through a slot formed in the diaphragmatic plate. This usually occurs without the formation of serous hernia, so diaphragmatic hernia (DH) refers to a false hernia. Diaphragmatic hernia is not part of the disease in horses, it accounts for no more than 8 % of all surgical cases, treatment of colic. Diaphragmatic hernia,

should be considered as one of the possible etiological factors of digestive tract pathology in abdominal pain in horses with recurrent colic, intractable medical treatment.

IRIS (from the Greek . ΔΙΆΦΡΑΓΜΑ - SCREEN) - musculoaponeurotic formation - the diaphragm that separates the chest cavity from organs of abdominal, does in the body static and dynamic function.

Dynamic iris function being inspiratory muscles, is to implement act with breathing moreover. Movement of the diaphragm facilitated the flow of venous blood in the right atrium, promote the flow of venous blood from the liver, spleen and abdominal movement of gases in the digestive tract, act bowel movement of lymph.

Static or support function of the diaphragm is to maintain the pressure difference between the chest and abdomen. The negative pressure in the chest cavity allows to find easy-to- expanded state and thereby provides a complete gas exchange. From muscle tone iris depend normal relationship between chest and abdomen. At break and wounded IRIS DUE pressure difference of the chest and abdominal cavity may happens in the pleural cavity the small or large intestines, omentum, stomach, spleen, liver, etc. Part. What happens after injury as directly or after any time (photo 1a & b, 2, 3).

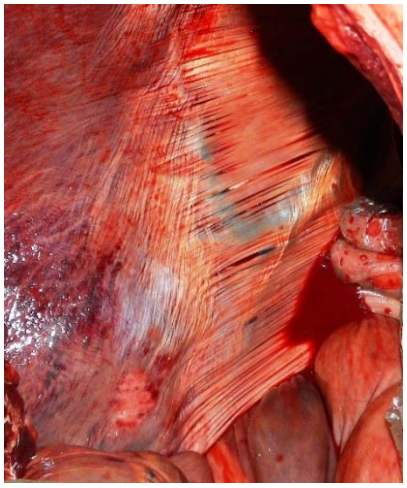
A   B

PHOTO 1 Lobe of the liver in the chest cavity

Photo 2. Hemorrhagic effusion the abdominal cavity

Photo 3. Reposition large colon of of the chest cavity through the abdominal diaphragm rupture

Sweep abdominal organs may undermine the margins diaphragm rupture and necrotic , in addition , their presence in the chest cavity can trigger inflammatory processes , enhance pulmonary

capillary permeability , and as a result - the emergence of pulmonary edema. As a result of changes squeezing and intrathoracic pressure may occur atelectasis and death of animals from asphyxia .

Rupture of the diaphragm is the most demanding closed injuries in horses due to the pathogenesis , the absence of specific clinical signs , the difficulty of diagnosis.

Diaphragmatic hernia differs significantly from each other in origin, clinical manifestations , course and prognosis . They are divided into congenital (CDH) and acquired (ADH) , traumatic and non-traumatic . Most often in horses meet traumatic false hernia of the diaphragm. In our opinion, this is due to singularities of operation and maintenance of these animals. Thus, according to some authors, about 70 % herein diaphragmatic hernia , is the result of chest trauma and abdominal area , prepared, for example , in the fall after overcoming an obstacle or at the time of jumping over the barrier , and, if assume heavy physical loads, After a fight with other horses or a car accident . Furthermore, the known event of a DH of horses under strong stress during mating.

Clinical symptoms of diaphragmatic hernia extremly variability depending on the size of diaphragmatic rupture on what abdominal organs were displaced in the chest (left lobe of the liver, stomach? or a loop gut), their excesses in the hernial and lung impaction And mediastinal shift in a healthy way . Because some cases DH accidentally discovers posthumously which confirms the version of the benign course of the disease in horses , do not carry heavy load. In mild cases in animals with a diaphragm rupture there has been little oppressed , anorexia , signs shock , acute same diaphragm rupture - symptom of colic and bleeding in the abdominal and thoracic cavities.

Diaphragmatic hernia should be suspected in horses with abdominal pain of moderate to severe extent they could not be identified. This is a pain out of harassment localization intestines, provoke increased abdominal pressure .

If the infringement bowel the picture of strangulation obstruction, followed by a symptom of colic (pain cramping). Of the common symptoms immediately after harass dominate signs of shock: pallor, sweating, tachycardia, severe shortness of breath, lower blood pressure. Late join intoxication symptoms progress, further quickens the pulse - to 75-80 beats per minute (at a rate of 24-42). Continue to expand respiratory problems caused by impaired contraction of the diaphragm, pain when inhaling and exhaling, secondary lung diseases due pleurisy or pneumothorax compression arise in lung compensatory tachypnea.

Palpitations respiratory movements can provoke pain in the damaged area of the diaphragm. Horse can take uncharacteristic posture, for example, " Pose sedentary dog" or stand with widely spaced forelimbs (photo 4) .

Photo 4. "Pose sedentary dog" - horse with diaphragm rupture.

The possibility of death due to acute heart failure or acute respiratory failure (atelectasis), meets according to some sources of information in 33% of cases traumatic diaphragmatic hernia in horses.

When diagnosing DH infringement only method of treatment is surgery for urgent indications, has several objectives: 1) To remove a hernia, 2) Refine hernial 3) normalize relations between chest and abdomen. Body in viability infringement is returned to the abdominal cavity and sutured defect in the diaphragm at irreversible changes affected organ resected.

Recommended for favorable outcome - early surgical treatment of diaphragmatic hernia. It is noted that surgical intervention in chronic DH can cause pneumothorax after the separation of the abdomen and lungs.

CONCLUSIONS

Clinical symptoms of diaphragmatic hernia are very diverse and depend on the size and localization of diaphragmatic rupture, as well as on what abdominal structures and force of compression of the lungs. Diaphragmatic hernia should be considered as one of the possible etiological factors for recurrent colic, intractable drug therapy in horses with abdominal pain is recomended. When diagnosing DH infringement only method of treatment is surgery for urgent indications. Forecast at diaphragmatic hernia in horses is unfavorable. In the early post-operativon period intensive care and control of oxygen percentage in arterial blood are needed.

A STUDY OF POSTOPERATIVE COMPLICATIONS WHEN VOLVULUS OF THE STOMACH IN DOGS

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Abstract

The paper presents the monitoring of postoperative complications when volvulus of the stomach in dogs. The number of complications depends on the time since the onset of inversion, with the death of 1 animal installed during a 6-7 hour inversion and 4 dogs died in the postoperative period with a duration of inversion 7-8 hours.

Introduction.

The paper presents the monitoring of post-operative complications of twisting of the stomach in dogs. The complication rate depends on the time since the start of twisting, with death of the animal 1 is set to the turn-up period 6-7 hours and 4 dogs died in the postoperative period with a duration of 7-8 hours bloat.

Mortality of animals and severity of complications directly related to the fact that not enough data on the activities guaranteeing the clinical control of pathological processes in the postoperative period in the twisting of the stomach [3; 2; 1].

The goal of this study - to study the characteristics of post-operative complications of twisting of the stomach in dogs.

Materials and methods. Under supervision, were clinically affected dogs large (n = 35) and giant breeds (n = 23) in an amount of 58 individuals with the twisting of the stomach by 4-8 hours from the beginning of the turn-up. Statistical processing of the results was performed using MedCalc for Windows.

The results of research. Monitoring of postoperative complications when twisting of the stomach in dogs in our study showed that out of 58 dogs in 28 animals were identified complications, which amounted to 48.2%. At the same time it registered the death of 5 individuals, representing 8.6%. (Table. 1).

Number of dogs with complications, depending on the length of the turn-up showed 28 dogs with long bloat 4-5 hours, we studied 18 males and 10 females, and the number of dogs with complications was 9 animals (32%). Of the 14 dogs with bloat lasting 5 - 6 hours were 8 males and 6 females, we found 8 complications, which amounted to 57.1%. In 10 dogs with gastric volvulus duration of 6-7 hours complications were noted in 6 cases, while the fixed 1st death of the animal,

and of 6 dogs duration bloat 7 - 8:00. Number of dogs with complications was 5 animals, with mortality noted in 4 individuals, which accounted for 66.7% (Tab. 2).

Table 1

Number of dogs with complications according to on the length of the turn-up

Number of Dogs (n=58)	Sex		Time after inversion (h)	Number of goals with complications	Number of goals with complications %	Mortality after surgery	Mortality%
	♂	♀					
28	18	10	4 - 5	9	32,1		
14	8	6	5 - 6	8	57,1		
10	6	4	6 - 7	6	60,0	1	10,0
6	2	4	7 - 8	5	83,3	4	66,7

Table 2

The severity of complications, and combinations thereof, depending on the length of the turn-up (percentage of complications)

Number of Dogs (n=58)	Time after inver-sion (h)	The number of complica-tions after surgery	The clinical manifestation of complications				
			ОПоч.Н Абс. (%)	ОПеч.Н Абс. (%)	ССС Абс. (%)	Bleeding Абс. (%)	Pus Абс. (%)
28	4 - 5	12	4 (33,3)	1 (8,3)	3 (25,0)	2 (16,7)	2 (16,7)
14	5 - 6	14	6 (42,9)	2 (14,3)	4 (28,6)	2 (14,3)	0 (0)
10	6 - 7	12	7 (58,3)	3 (25,0)	2 (16,7)	0 (0)	0 (0)
6	7 - 8	10	5 (50)	2 (20)	3 (30)	0 (0)	0 (0)

Note. Complications in 50% of cases, followed by the ICE syndrome.

OPoch.N - acute kidney failure; OPech.N - hepatic impairment; CCC - the cardiovascular system

Studies have shown that in animals operated on because of twisting of the stomach have, in most cases, complications, accompanied by a variety of clinical manifestations. Often accompanied by complications of DIC syndrome and had a combination of several pathological conditions that we have read how to combine complications. The severity of complications, and combinations thereof, depending on the duration of the turn-up, so in 28 dogs operated after 4 - 5 hours after the start of bloat was recorded 12 complications and combinations thereof. It was found 33.3% of acute renal failure (OPoch.N), 8.3% of hepatic failure (OPech.N), we also found a violation of the cardiovascular system (CVS), which accounted for 25.0%. There have also been installed complications such as internal bleeding (16.7%) and purulent complication of subcutaneous tissue (16.7%). Of the 14 dogs were operated after 5 - 6 hours are 14 different complications, which included 42.9% OPoch.N, OPech.N 14.3%, 28.6% CCC 14.3% bleeding. Thus, complication observed by us in 48.2% of cases. The greatest number of complications occurred because OPoch.N less OPech.N and CCC. A large number of associated complications and their number depends on the time since the start of twisting, with death of the animal 1 is set to the turn-up period 6-7 hours and 4 dogs died in the postoperative period with a duration of 7-8 hours bloat.

MORPHOLOGICAL ASPECTS OF REPRODUCTIVE SYSTEM OF QUAILS

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Abstract

In the article the features of reproductive system of quails (ovarium and oveductus) are investigated through morphological technigues.

Results.

The reproductive system is characterized by asymmetry of quail reproduction and strong development of specific glands in the oviduct, forming a shell egg.

With the help of macro- and micro-dissection, planimetric, stereometric and histological techniques of research, we studied the structural organization of the reproductive organs in quail from hatching and up to 420 days of age.

Reproductive organs consist of quail uviform left ovary where the egg formed, and left tubular oviduct. Ovary polymorphic form, located close to the cranial lobes of the left kidney and the left adrenal gland is different from others of its whitish color. It is most intensively during the 90 days of age and up to 180 days of age. The ovary is isolated cortical and medullary areas, the relationship between which is not always clearly expressed. Outside the ovary is covered by a two-layer (epithelial and connective tissue) membrane, which is the follicular layer. The ovary is calculated quail 1-2 thousand follicles. As the oviduct, up to 30 days of age, he has a direct view of the thin cord and only to a 60-day-old begins to differentiate into departments. The oviduct is located in the left half of the phrenic cavity, the front end of the oviduct opens under the ovary in the body cavity, rear - the cloaca. Oviduct wall consists of an outer layer, an extension leaf peretonialnogo cavity medium which contains longitudinally and circumferentially spaced contact-smooth muscle dies and inner consisting mainly of epithelial cells of the mucosa. By 120 days of age in the oviduct are five divisions: the funnel, where fertilization takes place; protein department - the longest oviduct department, it formed a protein shell; isthmus, where the film is formed podskorlupovaya; skorlupovy department shells are formed, and the lead department, where the egg is covered nadskorlupovoy shell. Among all sections investigated, the greatest interest and protein skorlupovy divisions since their structure predominates glandular epithelium having functional activity. The maximum value of glandular apparatus oviduct is between 120 days of age, 300 days old and, apparently, ensures maximum efficiency quail during this period.

MECHANISMS OF ACTION OF TOXOPLASMA GONDY ON THE BODY OF THE INTERMEDIATE HOST

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Abstract

The highly prevalent parasite *Toxoplasma gondii* manipulates its host's behavior. In infected rodents, the behavioral changes increase the likelihood that the parasite will be transmitted back to its definitive cat host, an essential step in completion of the parasite's life cycle. Next, we describe the theories of the mechanism of action of Toxoplasma on the behavior of its intermediate host.

Introduction

Toxoplasma Gondi (T. Gondi) - intracellular parasite that changes the behavior of their hosts. To understand the importance and benefits of selective behavioral changes imposed by T. Gondi, consider the life cycle of the parasite. T. Gondi dangerous not only for animals but also for people, it is the ultimate owner of the representatives of the cat family, is the only animal in which the parasite can pass the stage of sexual reproduction. T. Gondi can infect many warm-blooded animals and use them as intermediate hosts.

In these intermediate hosts of T. Gondi multiplies rapidly in the tissues, is not inhibited by the host immune system. Education oocysts occurs primarily in the brain, it allows you to change the behavior of its intermediate host so that in the shortest time to complete its life cycle. For example, infected mice no neophobia (fear of the new), they are not afraid of the smell of cats, sometimes even seek it. Despite the fact that man is a dead-end intermediate host of the parasite, T. Gondi and his attacks. A correlation was observed between the prevalence of T. Gondi and an increased risk of traffic accidents, as well as extraversion and lower conscientiousness in the study infected 47 infected and uninfected 276 students (Flegr, 2013). Just T. Gondi distributed not only on land but also at sea. Marine mollusks, filtering water, infected with Toxoplasma, which does not harm them, encapsulated in tissues. Callan, who ate such shellfish as infected with the parasite, but because he is too weak immune response to T. Gondi, often an animal dies.

Objects and methods of research

The mechanisms responsible for behavior change to intermediate host is currently unknown. Consider three theories mechanism of action of T. Gondi on the body. The first discusses the importance of localization of the parasite. In 1972, the experiment was carried out in which the experimental rats surgically damaged amygdala, after which they put to the lulling cats. Experimental rats were not afraid of the cat odor, even physically in contact with cats (Blanchard and Blanchard, 1972). We can assume that the high accumulation of T. Gondi in areas of the brain responsible for fear, can damage the amygdala, thus changing the specific behavior of its intermediate host. With color genes luminescent coelenterates painted T. Gondi and laboratory rodents infected them, and now the parasite fluoresces, and transmits that gene to their offspring, so that you can easily see in which part of the brain is localized the parasite. After examining the medulla of mice revealed that T. Gondi concentrated not only in the almond-shaped bodies, but also in the cerebral cortex. However, the intermediate hosts of changing a certain aspect of his behavior, but otherwise they remain healthy, which means that a large concentration of the parasite in a certain part of the brain does not disturb its function, like surgery.

The second theory considers the strong immune response caused by T. Gondi. It has been suggested that because of increased serotonin levels, and varies the behavior the host, but the level of serotonin in healthy and infected mice were identical, therefore this theory thrust.

Just two areas of published evidence suggest that the parasite alters signaling neurotransmitters. This is the third theory of the impact of the parasite on the behavior of its intermediate host. Disorders in behavior caused by a parasite, disappear with drugs used to treat psychological disorders. In particular, if you give a mouse infected T. Gondi haloperidol (a dopamine antagonist), the symptoms of infestation leave.

The genome of T. Gondi have the gene that produces the enzyme tyrosine hydroxylase, which is normally involved in the synthesis of dopamine (Gaskell, 2009). Several studies have shown that infection with T. Gondi of the human body can have severe neurological consequences (Derkits, 2010). The parallels were drawn between the prevalence of T. Gondi and schizophrenia (Brown, 2005; Mortensen, 2007; Torrey, 2007). Despite the fact that schizophrenia - a multifactorial disease, pharmacological and genetic data suggest that dysregulation of dopamine metabolism is involved in schizophrenia (Howes, 2009; Seeman, 1975). This begs the question - Does T. Gondi on the metabolism of dopamine, especially on the basis of evidence on tyrosine hydroxylase encoded by T. Gondi. Other neurons in the body communicate with different substances, some via dopamine. Some recent dopamine is synthesized from L-DOPA, which is a catalyst for the synthesis of the

enzyme tyrosine hydroxylase. When these neurons are infected with T. Gondi, a parasite that increases the production of dopamine in these cells several times. Staining brain sections of mice infected (antibody staining) confirmed that around Toxoplasma organism is much dopamine. Consequently, it is a significant increase in parasite organizes dopamine synthesis in nerve cells. Just had taken antibodies that are specific for tyrosine hydroxylase and found that it is contained in the neuron cells, the parasite ejects the neuron enzyme tyrosine hydroxylase.

Results

Many neurons synthesize dopamine, but a small part of them synthesizes it from L-DOPA, however, this mechanism provides a certain effect on neurons and strictly specific changes in the behavior of the intermediate host of the parasite.

Output

T. Gondi able to change the behavior of a very narrow host due to the fact that it increases the production of dopamine in a specific population of neurons. Such changes in the behavior of the owner are beneficial to the parasite.

References:

1. E. Prandovszky, E. Gaskell, H. Martin, J. P. Dubey, J. P. Webster, G. A. McConkey; The Neurotropic Parasite Toxoplasma Gondii Increases Dopamine Metabolism; Published: September 21, 2011; DOI: 10.1371/journal.pone.0023866

2. G. A. McConkey, H. L. Martin, G. C. Bristow, J. P. Webster; *Toxoplasma gondii* infection and behaviour – location, location, location?; The Journal of Experimental Biology; Received April 24, 2012.

MOLECULAR TOXINOTYPING OF CLOSTRIDIUM PERFRINGENS AND CLOSTRIDIUM DIFFICILE ISOLATED FROM CATTLE BY PCR ASSAYS

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Abstract

Clostridium perfringens and C. difficile are common causes of enteritis and enterotoxaemia in humans and animals. Understanding the diversity of toxigenic strains may lead to a greater understanding of the pathogenesis in cattle and aid in the development of effective intervention methods for controlling clostridial infections.

Results.

Clostridium perfringens and C. difficile are common causes of enteritis and enterotoxaemia in humans and domestic and wild animals. The purpose of this study was to investigate the enterotoxigenity of Clostridium cattle isolates by PCR assays.

One hundred and nineteen bovine (faecal and intestine) samples were analyzed by culture assay. All C. perfringens isolates were screened for the characterization of the toxinotype. C. difficile strains were PCR-tested for the presence of tcdA/tcdB and cdtA/cdtB genes.

Overall, 53 bovine samples (44.5%) tested positive: 37 for C. perfringens and 16 for C. difficile. In two C. perfringens-positive diarrhoeic samples, C. difficile was also isolated. In one cow and three calves, C. perfringens was isolated from the faecal and the intestine sample; in one calf, it was isolated from the intestine specimen. All C. perfringens-positive specimens (32 faeces and 5 intestines) belonged to 33 diarrhoeic animals (23 calves, 8 cows and 2 heifers). Twenty-seven

(23 faeces and 4 intestine) of the 37 C. perfringens-positive isolates (73.0%) were from calves. In particular, 67.6% of diarrhoeic calves (n=23 of 34) yielded isolates of C. perfringens.

All C. perfringens isolates were type A; none of the 37 C. perfringens strains were enterotoxin-positive (plc+/cpe-) by duplex PCR.

Out of the 18 C. difficile isolates, 11 (61.1%) belonged to healthy, non-diarrhoeic dairy cows, 4 (22.2%) to diarrhoeic calves and 3 (16.7%) to diarrhoeic cows. C. difficile strains resulted tcdA/tcdB and cdtA/cdtB-negative.

Understanding the diversity of toxigenic strains may lead to a greater understanding of the pathogenesis in cattle and aid in the development of effective intervention methods for controlling clostridial disease outbreaks.

FEATURES OF CATECHOLAMINES DISTRIBUTION IN DOG'S HEARTS WITH EXPERIMENTALLY CREATED DIFFERENT KINDS OF MYOCARDIUM HYPERFUNCTION AND THEIR ROLE IN THE DEVELOPMENT OF CONGESTIVE HEART FAILURE AND ARRHYTHMIAS

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Abstract

The article reveals features of catecholamines distribution in dog's hearts with experimentally created different kinds of myocardium hyperfunction and their role in the development of congestive heart failure and arrhythmias.

Results.

Various hyperfunctions infarction (GM) lead to a powerful emotional stress on the body and contribute to the development of various complications (VI Burakovsky, 1981, 1983; Meshalkin EN et al., 1978; Flitter WD, 1993; Hayashi J. et al., 1996). According to the researchers these hemodynamic reconstruction cause an increase of catecholamines in plasma and in the myocardium. Recently, particularly noradrenaline, can accumulate in large amounts within the intramural myocardium axons in the form of so-called "catecholamine bombs» (Kuosala K., 1985, 1988). It draws attention to marked differences in the content of adrenaline and noradrenaline in various forms in different parts of the GM of the heart muscle.

Changes in the metabolism of the heart muscle is not without reason, is associated with an elevated content of catecholamines (eg, epinephrine) which dramatically increase the consumption of oxygen by the myocardium while reducing the efficiency of the heart muscle. This fact is the basis for modeling metabolic focal lesions of the heart and identify stereotypical forms of myocyte damage (ZM Kiselev, 1988; Nepomnyashchikh LM, 1981). Purpose - to determine the features of the distribution of catecholamines in the myocardium in dogs with experimentally established various forms of myocardial hyperfunction and to assess their role in the development of heart failure.

The content of catecholamine and hemodynamic animals with atopic form of myocardial hyperfunction. When an isotonic form of GM hemodynamics and functional state of the myocardium was determined hemodynamic compensatory adjustment of the right ventricle. The end diastolic volume was significantly increased, but this did not lead to significant changes in end-diastolic pressure. Apparently, this phenomenon linked normal stiffness of the myocardium, indicating a satisfactory extensibility of the right ventricle.

The content of catecholamine and hemodynamic in animals with a form of isometric myocardial hyperfunction. In animals with a form of isometric contraction GM figures slightly different from the norm. The index of myocardial stiffness was normal, indicating good extensibility ventricular chamber and maintaining a satisfactory elastic properties, and satisfactory adaptation to hyperfunction. Against this background, revealed various changes in the concentration of epinephrine and norepinephrine.

The content of catecholamines in animals with mixed GM. When mixed form GM hemodynamic situation was characterized by an overload of the right heart volume and accompanied by resistance and compensatory restructuring intracardiac hemodynamics. This occurred against the background of myocardial hypoxia, which is reflected in the content of catecholamines in the heart muscle.

Morphological changes of myocardial cardiotoxic effects of catecholamines. Prolonged activation sympathoadrenal you can cause myocardial necrosis and, in turn, be the cause of acute heart failure (BA Konstantinov 1981; Flitter WD, 1993). Experimental studies have shown that elevated concentrations of catecholamines have toxic effects (A. Hecht, 1975). In connection with these authors studied the morphological changes in the myocardium in animals with a mixed GM. Morphologically determined heart hypertrophy of cardiomyocytes of ventricles, small pockets of cardiosclerosis, fibroelastosis and atrial endocardial sclerosis. These results are consistent with the results of Raab W. (1974) which has been shown experimentally that kateholaminemiya no direct effect on the destruction of heart muscle cells, this effect occurs in a roundabout way - through the promotion of the transmembrane entry of calcium into the cell.

Our results show that the mechanism of small focal myocardial necrosis play the role of multiple factors: structural and functional abnormalities of the coronary arterial heart and metabolic disorders of muscle cells.

Activation sympathoadrenal on a background of myocardial hyperfunction may be accompanied by the development of metabolic necrosis in all parts of the heart and to be one of the causes of early heart failure.

Studying the mechanisms of vascular-metabolic damage cardiomyocytes voltage microvasculature when GM revealed that occur in the heart muscle are different in nature and tissue ultrastructural changes associated with predominant participation of the metabolic and circulatory factors. The results should be considered from the standpoint of parenchymal-stromal-microcirculatory relations in the aspect of adaptive-compensatory processes that enhances understanding of the structural general pathological responses of damage to the heart, the reversibility of the pathological changes.

GROWTH OF MUSCLE FIBERS IN BROILER CHICKENS CROSS "CHANGE 8" OF DIFFERENT SEX AND AGE

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Abstract

The diameter of muscle fiber of superficial chest muscle was increased from 8, 42 um (one-days) to 55, 1 um (49-days), biceps femoris from 8, 50 to 56, 9 um; chicken from 8, 37 and 8.39 um to 51, 3 and 52, 5 um with

Results

Modern requirements to the quality of broiler meat are reduced to ensure that the meat had in its structure as much as possible the amount of dietary protein at optimum fat content. A protein that is known to contain the muscle tissue, so its growth in poultry interests, both biologists and practitioners-butchers.

It was found that post-natal growth of skeletal muscle is accompanied by growth of individual muscle fibers, rather than increasing their numbers after birth [1]. It is believed that the growth of muscle fibers caused by two factors: an increase in diameter (due to the accumulation of myofibrils) and muscle fiber elongation (due to newly formed sarcomeres) [2].

To study the dynamics of growth of muscle tissue had a histological study of different types of muscles and topographic location of different ages broilers. We studied the surface of the thoracic and biceps femoris.

For this purpose from the central part of the muscle of the abdomen in males and females were excised and samples fixed in 10% neutral formalin aqueous solution and then embedded in paraffin blocks were cut on a microtome, sections were cut and stained with eosin gematoksili. The diameter of the muscle fibers is determined - when using a 40x10 magnification image analyzer DiViSy.

The measurement results are summarized in the table.

Table

The diameter of the muscular fibers in broilers, m

Age, days	Cock		Chicken	
	Surface chest	Femoral biceps	Surface chest	Femoral biceps
1	8,42±0,29	8,50±0,30	8,37±0,28	8,39±0,28
21	30,5±3,14	31,8±3,15	29,7±3,17	30,9±3,16
25	38,9±3,79	40,0±3,96	37,8±3,70	38,7±3,61
28	43,4±4,01	45,8±4,10	40,2±3,68	42,5±3,70
33	48,9±4,90	50,9±4,93	45,1±4,15	48,1±4,30
35	50,1±5,19	51,5±5,21	46,2±5,17	48,1±5,24
38	52,9±5,38	53,8±5,39	47,7±5,68	50,7±5,42
42	54,9±5,85	55,8±5,56	50,1±5,83	51,9±6,01
49	55,1±6,09	56,9±6,25	51,3±6,10	52,5±6,58

The data show that 49-day-old broilers, over one day old cockerels with muscle fiber diameter surface pectoral muscle is increased by an average of 46.68 microns, thigh biceps - 48.4 m, chickens - 42.93 and at 41 11 microns. All the studied muscles consist of muscle fibers of different sizes, with no variations in amplitude depending on the age of their diameter broilers, muscles, or accessories to a particular type could not be detected.

By 49 days of age males diameter of the muscle fibers of the surface of the pectoral muscle in comparison with the one-day increased by 6.54, dauglavoy hip - 6.69 times, the chickens - 6.13 and 6.26 times, while the carcass weight of muscle tissue - at 116.18 and 104.08 times. This suggests that an increase in muscle mass occurs not only by increasing the diameter of muscle fibers, but also by increasing the length of the muscle fibers.

Most of the increase in the diameter of muscle fibers occurs in the first 33 days of life of broilers, the growth of which males have an average day is at 1.26 microns (surface rib) and 1.32 (biceps thigh) um, chickens - 1,15-1, 24 microns. Further growth of the diameter of the muscle fibers in broilers and gradually decreased, from 33- to 49-day-old males have an average daily gain made by 0,39-0,38 mm; in chickens - 0,38-0,28 m, respectively.

With age, muscle fiber diameter of the cockerels superficial pectoral muscle increases with 8.42 micron (one-day) to 55.1 m (49-day), biceps femoral 8.50 to 56.9 mm; from chickens to 8.37 and 8.39 to 51.3 microns and 52.5 microns, respectively.

No significant differences in diameter between the surface of the muscle fibers pectoral muscle and the biceps femoris, as well as between males and hens of the same age is not revealed P <0.05.

Thus, we can conclude that the diameter of muscle fibers depends on the age, sex and poultry anatomotopograficheskogo location on the body muscles.

THE METHOD OF PRODUCING NATURAL MALE SEX PHEROMONES AND THEIR PRODUCTION TESTING

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Abstract

The article presents the results of natural boar and bull sex pheromones made of males' fabrics excreta. It is shown that sex pheromones have a stimulating effect on the timing of puberty and the development of female reproductive organs.

Introduction.

In recent years, biologists have developed an interest in the problems of chemical communication in animals including behavior management of individuals with olfactory signals. The role of sex pheromones in the regulation of reproductive function, they conducted extensive field testing in various types of animals (Narizhny, 1991; Sein, 2009). At the same time remain insufficiently studied issues such as the effect of sex pheromones of male animals for a sexual cycle in females, their histological structure and functional activity of the reproductive organs, the content of the morphological and biological components of the blood.

Given the above, we carried out experiments to study the effect of natural sex pheromones boars and bulls on the reproductive function of sows, cows and heifers.

Results. Natural male sexual pheromones prepared according to our method. The feedstock used testes, bladder wall tissue and urine of adult males. Technological process includes the following stages: rough milling testis and bladder tissue homogenization prior to simultaneous state in the presence of surfactants, incubation, mixing, centrifuging the urine, steam distillation in a special system, by preparation of sterility and toxicity.

Production tests produced drugs of natural sex pheromones resulted in farms of the Kursk region.

In the first experiment, the preparation of natural sex pheromones to stimulate puberty in pigs. To this end, two groups were formed mature gilts analog large white breed of 20 goals each. Group 1 guinea pigs treated with the drug, the group 3 animals were controls and treated with distilled water. Pheromones used in a day by spraying at the head of animals using an atomizer. Dose is 0.5 ml / head. Stimulation was performed 6 months of age and pigs before puberty (first estrus manifestations). Hunt was determined using a boar-tester.

On day 7 after the first detection of estrus reins controlling the slaughter of pigs 5 from each group. After the slaughter of the animals were removed genitals, determine their weight, linear parameters, the area of the uterine horns by projection on the graph paper, set the volume of the ovaries by dipping them into a measuring vessel with water was determined by the size of the follicles using a caliper.

The results showed that the majority of pigs treated with sex pheromones, puberty occurs in the first 10 days after the beginning of stimulation (Table. 1), and in the control animals is significantly delayed, and a 30-day observation period was revealed only 9 pigs .

Table 1

The onset of puberty in gilts exposed drug stimulation of natural sex pheromones boar

Groups	n	Spotted rut in pigs during the day after stimulation						
		1-5	6-10	11-15	16-20	21-25	16-30	Всего
1 (experimental drug)	20	8	7	2	-	1	-	18 (90%)
2 (control)	20	-	-	3	3	-	3	9 (45 %)

In turn, it has been found that stimulation of gilts, natural sex pheromones positively influences the growth and development of reproductive organs (Table. 2).

In the second experiment was carried out testing of the drug production of natural sex pheromones bull. To this end, it was selected two groups of 30 animals each. Cows 1 group treated with the drug. Cows 2 control groups were, they were not subjected to stimulation. Cows were carried out on a daily basis, starting from the third day after calving and before the onset of estrus. The dose of 0.5 ml / finish, apply it by spraying nasal mirror animals.

It was found that the cows exposed stimulation manufacture of preparations before rut occurred (Table. 3) and, after their insemination pregnant animals was greater than in the control.

Table 2

The development of the reproductive organs of gilts subjected to drug stimulation of natural sex pheromones boar.

Indicators	Groups	
	1 (experimental drug)	2 (control)
n	5	5
Uterine weight, g	390,5 ± 4,5*	368,0 ± 4,0 *
The length of the uterine horns, sm	173,0 ± 2,0 *	163,0 ± 3,0
The area of the uterine horns,$см^2$	794,5 ± 8,0 *	169,5 ± 8,1
Length jajtceprovoda, см	38,0 ± 0,8	37,0 ± 0,8
Ovarian Mass	6,8 ± 0,2 *	5,5 ± 0,3
The volume of the ovaries, $см^3$	5,7 ± 0,1 *	4,4 ± 0,2

Note: * - P <0.05, significant differences compared to the control group.

Table 3

Display of oestrus in cows and their insemination results after drug stimulation of natural sex pheromones bull

Groups	n	It has been in the hunt for 21 day.	Of them were pregnant	Pregnancy rates of total number of animals
1 (experimental drug)	30	27	26 (96,3 %)	86,7 %
2 (control)	30	21	17 (81 %)	57 %

In the third experiment, the preparation of natural sex pheromones bull used to stimulate sexual reproduction in cows and heifers with ovarian hypofunction. About low functional activity of the ovaries was judged by the results of the vaginal and rectal examination, as well as according to the morphological and biochemical analysis of blood.

Selected animals with ovarian hypofunction were divided into equal groups - the experimental and control. Experienced cows and heifers treated with sex pheromones, and control - have not undergone stimulation. After development of animal estrus artificially inseminated.

The results showed (Table. 4) that the beginning of the experiment the animals of all groups of the uterus, usually had reduced dimensions, mild rigidity, its horns were thinned and displaced in the caudal part of the pelvis.

Table 4

Display of oestrus in cows and heifers with ovarian hypofunction and the results of insemination after stimulation medication natural sex pheromones bull

Animal group	n	Spotted hunting 1st month after the start of stimulation	Of those fertilized (%)	Spotted hunting in the 2nd month after the start of stimulation	Of those fertilized (%)
1 (experimental drug)	24	15	10 (67 %)	3	2 (67 %)
2 (control)	24	4	2 (50 %)	4	2 (50 %)

The ovaries have a size of a bean to a woman, firm to the touch, flat, smooth surface of. On palpation of ovarian follicles and corpora lutea were not found. The mucous membrane of the vagina and cervix was pale in color and sparsely humidif. Hypovarianism accompanied by a lack of sexual cycles.

In turn, it was found that the cows and heifers subjected biological stimulation sex pheromones were significantly higher reproductive performance when compared to control animals.

Thus, the results of the research indicate that the obtained preparations natural sex pheromones boars and bulls has a stimulating effect on the reproductive function of sows and cows, and can be recommended for practical use in the practice of animal husbandry and veterinary medicine.

MORPHOLOGICAL ASPECTS OF IMMUNE SYSTEM OF QUAILS

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Abstract

In the article the features of anatomy of central (thymus, bursa, cloacalis) and peripheral (glandula palpebral tertius, lymphoid cecal tonsil, lymphoid diverticulus and spleen) bodies of the immune system of quails are described.

Results. Using the macro and micro-dissection, morphometric and planimetric research methodology followed by statistical processing, we studied the structural organization of the immune system quails from hatching and up to 420 days of age.

The bodies immune system quail according to function divided into central and peripheral. By the central organ of the immune system are the thymus and cloacal (Fabricius) bag to peripheral - spleen, lymphoid diverticulum (Meckel), cecal lymphoid plaque garderova iron (iron third century), clusters of lymphoid elements of the pharynx, larynx, bronchi. The thymus is located in

quail along the spinal column in the area of the last cervical vertebra and consists of 6-8 lobes oval grayish-pink. In each lobe of the thymus providing 4 zones: subcapsular, cortical, medulyarnuyu zone and perivascular spaces. As for the bursa of Fabricius, it is located ventral to the lumbar-sacral bone phrenic body cavity. Bursa of Fabricius of quail has an ellipsoidal shape and a cavity into which the folds appear. In each series 1-2 fold arranged lymphoid follicles surrounded by connective elements. In lymphoid follicles secrete 3 zones: cortical, medullary and border. Duct of bursa of Fabricius opens directly into the cloaca. Garderova iron, while in depth periorbity eyes as a duct that opens only in the conjunctival sac. In the parenchyma of the gland revealed lymphoid nodules and congestion associated with the synthesis of immunoglobulins.

Lymphoid Meckel's diverticulum is a vestige of the yolk sac is a bag-shaped body cavity connected by short channels to the cavity of the jejunum. Spleen has an oval shape and is located on the right side of the stomach. The parenchyma of the spleen consist of red and white pulp. Caecal lymphoid plaque, settling along the gastrointestinal tract, have the same relationship with its cavity. Thus, these organs of the immune system quail are like "sensors" that inform the immune system of the antigenic diversity of the environment.

HISTOLOGICAL CHARACTERISTICS GOITER ROOSTERS CORNISH AND PLYMOUTH ROCK IN POSTNATAL ONTOGENESIS

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Abstract

Studied the histological structure of goiter of Cornish and Plymouth chicken (males). It was found that the intensive development of goiter shells are observed up to 155 days of age, followed by a gradual decrease in the growth of up to 420 days. Also was set the average degree of correlation between the male body weight and the thickness of the mucous membrane of the goiter.

Results. Poultry production in the Russian Federation is currently the most actively growing sector of agriculture. Production of poultry meat based on the use of broilers. Intensive development of broiler production in most breeding work obligation. HAG "Change" in collaboration with scientists VNITIP conducts a comprehensive breeding program to develop highly cross beef. However, the fundamental histological studies of goiter and morphologically correlative relationships with male body weight was carried out. Therefore, the aim of our work was to study the morphology of goiter in meat breeds roosters in postnatal ontogenesis.

Material for the study served cocks 9 and age groups, from which samples were taken from the middle of the crop, followed by fixing them in 10% aqueous formalin solution for 3-5 days. Then paraffin blocks were made, followed by obtaining gistosredov in the thickness of 3-4 mm on the luge microtome MC-2. Sections were stained with hematoxylin and eosin. In addition, gistosrezy stained Kreybergu (detection of glandular components, and protein) and Van Gieson (painting pikrofuksinom to detect connective-tissue component). Additional staining methods allow much more precise differentiation histological structure of the crop.

Table

The morphometric parameters of goiter in males Cornish and Plymouth (R≤0,5 *; p ≤ 0.05).

Years , *days*	**Weight** *(g)*	**Mucous** *(mkm)*	**Submucosa** *(mkm)*	**Muscle** *(mkm)*	**Total** *(+serous 23 mkm)*
Goiter (Cornish)					
1	0,2025±0,03	661,54±0,63	401,98±0,23	451,42±0,18	1537,94
7	4,131±0,11	776,4±1,84	480,84±2,18	486,05±1,98	1766,29
14	5,225±0,08	923,07±1,92	578,44±1,43	640,75±3,12	2165,26
28	5,4675±0,14	977,23±2,17	640,73±2,31	709,58±5,51	2350,54
42	6,08825±0,24*	936,23±7,32	547,2±3,03	698,04±4,29	2204,47
84	6,755±0,11	1048,94±7,43	642,66±2,6	830,91±0,62	2545,51
105	8,615±0,74	1423,38±6,7	925,05±1,68*	999,01±2,13	3370,44
155	9,1565±0,83	1130,68±7,66	724,32±1,46*	801,19±3,99	2679,19
220	9,65±1,04	907,56±9,3	574,41±2,7	648,05±6,1	2153,02
420	11,25±0,03*	661,54±0,63	401,98±0,23	451,42±0,18	1537,94
Goiter (Plymouth)					
1	0,18±0,01	606,14±1,09	368,44±0,28	413,69±0,27	1411,27
7	3,98±0,04	744,23±1,65	460,98±2,11	465,98±2,25	1694,19
14	4,95±0,06	876,33±1,99	549,11±2	608,34±3,82	2056,78
28	5,26±0,08	928,62±5,85	608,87±4,6	674,32±7,15	2234,81
42	5,62±0,2	893,47±10,13	635,22±6,71	644,51±9,37	2196,2
84	7,01±0,1	1089,54±10,8	667,56±5,62	863,14±5,49	2643,24
105	9,29±0,59	1337,35±9,15	869,27±5,93	938,71±6,25	3168,33
155	8,87±0,79	1095,99±12,02	702,13±5,84	776,66±6,46	2597,78
220	9,32±0,96	877,18±10,68	555,24±6,25	626,43±8,58	2081,85
420	10,18±0,01*	606,14±1,09	368,44±0,28	413,69±0,27	1411,27

The study of the structural components in histological preparations were performed using ergonomic trinocular microscope transmitted light Meiji Techno MT4000 at magnifications of × 4, × 10 and × 40. To obtain representative random sampling of fields of vision of the microscope (n≥10) carried out data, according to the measure of histological structures. The measurement results are summarized in the table.

Importantly, the serosa goiter was measured in all studied age of the bird, its thickness ranged 23-23,2 m. This is because the serosa consists of loose connective tissue, covered by one layer of flat mesothelial cells. Therefore, in the future this shell goiter larger do not dwell. Also, the study revealed the inability to adequately measure the diameter and the total thickness of the layers of the crop, without committing authority.

When gistometrii mucous goiter (table) found that mucous goiter Cornish roosters from birth to 155 days of age increased in 2.15 times (46.47%), the breed Plymouth increased 2.2 times (45.32%) ; from 155 to 420 days decreased in the first - 1.45 times (63.76%); the second - 1.47 times (65.59%).

The thickness of the submucosal layer at the Cornish males from birth to 155 days of age increased by 2.3 times (43.45%), the breed Plymouth 2.35 times (42.38%), and from 155 to 420 today decreased 1.5-fold (62.09%); the second - 1.52 times (63.87%).

The thickness of the muscular layer of goiter in Cornish males from birth to 155 days of age increased by 2.21 times (45.18%), the breed Plymouth increased 2.26 times (44.07%); decreased respectively from 155 to 420 days of age in 1.64 times (64.86%); roosters Plymouth 1.66 times (66.73%).

Correlations between indicators identified male body weight and the thickness of the mucous membrane (the average correlation for Cornish - r = 0,66 for Plymouth - r = 0,67).

It should also be noted characteristic decrease in the growth rate of goiter shell thickness after 42 days, but with the subsequent increase in growth and up to 155 days of age. We believe that this is due to a period of adaptation roosters during the transition from heavy to moderate type of feeding.

Further processing of histological material aimed at the search and identification of patterns of cellular composition ratios with the correlation bonds.Thus, we can conclude that the intensive development of membranes goiter observed in males 155 days of age, followed by a gradual decline in growth up to 420 days of age. Just set the average degree of correlation between the male body weight and thickness of the mucous membrane of goiter.

SECTION 3

FOOD QUALITY MANAGEMENT. QUALITY CONTROL OF PRODUCTION WITHIN CUSTOM UNION AND WTO

THE PROSPECTS FOR IMPLEMENTATION OF RAPID METHODS OF ASSESSING THE QUALITY OF STERILIZED PRODUCTS DURING STORAGE COMPONENTS

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Abstract

This essay presents results of the analysis of methods of assessing the quality of sterilized products during storage. The use of NMR to characterize changes in the quality of products during heat treatment will create the necessary conditions for the implementation of a method of artificial ageing accelerated way for the purpose of establishing the shelf life of canned fish products.

In the Russian Federation, issues of quality and safety of food products regulated by the technical regulations, federal laws and regulations. Requirements for safety indicators, methods of their determination are strictly regulated, at the same time issues of food quality, prevention of actions misleading consumers, methodical support of determination of quality has not yet been resolved at the appropriate level and are one of the most pressing and unresolved problems.

A significant difficulty is the process of justification and the establishment of guaranteed shelf life for the product long term. Shelf life - the period during which the food product is considered suitable for the intended use. In accordance with the requirements of SanPiN 2.3.2.1324-03 of food, the quality of which after a certain period from the date of manufacture is deteriorating and they acquired property, dangerous to human health, set expiration dates. In justifying the shelf life by the manufacturer or developer documentation provides information to the organs and institutions of the State Sanitary and Epidemiological Service of the Russian Federation on measures to help improve the safety of food (improvement of technology, the introduction of new packaging and improved indicators of quality raw materials, reinforced sanitary regime in the manufacture and so on .d.), and the results of product testing, indicating their safety, quality and suitability for the intended use within the expiry date.

In this regard, the purpose of the work was to analyze and identify the most promising methods for assessing the quality of food products in storage.

Recommendations for establishing expiration dates are set out in the Methodological guidelines MUK 4.2.1847-04 "Sanitary assessment study shelf life and storage conditions of food", in which the duration of studies is determined by storage at Storage warranty period (date), set by the national standard or a technical document manufacturer.

According to the requirements of regulations in determining the shelf life of canned foods should be developed modes of sterilization (pasteurization) and justified by the shelf-life testing, with periods of research products to exceed the duration of the intended shelf life for the time defined the reserve ratio. In this regard, the introduction of new types of cans in most cases can be effectively carried out only after 2-4 years from the start of the test products. This fact greatly limits the introduction of a new range of canned products, with set properties and the appointment made by advanced technology, using modern types of packaging.

Analysis of the data available in the literature to establish the shelf life of food products indicates that studies to assess and change the quality and consumer properties of food in storage is currently carried out in three areas:

- Traditional testing in accordance with the requirements of the documentation at regular intervals;
- The use of mathematical modeling changes in the quality of foodstuffs [Vyrodov, 1997, 1998; Akterian, 1997];

- The use of accelerated aging methods [Lobanov, caracal, Shcherbakov, 2001; Odoev, Lukoshkina, 2007; GOST 51481-99].

Traditional (standard) tests to change the quality and safety of products during storage under the conditions laid down in the standard documentation, the most reliable, but it is quite a lengthy process.

Methods of mathematical modeling of changes in the quality of food products do not always produce reliable results, as is quite difficult to predict the biochemical and chemical processes. To quantify and predict changes in food quality during storage is necessary to build a kinetic mathematical model relating the indicators of quality of product (process parameters) with independent variables influencing the process (factors) [Stele, 2006]. Kinetic studies are based on measuring the speed of the process, which depends on both the external (temperature, pressure, etc.) and internal factors (concentration, pH, etc.). But for the vast majority of food forecast for the object of one parameter does not give satisfactory results in terms of mathematical modeling foods are one of the most complex objects [Vyrodov, 1997, 1998].

To determine the shelf life of food products long-term storage of great interest are the methods of artificial aging accelerated way to significantly save time and predict certain quality indicators. The term "accelerated (climatic, thermal) aging" experiments used to determine the accelerated change of indicators of quality of the product in extreme storage conditions (high temperature, humidity, etc.). On the basis of model changes in the quality of the product during storage is possible to develop a rapid method for determining the period of its validity.

According to published data, in many cases, to describe the temperature dependence of the parameters of the process of aging foods most commonly used Arrhenius equation and the hyperbolic model [Odoev, Lukoshkina, 2007; GOST 51481-99]. The method of accelerated aging tests on climatic widely used to predict the shelf life of polymer materials [GOST 9.707-81]. Maximum allowable values of aging is determined by normative and technical documentation for the relevant test object - a sample of the material.

The mathematical treatment of experimental data is carried out by the method of least squares, is plotted against the change in the duration of the aging test at given temperatures, build prediction curve at which the storage time is determined and set an expiration date. Similar work on the use of the method of accelerated aging carried out for the paper and board [GOST 29331-92], vegetable oils [GOST 51481-99 (ISO 5630-4-86)]. This approach has been successfully used to simulate the loss of quality of dried foods, juices, vegetable, microbial spoilage in predicting milk products.

For canned foods aging method is rarely used. The literature describes a method to predict the condition and safety of canned meat [Scientific substantiation and working ..., 2006]. The fishing industry provides a method for determining the shelf life of canned fish, using the method of thermal aging, followed by mathematical processing of the results, the establishment of dependences of parameters of aging time and temperature, and then calculating the forecast duration of storage [Odoev, Lukoshkina, 2007; Patent number 2265838 Russian Federation, 2005].

As aging parameters used in the sensory evaluation scores and chemical characteristics: acid number and the total fat content of sulfhydryl groups. As the expiration date is the smallest of the values of the value of the prospective length of storage, set to achieve the specified critical values of each of these chemical indicators of quality. Each critical value of the corresponding figure of merit determined experimentally - as a value corresponding to the minimum allowable sensory evaluation, for example equal to 35 points. To accelerate the storage of canned investigated storage temperature range of 20 to 55 ° C, set a number of laws and suggested a rapid method of determining the shelf life. Changes in storage canned fish are mostly chemical in nature and are characterized by specific parameters of quality, such as acid value and the total fat content of mercapto groups which are determined by certified chemical methods rather laborious and complicated. For these purposes may be used the method of nuclear magnetic resonance spectroscopy to characterize the connection which can be formed during thermal processing and

subsequent storage of canned products, set changes the fatty acid composition of lipid and amino acid composition of proteins.

Conclusions.

The use of reliable and rapid method of NMR spectroscopy to characterize the quality of production will create the necessary conditions for the implementation of a rapid method of establishing shelf life of canned fish products.

DETERMINATION OF NITRITE IN COOKED SAUSAGES

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Sodium nitrite is a white or slightly yellow crystalline powder. It is soluble in water and hygroscopic. In air slowly until further oxidizedup sodium nitrate NaNO3. Sodium nitrite is a strong reducing agent. (Harmful Food Additives)

Sodium nitrite can be used in the food industry in pure form or in the form of nitrite curing mixture i.e. sodium chloride diluted in a ratio of from 1: 200 to 1: 250. For Russian food businesses sodium nitrite comes in a package of up to 3 kg, it is stored separately in a closed special room. In the workshop sodium nitrite comes only in the form of p-pa 2.5% concentration.

In the production of meat products nitrite enhances bactericidal action exerted salt, acids and heat, and protects the fat contained in the meat from oxidative damage. In addition, nitrogen oxide releases nitrite reacts with colorant to form blood nitrosomyoglobin myoglobin. As a result of the stabilization of the red color of meat products. (Know goods)

The aim is to nitrite in the cooked sausage "Doctor's" and "Russian" sold at retail "Ermolinskaya semi-finished products."

Objects of research - sausage "Doctor" and "Russian", which is realized in the retail network "Ermolinskaya semi-finished products."

For the test sample taken in the amount of two pieces for all kinds of tests. Units taken from selected single samples weighing 200-250 g and of them are combined sample 400-500, it is packaged in a cellulose film, parchment or other materials. (GOST 9792-73)

Studies were conducted on photoelectrocolorimeter. The essence of the method: a sample of hot water extraction, filtration and precipitation of proteins. Preparation of red color in the presence of nitrite by adding to the filtrate an aminobenzene sulfonamide and N-1-naftiletilendiamina dihydrochloride and photometric measurement at 538 nm wavelength. (GOST 29299-92)

The content of sodium nitrite in cooked sausages should not exceed 50 mg / kg. (SanPiN 2.3.2.1293 - 03)

The results of studies of sausage "Doctor's" and "Russian" are shown in Table 1

Table 1

The results of studies

sample under investigation	Nitrite content in mg / kg
Sausage "Doctor's"	10,00
Sausage "Russian"	8,95

Based on these data, we can conclude that the sausage "Doctor" and "Russian" is within the acceptable norms.

On the one hand, sodium nitrite, when added to cooked sausages plays an important part, which is used to make the red color of the product, prevents the proliferation of fungi and various bacteria. On the other hand, sodium nitrite, interacting with amino acids upon heating gives a carcinogen which is capable of provoking the development of cancers. Prevent carcinogenic help vitamin C. Foods that combine E 250 and ascorbic acid are safe.

Overdose of sodium nitrite is so dangerous to health, which can lead to hypoxia, cause severe poisoning, and even eventually lead to death. Should not buy cooked sausages in questionable places of sale.

Comparative evaluation of the quality of the samples of cooked sausages showed that both samples comply with the requirements of the normative document SanPiN 2.3.2.1293 - 03 "Hygienic requirements for the use of food additives." These samples can be tolerated in the implementation.

SOME PROBLEMS OF HEALTHY NUTRITION IN THE FOOD PRODUCTS FROM AGRICULTURAL RAW MATERIALS

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Abstract

The biological value of semi-finished of poultry from different food producers are were evaluated. It was revealed the feasibility of expanding the range of semi-finished products of poultry in combination with components from plant material containing biologically active substances and dietary fiber.

Overview

In accordance with the "Strategy of development of food and processing industry of the Russian Federation for the period up to 2020" (Order of the Government of the Russian Federation dated April 17, 2012 N 559-r) in the domestic agro-industrial complex task of providing secure and sustainable supply of the population in a safe and quality food, development, manufacture of food products enriched with essential components, improving nutrition in organized groups on the basis of high-quality products from agricultural raw materials. These problems are particularly relevant at the present time - the period of active work on import substitution (Bezryadnova, 2015).

The state program of agricultural development is complemented with new routines and received additional funding up to 2020 in the amount of 688.4 billion. Rubles. As a result, the total amount of support for the Russian agro-industrial complex increased to 2.126 trillion rubles. Through the implementation of the state program of events is planned to increase agricultural production in crop at 16.2% in livestock production - 18.8%.

Thus, the guaranteed provision of sufficient raw materials for food processing industries, where, in accordance with the state program of the Strategy should be produced products, quality indicators which will meet the principles of healthy eating.

As part of the research on internal grant RG "The development of innovative technologies for the production of specialized safe and high quality culinary products from raw materials of animal origin", we carried out market research semi-finished products made of pork and poultry and concluded that a narrow range of semi-finished products containing vegetable component. It is known that vegetables contain biologically active agents and dietary fibers required for digestion and better utilization of its gastro-intestinal tract. In this regard, expansion of the range of meat

products containing vegetable component is an important task of the state program of development of agrarian and industrial complex in terms of increasing production, rich in essential components.

Objects and methods of research

The objects of study are chosen semi-finished products of mass consumption - broiler carcass 1st category and the most valuable part - fillet. Analyzed semi-finished products, "fillet", "fillet without skin" chilled, developed by TU 9214-001-50190796-09 TU 9211-251-23476484-11 domestic manufacturers brands "Petelinka" and "freshness", as well as the company Sadia SA (Brazil), which has a quality management system of food production ISO 9001: 2008 and the sign GMP.

We noted the demand of the Chinese population and botanical varieties of Chinese cabbage Brassica rapa l. emend. metzg ssp. pekinensis (lour) hanelt or Brassica chinensis l. These vegetables are rich sources of biologically active substances (BAV) and fiber - the main mineral ingredients recommended by nutritionists to combine with meat products. From domestic products cabbage Kudesnitsa included in the State Register of the Russian Federation, popular varieties - Glass, Nick Bilko F1. Industrial volumes of this product offers the company "Summer" in the Krasnodar Territory (Bespalov, 2014).

These objects are called our scientific interest.

We investigated the amino acid composition and its changes in chilled fillets bird domestic producers, as well as refrigerated after thawing of the company Sadia SA (Brazil). Spend a heat treatment in identical conditions to determine the change in the amino acid composition in all the samples. Used technique for fully automated amino acid analyzer Biochrom 30+ (UK) software. Determined the antioxidant activity and dietary fiber in cabbage Brassica pekinensis L., including changes after heat treatment. Antioxidant activity was determined by amperometric method using the device "TsvetYauza-AA-01", which allows to determine the proportion of total antioxidants in the samples. Determined the total mass fraction of soluble and insoluble dietary fiber in the sheets fresh and heat-treated Chinese cabbage (GOST R 54014-2010). The technology for the production of semi-finished fillet poultry in combination with herbal ingredients - Chinese cabbage. Statistical analysis was performed using the computer program Microsoft Office.

Results and discussion

The results of these amino acid composition of the samples before and after heat treatment are shown in Table 1, from which it follows that the total concentration by weight of amino acid varies in the medium range of -2, 07% (from 0.66% to 3.1%) and cooled to 2, 96% (from 1.03% to 4.45%) in the thermally treated samples, which is a moderate difference. We defined a number of amino acids similar values of mass concentration observed in semi-finished products of domestic manufacturers who have little difference from that of foreign producers in the semi-finished product. It should be noted that the fillets foreign poultry producer enters a state of deep-frozen and the thawing process is the loss of meat juice soluble protein fraction.

Despite this, the mass concentration of the amino acid has more retentive than domestic samples that may be explained by differences in the technologies of birds and quality of the protein matrix.

During the heat treatment changes the mass concentration of amino acids in the samples had a similar trend.

Studies have suggested antioxidant activity of vegetable components - Peking cabbage Brassica pekinensis L. for the production of semi-finished poultry produced using as a standard gallic acid. Measurement of the antioxidant activity of a sample of raw Chinese cabbage showed 0.5598 mg / g, and after cooking (roasting in the "convection-steam") - 0.5116 mg / g. From the data obtained it follows that the vegetable component largely retains antioxidant properties that can be used in the development of semi-finished dishes and functional orientation.

Total mass fraction of soluble and insoluble dietary fiber in the sheets fresh and heat-treated Chinese cabbage was determined enzymatically-gravimetric method. Mass fraction on dry substance amounted to 36.8% and 45.1% respectively. A large proportion of dietary fiber in the

composition of Chinese cabbage leaf allows to develop production technology of meat products with vegetable component functional orientation, which can improve the digestive system due to the effect of dietary fiber on the strengthening of motor skills.

Table 1

Amino acid composition of the samples PTSFB refrigerated and after heat treatment to a state of preparedness

Name of amino acids (designated number)	PCBF Sadia S.A. (g/100g protein)	PCBF «Пете-линка» (g/100g protein)	PCBF «Свежесть» (g/100g protein)	PCBF Sadia S.A. (g/100g protein) T°C =160°C	PCBF «Петелинка» (g/100g protein) T°C =160°C	PCBF «Свежесть» (g/100g protein) T°C =160°C
Aspartic acid	6,93	6,86	6,64	8,16	7,89	7,61
Threonine	3,28	2,84	2,82	3,94	3,62	3,49
Serin	3,04	3,00	2,87	3,56	3,45	3,39
Glutaminic acid	11,66	10,85	10,47	13,62	12,31	12,14
Glycine	3,08	2,87	2,83	3,39	3,26	3,18
Alanine	4,32	4,24	4,17	4,80	4,70	4,60
Valine	1,92	1,57	1,61	2,43	2,06	1,91
Methionine	2,31	2,32	2,31	2,55	2,43	2,43
Isoleucine	2,70	2,05	2,17	3,67	2,97	2,80
Leucine	5,69	5,33	5,28	6,96	6,46	6,15
Tyrosine	2,43	2,32	2,29	3,00	2,80	2,69
Phenylalanine	2,85	2,53	2,51	3,43	3,18	3,01
Histidine	2,36	2,21	2,22	2,61	2,38	2,38
Lisin	6,42	6,21	5,61	7,70	7,19	6,86
Arginin	4,57	4,59	4,05	5,64	5,12	4,92
Prolin	2,87	2,89	3,03	3,13	3,28	3,19
In total	66,43	62,67	60,89	78,6	73,12	70,74

We have developed a range of semi-finished functional orientation of poultry and pork, wrapped in a sheet of Chinese cabbage. Obtain priority of intellectual property rights (patents).

Conclusion

Thus, in terms of biological value of semi-finished poultry domestic and foreign manufacturers there are some differences seem related to the fattening methods for growing. Average grade abnormalities did not reveal a significant reduction in the quality of products and approximately equalizes foreign and domestic manufacturers.

The expediency of expanding the range of semi-finished poultry combined with components from plant material containing biologically active substances and dietary fiber.

USE OF BIOTECHNOLOGICAL TOOLS IN COCOA (THEOBROMA CACAO)

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The cocoa (*Theobroma cacao*) and her by-products cocoa butter and cocoa liquor, have an outstanding importance in the world economy.

For the Republic of Ecuador, since the end of the XVIII century until now, it´s a notable source of currency and, also, has an historical, social and political significance, namely, from the income part of budget till the use of the nickname "gran cocoa" within such small group of Ecuadorian population which was benefiting from its production.

It´s well known that cocoa was domestified 1500 years ago by the maya, an important Amerindian Mesoamerican tribe; there is another theory also, which established this occurred in the Amazon Basin in South American and then reached the western slopes of the Andes specially the Chone and Guayas Rivers Basin in Ecuador, where, trough years the evolutionary forces yields an exceptional product, known as "cacao arriba", beans with a unique smell "a sensation of flowers, roses and lilies".

The Republic of Ecuador was the biggest world exporter of cocoa beans during the period 1880-1915, but lost his position by two microbiological (fungal) diseases known as "monilia" and "escoba de bruja".

According to the export statistical data of the Ecuador´s Central Bank, cocoa was the fourth agricultural product, giving 2.700 million dollars during the period 2002-2011, corresponding 79% to dry beans and 21% for butter.

The global cocoa production is shown in table 1.

Table 1

World cocoa bean production, grindings and stocks, *in thousand tonnes*. *Source: International Cocoa Organization Statistics 2014:*

Crop year (Oct-Sep)	**Gross crop**	Growth rate (Year on year)
2009/10	3 634	1.2%
2010/11	4 309	18.6%
2011/12	4 085 -	-5.2%
2012/13	3 928	-3.8%
Forecasts 2013/14	4 358	10.9%

The world production is almost the 4 mln.tonnes, some years less as a rule due to climate conditions.

According to new Ecuadorian economical policies, the production of cocoa beans must be increased, so, it´s necessary to increase the land cultivation, develops new and strong factories keeping in mind the exportation of a better product.

Cocoa and biotechnology

Cocoa butter is a by-product of the cocoa beans, with a special consideration, even using the modern technology it´s impossible to synthesis it artificially, and also it´s important a continuous raw material flow (cocoa beans).The cocoa butter is used in the production of important cosmetic goods (facial creams and pencil lips, for example) and medicines (example, suppositories). This

explains why it´s necessary more research in the cocoa world production and especially in the incidence of microbiological diseases.

Historically, the Ecuadorian cocoa beans crops suffered the attack of two fungal diseases, produced by *Monilia roreri* and *Marasmus perniciousus* (Rimache, 2008), which leads to a sudden drop of the production and consequently a decreasing in the national budget.

The biotechnological approach in the cocoa production implies the research in antibodies, enzymes, co-enzymes and genes.

In the future, it´s possible that certain pathogenic fungi cross the Atlantic Ocean barrier and infects the cocoa plantation in West Africa, which produces 70% of the world cocoa crop. It´s well known that the African cocoa trees doesn´t have a resistance against these fungal diseases.

To fight these diseases, a group in Florida University is studying the cocoa genome in order to identify such parts of DNA (deoxyribonucleic acid) which has resistance against these diseases. The DNA discovered by Watson and Crick is the master molecule in the heritage of biological characters (Watson, 2007).

The classical strategy consists in identification the plants with resistance, artificially pollen then and after check the received generation. This takes time and doubtfully accomplishable.

The biotechnological approach is to identify the DNA parts which confer resistance and select the better trees for hybridized. Of course, it´s an expensive procedure, but "once that you identified the genetic sequence, the work becomes much easier" (Moyer, 2010).

At the end of 2010 they discovered parts of the cocoa genome, and in the next coming years they are enabled to discover the other parts. These are very good news for the cocoa producers in the world.

Other biotechnological methods that are used are:

- Creating and supporting germplasm collections in order to analyze and modify the genetics of the cacao plant;
- Genetic fingerprinting using state-of-the-art DNA markers;
- Gene isolation and functional analysis;
- Genetic transformation capability;
- Plant tissue culture;
- somatic embryogenesis;
- Nursery propagation systems: grafting, rooted cuttings;
- Biochemistry: Analytical capabilities for cacao metabolites such as lipids and flavonoids: HPLC, Mass Spectrometer, Metabolite purification, Flavonoids, Fatty Acids;
- Secondary Synthesis and Bioreaction.

Currently, cocoa is in focus of many researches throughout the world. For example, a large consortium of researchers, government agencies including USAID, The World Bank and the USDA and the chocolate manufacturing industry are developing a global plan promoting sustainable cocoa production and implementing research and development activities. Only uniting the global capacities the new technologies could be delivered to farmers all over the world, improving farmers income in developing countries.

BIOTECHNOLOGICAL ASPECTS OF BIFIDOBACTERIA USAGE TO OBTAIN PRODUCTS OF ANIMAL ORIGIN WITH THE DESIRED PROPERTIES

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Abstract

This article discusses the need for improving the efficiency of processing of agricultural production through the introduction of innovative technologies for the biological transformation of raw meat. Existing biotechnology techniques allow the production of new types of meat products. Microorganisms are active producers of nutrients, that is why in the old times people used microbiological processes in food production.

The meat processing industry is currently interested in improving the efficiency of the processing of agricultural products through the introduction of innovative technologies for biological biotransformation of raw meat.

Existing methods of biotechnology allow the production of new types of meat products for general, special and medical - preventive purposes, based on the enzyme treatment and fermentation of raw meat with the effect of improving the functional - technological properties of raw materials, the possibility of creating food and feed hydrolysates, synthetic fragrances, dyes, biologically active substances with a view to feed protein synthesis, and in the future - of proteins for human nutrition (Antipova, 1997)

Microorganisms - active producers of nutrients, that is why from ancient times, people have used the microbiological processes in food production. They have a wide range of various enzyme systems, thereby capable to form throughout its life different metabolic products that are of interest to people.

With respect to meat products lactic acid bacteria, bifidobacteria, and vinegar bacteria and yeast are widely used, they are added during salting stage, in dry form or after dilution (Gizatov, 2005)

Application of the bifidobacteria is complicated by the fact that they are strict anaerobes, and are very demanding to medium. Reproduction of bifidobacteria is caused by huge amount of growth factors. Many types require biotin pantaten acid, cysteine, riboflavin, purine and pyrimidine bases, peptide, amino sugar, oligosaccharides, some unsaturated fatty acids (Motavina 2014)

Traditionally in culturing Bifidobacterium milk is used culture as medium. We have proposed to use the product of poultry farms-egg.

It is known that the egg comprises dry matter and water. Water makes up to 74%, 26% dry matter. Egg protein comprises all essential amino acids, vitamins A, B, E, D. The protein has many Na, S, CI, K, yolk has P, Ca, S, and micr elements Zn, Fe.

Yolk lipids contain unsaturated acid arachidonic, linoleic, linolenic.

Our proposed technique is the activation of bifidobacteria by using egg as a nutrient medium achive and thus complete content of all essential nutrients and anaerobic conditions so necessary for the growth of bifidobacteria.

We offer diluted dry bakpreparat with distilled water and injected into egg cultivation goes under anaerobic conditions at room temperature, so we eliminate the stage of microbiological boxing and thermostat.

During the experiment, the eggs has been taken under the same conditions in each egg is injected diluted with distilled water the same amount bacpreparate. Within four days to culturing microorganisms occur at room temperature. After every 12 hours was measured the dynamic of acid production the results are shown in Fig.

Interpreting the results it can be said that the best period for the cultured strain of microorganisms in the production of meat products is the period within 2-3 days, followed by decline in the dynamics of acid, which indicates the lack of nutrients for further growth of microorganisms.

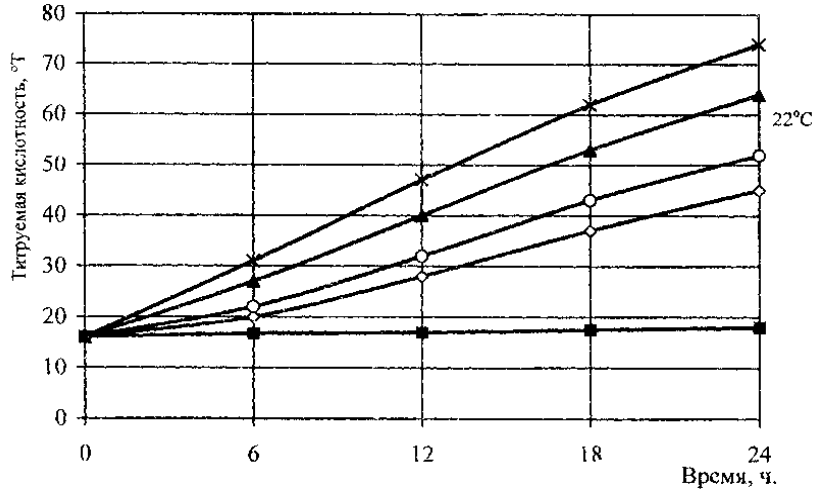

Figure - Dynamics of acid during bifidobacteria cultivation at room temperature

These microorganisms are encouraged to use in the production of sausages (Gizatov, 2009)

Our proposed technology of production of sausages affect the organoleptic characteristics of the finished product. Lactic acid bacterial microflora and products of its vital activity make certain changes in the microstructure of the meat, causing homogenization, swelling and fusion of muscle fibers, granular disintegration of parts of the fibers, the destruction of the nuclei, thereby increasing the density of arrangement of the structural elements of minced meat, stronger binding of the particles of the shredded meat with milled. These changes increase the availability of myofibrils muscle proteins to gastrointestinal enzymes and increase the biological value of the product, since it is known that the extent and rate of digestibility of proteins depends on the stage of meat ripening.

Application bacpreparations in amount less than 3% does not lead to the intensification of the process of production of sausages, due to insufficient content of bacterial cells and their metabolic products (lactic acid, the amount of carbonyl compounds, free acid) in 1 g of minced meat. Above 7% negatively affect the quality characteristics of the product, thus, as the results of studies it was found that the use of bacpreparations, in amount of 5% is the most optimal.

The introduction of foods fortified with consortia of micro-organisms, maintaining normal intestinal flora of human is not only of great social value, but also allow economical and rational use of essential food supplies meat and meat products, as well as to improve environmental production through low-waste technology.

STANDARDIZATION OF YOUNG CATTLE IN FRANCE AND RUSSIA IN COMPARATIVE PERSPECTIVE

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Abstract

The purpose of this article is a comparative analysis of the standards of France and Russia and mapping the main indicators by weight of carcasses of cattle beef production. A comparative analysis shows differences. In particular, the weight of carcasses of young cattle and objective indicators of the quality of meat from animals of different age, gender, productivity lines.

Today, meat industry occupies a leading position, despite the fact that many of the problems it is still relevant and need to be addressed. Cattle brings good profit, but to contain it, you need to know all the technology of feeding, care, slaughtering and butchering of cattle, as well as state standards to protect the interests both of donor animals and consumers about the quality of meat products. One of the objectives came into force a new state program of development of agriculture until 2020 - Adaptation of the agricultural sector to the conditions of the WTO. Achieving the planned indicators of production of cattle breeding, while maintaining (increasing) the current level of state support will enable growth in the proportion of meat and meat products of domestic production to the achievement of a threshold for the Doctrine of food security at the level of 85% by 2017.

To improve the competitive domestic production and food processing industry, as well as harmonization with the standards in force in Europe and the United States, designed to GOST R 54315-2011 "Cattle for slaughter, beef and veal carcasses, sides and quarters," GOST R 55445 - 2013 "Meat. High quality beef ".

The purpose of this paper is a comparative analysis of the standards of France and Russia and the subsequent establishment of the main indicators of compliance by weight of the carcasses of cattle beef production.

Sex and animal breeds are some of the most important indicators in the evaluation of young cattle and determining the categories of fatness as live weight beef steers the mass productivity steers by 12-14% and heifers - by 17-19%. It should be noted that the live weight of the major beef breeds great of having a long period of development, sustained growth of muscle tissue and less prone to obesity more than dairy breeds. Charolais, kianskaya, meat Simmental - in Russia, Limousin, Aquitaine bright, Piedmont - in France.

Unfortunately, the current standard GOST R 54315 - 2011 does not take into account the sex and breed of the animal fatness in determining the category in contrast to the standard of France, where it counts (Regulation (EC) № 1234/2007 of 22 October 2007 Regulation (EC) number 566/2008 of the Commission dated 18 June 2008) Depending on the degree of subcutaneous fat in the carcasses of young French in the standard emit 5 classes - with the lack of subcutaneous fat, with a very thin layer of fat, with a slight layer of fat, fat, very fat, whereas in the GOST R 54315-2011 only two - subcutaneous fat is poorly developed; no body fat throughout the body.

The category to the entrance of the carcass weight of not less than 280 kg, polnomyasnye with rounded, convex and well developed muscles, the hip part of the carcass is very wide and smooth, back and loin are broad and thick almost to the withers, the spinous processes of the vertebrae are not visible.

Category D match carcasses weighing not less than 240 kg, with a rounded polnomyasnye well-muscled, medium width of the hip, smooth, hip muscles around the knee noticeable, but not

hovering, back and loin of medium width, but tapers towards the shoulder, neural processes of the vertebrae are not visible.

According to the standards of the French slaughter weight of animals is a schematic diagram of a commercial, which is divided into four main marketing option of putting the carcasses of cattle. The weight of the carcass, such separation follows:

- "Chopped" - light weight carcass around 230-250 kg (according to GOST R 54315 - 2011 carcass weight corresponds to the category "extra", the category "D" according to GOST R 55445 - 2013), who directed for fresh or frozen ground beef mainly for catering with high discount.
- "Private" includes about 240-290 kg carcass, which corresponds to category "extra" or "prima" Russian standard categories "D" or "R". These carcasses are mainly used for the preparation of steaks and fillets obtained from various anatomical parts of carcasses.
- "Recovery" - carcass weight of 290 - 300 kg and above (according to GOST R 54315 - 2011 Category "Prima", GOST R 55445 - 2013 - category "K"). Half-carcasses, quarters and different parts of the same carcass custom.
- "Ankle", carcasses of more than 380 - 400 kg (by Russian standards - the category of "super", category "B"). There carcasses of cattle (or quarters) are themselves unit transaction. Option is intended primarily for sale to farmers butcheries.

After analyzing the basic conditions for the use of carcasses of cattle and individual muscles and muscle groups of marble, it should be noted that in Russia, the first two options markets ("chopped", "private") are not practiced and implemented in the form of carcasses packaged pieces of meat. According to GOST R 55445 - 2013 "Meat. High quality beef "beef produced in the form of longitudinal half-carcasses or quarters, with cutting (internal iliac lumbar muscle).

The comparative analysis of the standards of producing highly competitive beef shows discrepancies. In particular, it concerns the live weight and carcass weight of young cattle and, of course, objective indicators of the quality of the meat from animals of different ages, gender, productive direction.

THE ROLE OF THE COOPERATION OF THE TEILNEHMENLÄNDER WITHIN THE SCOPE OF THE EURASIAN ECONOMIC UNION (IN GERMAN)

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Im Rahmen des Zollbundes wurde die Übereinkunft über einheitliche Regeln und Prinzipien der technische Regulierung, über gegenseitiger Akzeptation auf Akkreditierung der Zertifizierungsstellen und der Prüflaboren, die eine Arbeit in der Konformitätsbewertung unterliegt dem Territorium Weißrußlands, Kasachstans und Rußlands angenomen.

Als Ziele der Formierung der Normativrechtsgrundlagen des Zollbundes auf dem Gebiet der technischen Regulierung bilden Teilnehmenländer dei einheitliche Liste der Produktion, in verbindung auf die gleichen entstandenen und verpfichtenden Forderungen.

Wenn man sich auf gegenseitiges Interesse in der effektiven Gewährleistung des Betriebes und der Entwicklung des Zollbundes und des einheitlichen Wirtschaftsraumes stützt, bestätigen Staaten die Eurasische Wirtschaftskomission. Die Grundaufgabe der Komission ist die Ausarbeitung der Vorschläge bezüglich der Normativdokumentationen auf dem Gebiet der Wirtschaftsbeziehungen im Rahmen des Zollbundes und des einheitlichen Wirtschaftsraumes. Die Eurasische Wirtschaftskomission hat den Status der supranationalen Verwaltungsbehörde. Der

Komissionsbeschluss ist verbindlich für die Verwirklichung in den Territorien der Teilnehmenländer.

Für die Wirtschaftsfestigung der Teilnehmenländer, ihrer Modernisierung und der Erhöhung der Konkurrenzfähigkeit began die Eurasischen Wirtschaftsunion (EAWU) seit 1 Januar 2015 zu funktionieren. Die Gründung der EAWU trägt der Festigung der Staatensstellung an der internationalen Arena bei, so wurde ein Vertrag am 10 Oktober 2014 über die Hinzufügung Armenien zu der Union unterschrieben. Der Beitritt Kirgistans ist noch in Planung. Dies ermöglicht einen gemeinsamen Markt von qualitativen Produktionen, eine hohe Nachfrage an Produktionen und Entwicklung der Produktionsmöglichkeiten des Nationalherstellers zu sichern.

Nach dem Auswärten der Ergebnisse des gegenseitigen Handel der Waren der Eurasischen Wirtschaftsunion wärend Januar 2015 betrug das gegenseitige Handelsvolumen 2,7 Milliarden US Dollar bzw. 64,1% zu dem Niveau der jeweiligen Periode im Jahr 2014.

Tabelle

Die Umfänge des gegegseitigen Handels der Waren der Teilhehmenländer EAWU seit Januar 2015

	US Dollar in Millionen	Januar 2014 in %	Der Anteil vom Umfang in %
EAWU	2680,7	64,1	100,0
einschließlich**:**			
Armenien – Weißrußland	1,4	69,7	0,1
Armenien – Kasachstan	0,0	0,0	0,0
Armenien – Rußland	94,1	76,2	3,5
Weißrußland – Kasachstan	36,2	82,0	1,3
Weißrußland – Rußland	1619,1	60,2	60,4
Kasachstan – Rußland	929,9	70,1	34,7

Im Januar – Februar 2015 war der Produktionsumfang des Agrarsektors in den Wirtschaften alle Kategorien der Teilnehmenländer EAWU 6,5 Mlrd. US-Dollar groß und ist im Vergleich zu Januar – Februar 2014 in den konstanten Preisen um 3,2% gestiegen.

Tabelle

Die Landwirtschaftsproduktion

	Januar – Februar 2015		
	Mlrd. Geldeinheit der Binnenwährung (in den laufenden Preisen)	Mln. US-Dollar	Januar – Februar 2014 in % (in den konstanten Preisen)
Armenien	43,0	90,1	103,6
Weißrußland	12062,7	811,8	105,4
Kasachstan	156,2	847,7	102,4
Rußland	302,6	4791,8	103,0
EAWU	-	6541,4	103,2

Die Gründung EAWU in den Territorien der Teilnehmenländer versichert die ungehinderte Lieferung von Waren, der Kapitalien, der Arbeitskraft, der Dienstleistungen und auch gleichen Zugang zu der Verkehrsinfrastruktur, Energie-Infrastruktur und allgemeinen Regeln von Zollregelungen. Für die Verbesserung der Qualität der Güter, der Sicherheit und die Erhöhung der Konkurrenzfähigkeit harmonisiert die normative Dokumentation mit der internationalen Gesetzgebung.

Harmonisierung der normativen Dokumentation ermöglicht den Teilnehmenländern eine Zusammenarbeit um dem Entschluss von wissenschaftlich-technichen Problemen zu ausbauen und zu vertiefen, Ausgaben von materiellen und energetischen Ressourcen zu optimieren, Maßnahmen

um die Arbeitssicherheit und den Umweltschutz zu steigern. Für die Effektivität dieser Prozesse muss der gegenseitige Handel mit internationalen Ökonomischen und wissenschaftlich-technichen Organisationen vorhanden sein.

Dies bedeutet weitere Entwicklung von gesetzgebender Grundlage auf dem Gebiet der technischen Regulierung, die Konformitätsbewertung der Produktion, normative Grundlage auf dem Gebiet der Normung und der Bescheinigung, die nicht nur in dem Territorium der Russischen Föderation, sondern auch in anderen Staaten verwendet wird, welche im Rahmen EAWU zusammenwirken. Die Entwicklung der technischen Regulierung über die Sicherheit der Produktion stellt verbindliche Erfordernisse für Anwendung und Ausführung zu den Objekten der technischen Regulierung.

Bei der Entwicklung von technischen Regulierungen richtet man sich nach den Erfordernissen zur der Produktion, Güter und Dienstleistung, die mit internationallen Normen harmonisieren.

Harmonisierung der Normen trägt zu der Gewährleistung von Sicherheit der Lebensmiteln fürs Überleben und der Gesundheit der Leute, der gegenseitigen Akzeptanz von Form der Konformitätsbewertung der Bescheinigungssysteme von Gütern und Dienstleistungen und dem Verbraucherschutz gegen minderwertige, gefährliche und falsifizierte Produktion bei.

Für die Entfernung der Hemmnis in der handels-und-wirtschafts und wissenschaftlich-technischen Zusammenarbeit unter Teilnehmenländern muss das Bescheinigungssystem mit der Berücksichtigung von internationallen Praxis verbessern. Dies ermöglicht unter günstigen Bedingungen den Tausch von Gütern und Dienstleistungen nicht nur im Rahmen EAWU, sondern auch mit anderen Staaten durchzuführen.

Zum Beispiel, wurde die Bestätigung der Übereinkunft von Ländern der EAWU über die Abstellung der technischen Hemmnisse mit GUS-Länder beendet, wobei dies nicht die Mitglieder der Union sind. Es gibt die Möglichkeit bei einem Beitritt der GUS-Länder zu den Systemen von technischen Regulierung der EAWU eine Gründung von mehr günstige Bedinungen für Entwicklung der handles-und-wirtschafts Zusammenarbeit zwischen Staaten der EAWU und den GUS- Länder durchzuführen.

Außerdem nimmt die EAWU Kontakt mit den Vertretern von bedeutsamen internationallen und regionalen Organisationen auf, z.B. mit EU, EBRD, OSZE, UNCTAD. Man untersucht die Möglichkeit der Entwicklung und der Formalisierung des Zusammenwirken mit diesen Organisationen unter der Absicht des Ehrfahrungsaustausches und der führenden Praxis in dem Gebiet der effektiven Entwicklung des Integrationsprozesses und der Verbreitung in der breiten Öffentlichkeit im Ausland der objektiven Informationen über den Kern, Sachstand und kommenden Zwecke der eurasischen Integration.

In der heutigen Welt entstehen neue Organisationen, weil die Welt sich immer in einem ständigen Wandel befindet. Dies ermöglicht eine Entwicklung des Integrationsprozesses, eine Erhöhung des Warenumsatzes zwischen Staaten und die Verbesserung von Qualität der Güter und Dienstleistungen.

References.

Kochneva M.V., Syrtseva M.A., Kotelnikova Ye.D. Obespecheniye prodovolstvennoy bezopasnosti v ramkakh tamozhennogo soyuza «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.366-368

Abramova L.S., Kochneva M.V. Tendentsii na rynke pishchevoy produktsii i vzglyad v budushcheye «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.213-215

FEATURES GOST ISO 9001 : 2011 AND THE NEW INTERNATIONAL STANDARD OF ISO 9001 : 2015

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The new standard ISO 9001 : 2015 "Quality Management Systems . Requirements " is under international standard . Unlike ISO 9001 : 2015 version of 9001 : 2011 can be divided into three categories:

a) harmonization of management system standards ;

b) conceptual and key provisions of the model of management in accordance with ISO 9001;

c) supplement or modify elements of the model are available in the standard Management Standard ISO 9001 : 2011

The standard specifies requirements for a quality management system that can be used for internal application by organizations , for certification or for contractual purposes . The first version of the standard quality systems appeared in 1987 . The latest version has a sample 2015. The urgency of implementing the standard focuses on the effectiveness of quality management system in meeting customer requirements . The certificate ISO 9001 is the key to the competitiveness of products in the global market.

A series of standards in the range of room 9000 - 11000 has been defined by the International Organization for Standardization standards on quality management systems . The standards define the requirements of this series is the control system , and not the products or services provided by organizations and enterprises. The structure consists of a series of standards, standards that represent the requirements of standards of background information and guidance as well as standard provides specific questions of quality management systems .

In 2005 he was re-released MS ISO 9000: 2000 "Quality Management Systems . Fundamentals and vocabulary " . January 1, 2013 was published a new official version of the standard ISO 9001 "Quality Management Systems . Requirements . " The amendments relate to the responsibility of organizations in the case of outsourcing; activities of organizations in support of supply (warranty service, recycling and disposal); issues of safety products; configuration management of computer software and the protection and restoration of information; dealing with nonconforming product.

The approach to the development and implementation of QMS based on the requirements of international standards ISO 9001 Standard version 2011 is made up of steps, including:

- Determination of needs and expectations of consumers and other stakeholders;
- Development of policies and objectives of the organization in the field of quality;
- Defining and providing the necessary resources to achieve their objectives in the field of quality;
- The development of methods to measure the effectiveness and efficiency of each process;
- Application of the results of these measurements to determine the effectiveness and efficiency of each process;

Determination of funds necessary for the prevention and elimination of the causes of inconsistencies;

- Development and implementation of a process of continuous improvement of the quality management system;

In addition to the principle of a systematic approach, based on international standards ISO Standard 9001: 2011 were the principles of total quality management (TQM):

- Customer focus;

- Management leadership;
- Involvement of employees;
- Process approach;
- Continuous improvement;
- Decision-making based on facts;
- Mutually beneficial relationships with suppliers.

These principles are the basis for building a QMS, its functioning and continuous improvement.

These principles are the basis for building a QMS, its functioning and continuous improvement.

To claim that the organization has a quality management system, built in accordance with GOST ISO 9001: 2011 "Quality Management Systems. Requirements', you must define the processes of the QMS and their application throughout the organization; determine the sequence and interaction of these processes; determine criteria and methods needed to ensure that both the implementation and the management of these processes; ensure the availability of resources and information necessary to support these processes and their monitoring; monitor, measure and analyze these processes; take the measures necessary to achieve planned results.

ISO 9001: 2015

The first draft of ISO / TC 176 / SC 2, CD ISO 9001: 2015 was published on June 3, 2013

(project collected about 3,000 comments, and he received a positive assessment in the preliminary voting in 80% of countries). May 13, 2014 has been published and submitted to the formal draft ISO / DIS 9001: 2015 (DIS - Draft International Standard). In February of 2015 it is expected to publish a final draft standard ISO / FDIS 9001: 2015 (FDIS - Final Draft International Standard). After that, the standard has been adopted officially entered into force in September 2015.

The new version of ISO 9001: 2015 has changed significantly compared to the version 9001: 2011. Version of ISO 9001: 2015 was developed in accordance with the application in the directive ISO Annex SL (ISO / IEC Directives, Part 1 Consolidated ISO Supplement - Procedures specific to ISO). The Directive defines the requirements for regulations on the control system. It establishes a new, uniform standard for the structure of management systems (ISO 9001, not only, but also for other management systems).

Standard reworked and presented in the new structure. In the provisions of the standards should be observed in compliance with chapter headings and the use of the texts themselves. Quality management principles: customer focus; the leadership of the head; involvement of employees; process approach; continuous improvement; management relations. Comparison of series of standards ISO / DIS 9001: 2015 and ISO 9001: 2011 is shown in Table 1.

ISO/DIS 9001: 2015	**ISO 9001:2011**
1. Field of application	1. Field of application
2. Normativnye links	2. Normativnye links
3.Term	3. Term
4. Kontekst (Wednesday) organization	4. The system of quality management
5. Leader	5. Responsibility of Guidelines
6.Plan TQM	6. Resource management
7. Support	7. Agricultural products
8. Operating activities. (production)	8. Measurement, analysis and improvement
9. Performance Evaluation	
10. Improvements	

The new standard is the basis for the unification of standards to other management systems. All ISO technical committees developing or revising standards for any management system must be guided by a common structure standards, a single text containing the basic provisions, common basic terms and definitions. The new version of ISO 9001: 2015 contains new sections to improve the work orgnazitsy.

6. Planning for the system of quality management. Quality objectives and planning to achieve them.

The organization shall establish quality objectives for the activities concerned, levels and processes.

When planning how to achieve the quality objectives organization must determine:

- What will be done;
- What resources will be needed;
- Who will be responsible;
- Deadlines;
- On what basis the results will be evaluated.

The organization must keep documented information purposes in the field of quality.

8. Operations (production).

The organization shall establish processes for communication with consumers, including the following:

e) specific requirements for action in emergency situations (in the event)

General.

If the detailed requirements for the products and services the organization has not developed and are not defined by the customer or other interested parties so that they are sufficient for future delivery of products or services, the organization shall establish, implement and maintain processes of design and development.

Management of design and development

The controls applied to the design and development, must ensure that:

a) the results expected from the design and development process, are clearly defined;

b) analysis of the design and development process is carried out in accordance with the plan;

c) is checked, during which verified that the output of the process design and development to meet the requirements of the input data of the design and development;

d) is checked, during which verified that the resulting products and services can meet the requirements for the specified application or intended use (if known).

Management of processes of production and services

Controlled conditions shall include, where applicable:

a) the availability of documented information, determines the characteristics of products and services;

b) availability of documented information, determines the necessary actions and results;

g) certification and periodic recertification, which should demonstrate the ability to achieve planned results for each of the production process and service, the results of which can not be verified by monitoring or measuring;

9. Performance Evaluation

Analysis and evaluation

The organization shall review and evaluate the relevant data and information obtained by monitoring, measuring and other sources. Outgoing data analysis and evaluation should be used to:

a) demonstrate compliance with the requirements of products and services;

b) evaluate and improve customer satisfaction;

c) ensure compliance with and effectiveness of the system of quality management;

d) demonstrate the successful implementation of the plan;

e) performance evaluation processes;

f) assessment of external suppliers;

g) determining the need or opportunity for improvement in the system of quality management.

The results of analysis and evaluation are also to be used as an input to the analyzing system management.

10. Improvement

General. Improvement can be reactive (corrective action), gradually (continuous improvement), jumps (breakthrough), creative (innovation) or through reorganization (transformation).

Non-compliance and corrective actions. In the event of discrepancies, including those caused by complaints, the organization must:

a) to respond to the discrepancy and, depending on the circumstances: 1) to take measures for its control and correction; 2) to solve the problems associated with its consequences;

b) assess the need for action to address the causes of non-compliance in order to prevent its recurrence by means of the following actions:

- Consideration of non-compliance;
- determination of the causes of non-compliance;
- determination of the existence or possibility of occurrence of similar inconsistencies;

d) evaluate the effectiveness of the corrective action; e) to modify the quality management system, if necessary. Corrective actions shall be appropriate to the effects of the nonconformities.

The new version of ISO 9001: 2015 aims to improve the activity of the enterprise as a whole. Certification is carried out around the world in every organization. If the organization has a certificate of ISO 9001: 2015, then it increases the level. trust not only manufacturers, but also those products which it manufactures. Certification - a procedure in which an independent certification body confirms that the quality management system meets the requirements of a particular standard. These standards are voluntary.

Confirming the introduction of quality management system complies with 9000 confirmed by an accredited certification body, which includes the steps of certification works. After the audit, the planned supervisory inspection, recertification audit or special audit; a decision on the choice of the type of audit adopted by the organization in consultation with its certification body.

In cases where the audits are carried out simultaneously with the transition of the planned supervisory inspection or recertification probably need additional time to ensure that all the activities covered by the current standard. Upon entry into force of the new version of ISO 9001: 2015 certified companies have a series of ISO 9001: 2011 should confirm the new version of eighteen months. Three years after the publication of ISO 9001: 2015 all certificates ISO 9001: 2011 will be null and void.

References

Kochneva M.V., Syrtseva M.A., Kotelnikova Ye.D. Obespecheniye prodovolstvennoy bezopasnosti v ramkakh tamozhennogo soyuza «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.366-368

Abramova L.S., Kochneva M.V. Tendentsii na rynke pishchevoy produktsii i vzglyad v budushcheye «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.213-215

ESCHERICHIA COLI: AN INFECTIOUS OR A FACTORIAL PATHOGEN

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Esherichia coli – is a well-known and widely studied ubiquitous Gram-negative, facultative anaerobic, non-sporulating rod-shaped bacterium, isolated it 1885 by a German-Austrian pediatrician from the feces of healthy individuals and originally named Bacterium (bacillus) coli communis.

As natural inhabitants of the lower intestine of warm-blooded organisms, most of more than 700 known E.coli serotypes behave like harmless commensals, but some (EHEC, ETEC, EIEC, EaggEC, EPEC and DAEC) can cause serious illness in humans (e.g. O104:H4, O121, O104:H21, O157:H7 etc.) including bloody diarrhea, stomach cramps, vomiting and occasionally fever. The bacteria can also cause pneumonia, neonatal meningitis, hemolytic-uremic syndrome, peritonitis, mastitis, septicemia, and there is evidence of their involvement in cancer.

Strains of E. coli that cause disease outside the intestinal tract of any species share common characteristics and are called Extraintestinal pathogenic E. coli (ExPEC).

Research into ExPEC has shown that its potential transmission from food animal sources is likely to be implicated in human infections and that chickens, together with beef and pork, are a major reservoir.

Nowadays the most dangerous are so called ESBL E.coli, which produce an enzyme called extended-spectrum beta lactamase (ESBL). The Infectious Diseases Society of America (IDSA) included ESBL E.coli into the group of multi-drug resistant «ESKAPE bacteria» ("Bad Bugs – No Drugs"), which includes Enterococcus faecium (VRE), Staphylococcus aureus (MRSA), Klebsiella pneumoniae (ESBL), Acinetobacter baumanii, Pseudomonas aeruginosa, and Enterobacter species.

The occurrence of ESBL E. coli in chicken meat increases worldwide. According to the Technical University of Denmark (2012) in Danish chicken meat it increased from 8.6% in 2010 to 44% 2011 while the occurrence in imported chicken meat was 50% in 2010 and 48% in 2011.

Colibacillosis was first described in chickens in 1894. Since then, there have been numerous reports on colibacillosis in poultry and considerable research on the disease has been completed. Many investigators doubt that E. coli is a primary pathogen. Others are convinced that certain serotypes are primary pathogens and their opinion seems to prevail.

When in mammals it is mostly a primary enteric or urinary tract disease, colibacillosis in poultry is typically a localized or systemic infection occurring secondarily when host defenses have been impaired or overwhelmed by virulent E. coli strains - avian pathogenic Escherichia coli (APEC). Most APEC are ExPEC and share characteristics with mammalian ExPEC.

The O (somatic) antigen serotypes most commonly associated with disease outbreaks in poultry are O1, O2, O35, and O78. The K (capsular) antigens most commonly associated with virulence are K1, K80, K88, K99. In the intestinal tract of normal poultry, nonpathogenic serotypes far outnumber pathogenic serotypes, with 10-15% of intestinal coliforms being potential pathogens.

Birds are continuously exposed to the bacteria through contaminated feces, water, dust, and environment. Poultry colibacillosis has many "faces": colisepticemia, coligranulomatosis (Hjarre's disease), omphalitis and yolk sac infection, aerosacculitis (chronic respiratory disease, CRD), swollen-head syndrome (SHS), panophthalmitis, conjunctivitis, pericarditis, pneumonia, perihepatitis, splenitis, salpingitis, "egg peritonitis" (in layers, breeders), cellulitis, osteomyelitis/artritis/tenosynovitis, femoral head necrosis (FHN), food pad dermatitis (FPD), enteritis etc.

However, lesions alone do not allow concluding about E. coli infection, because other opportunistic bacteria (Aerobacter, Proteus, Klebsiella, Pseudomonas, Salmonella, Bacillus,

Staphylococcus, enteric Streptococcus, Clostridia, ORT, MG, MS, MM, Pasteurella, Bordetella, etc.) can behave similarly to E. coli, as secondary infections.

Among the conditions, predisposing to the development of E.coli infection in poultry there are numerous external and internal factors, such as:

* Bad biosecurity and poor hygiene: old, multiage farms, improper house cleaning and disinfection, poor control of vectors (rodents, synanthropic birds, insects), litter quality etc.

* Incubation: dirty, cracked, exploded eggs, overheated/dehydrated underdeveloped day old chickens with open navels - an easy target for any enterobacteria and other pathogens from the surrounding.

* Management disturbances: high stocking density, low feeding/drinking space, high growth speed, weighing, selection, beak trimming, fasting, thirst, onset of lay, catching, transportation, spiking, trauma etc.

* Psychological: hierarchy, competition, fear, aggression, feather pecking, cannibalism etc.

* Environmental: physical (temperature, humidity, draught, dust, light, noise) and chemical (CO2, NH3, CO).

* Nutrition: raw materials/feed quality and contamination, starvation, overfeeding, nutrients/minerals/vitamins excess/deficiencies, poor feed structure, weed seeds, (myco)toxins, poisoning, etc.

* Water quality: high bacterial count, high pH, low ORP, biofilm, Iron, pesticides etc.

* Subclinical intestinal/respiratory infections/invasions: coccidiosis, disbacteriosis, helminthes, MG/MS/MM, ORT etc.

* Vaccine reactions: some strains of IB, ND, ILT, TRT viruses can produce tissue reactions of the respiratory organs and mucous membranes, which may develop into a chronic respiratory disease. Live vaccines may have even more generalized detrimental effects depending on the flock's health status, the vaccine strain, the application method (rolling infections), interactions with other vaccines, environmental stress and combinations of these points.

* Immunosuppressive field/circulating viruses: Infectious Bursal Disease Virus (IBDV) Marek's Disease (MD), Chicken Anemia Virus (CAV), turkey Hemorrhagic Enteritis Virus (HEV) – by damaging lymphocytes or their precursor cells, they can trigger chronic respiratory disease.

* Respiratory field/circulating viruses: Low pathogenic Avian Influenza (LPAI), Newcastle Disease (NCD), Infectious Laringotracheitis (ILT), Infectious Bronchitis Virus (IBV), Avian Metapneumovirus (Turkey Rinotrecheitits) – by damaging the respiratory tract cilia they open a passage for numerous bacteria.

* Unjustified usage of broad-spectrum antibiotics (cephalosporins, fluoroquinolones etc.) without having a preliminary sensitivity test done; incorrect doses and duration of antibiotic administration (h/day, consecutive days); combination of several BSA on one farm.

* Hormonal responses to stress. Corticosterone is the main hormone associated with stress in chickens. Its concentration in plasma rises under stressful conditions.Changes in corticosterone have secondary effects on other hormone systems, such as the conversion of noradrenaline into adrenaline or the production of thyroid hormones. Elevated corticosterone levels in response to a chronic stress, irrespective to its nature, transform major metabolic processes of the organism into a catabolic rout with an irreversible effect, ending up with a severe immunosuppression, thus opening the gates for any secondary bacterial infection via intestinal (due to reduction of mucus production by goblet cells, damage to the villi, enterocytes, MALT/GALT elements, and tight junctions functionality) and/or respiratory tract.

Targets for future. The major improvements can be achieved by changing the old farms to "all in – all out" system, better understanding and controlling the environmental stress factors, using reliable laboratory diagnostics, antibiotics sensitivity test, more selective antibiotics application focused on narrow-spectrum drugs, application of new generation vaccines against APEC /ESBL E.coli.

COOLING UNDERGROUND VAULT FOR AGRICULTURAL PRODUCT

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Abstract

In work is presented one of the variant underground vault, for long keeping of the agricultural product. Cooling vault is produced to account аккумулированного chill in winter.

Mankind has always stood the issue of storage of agricultural products cultivated until the next harvest. For long-term storage of agricultural products in storage must be of conventional type to maintain a certain temperature and humidity conditions. With the development of the theory of refrigeration and air conditioning, refrigeration units to the invention have an opportunity to resolve this issue. But the application of this method of storage is costly and it is reflected in the value of stored agricultural product, ie the product becomes more expensive.

What and set the task to develop optimal storage options.

Objective: The objective of the task is to develop optimal storage options.

Research to develop the best options for the storage of dry hot climate in Uzbekistan is aimed at solving the following tasks:

1. Study of the climatic conditions of Uzbekistan during storage of vegetables, fruits, berries and root vegetables (October-May).

2. On the basis of the material studied to analyze the technological requirements of storage and dawat explanation of the proposed storage options.

3. Razrabatyvat theoretical background calculation of unsteady heat transfer to the store.

4. Carry out experimental studies of heat transfer or storage model proposed option, or in full-scale facility and the results of the experiment sopostovit theoretical premises.

5. Show the feasibility and economic efficiency of the proposed option in the current mapping repositories.

6. Show the comparative advantage of the store from the previous version in the simplicity of design and operation.

Research methods. In this paper, we propose a variant of the underground storage facility belonging to the so-called "machineless refrigerators," ie, no refrigeration plant. Cooling storage produced by accumulated cold in winter. Battery storage is ground covers on all sides.

The idea of using heat-retaining properties of the soil to change the temperature outside air was first considered O.Hettselem and designer E.G.Lo [1,2]. However, the calculated dependences for determining the degree of change of supply air temperature has been proposed.

The task of changing the parameters of the motion of air in the underground ventilation ducts-N of doing Heerden, P.N.Smuhin, E.V.Stefanov [3,4,5]. The most important contribution to solving the problems that characterize the change in the parameters of air when driving in the underground ventilation ducts, it was E.V.Stefanovym [6].

The accumulation of the cold in the ground array in two ways:

1. The accumulation of cold storage through ventilation ("passive" method of accumulation);

2. Accumulation of cold with ground heat exchangers ("active" method of accumulation).

These two methods can produce a cold accumulation separately or concurrently with one or two centrifugal fans.

The practical implementation of these methods is that the accumulation of cold soil file is carried out by displacement of cold air across the room (through ventilation) or channels located either in the building or outside buildings (ground heat exchanger).

Results: The use of channels (pipes) for the cold accumulation has the advantage that the reserves of cold can be actively used in the warmer periods of the year to provide the required parameters meteorolegicheskih air in the vault. These ground heat exchanger is well combined with a ventilation system storage. Note especially the proposed decision in principle. Thus, in winter the outside air by heat exchange with the surrounding soil file several heated and thereby umenshaetsya installed power of the heat exchanger. In springtime, the outside air temperature is set near the dew point is considerably higher than the temperature of the inner surface of the soil heat exchanger. Consequently, in this case there will be a bulk moisture condensation, and downstream of the soil heat exchanger obtain cold air with a relative humidity close to 100%.

Upon entering the warm and humid air in the initial section of the soil heat exchanger is cooled, and further heat exchange process is carried out with a bulk condensation. With regard to the high relative humidity in the underground storage facilities, it should take into account the entry of moisture through the building envelope due to their water vapor.

Conclusion: In conclusion, it can be concluded that turns out to be advantageous to use an underground storage facility for long term storage of agricultural products. In this case, it decreases the installation of equipment for cooling capacity, reduce operating costs and energy can be saved motoresource refrigerators.

STUDY OF THE QUALITY OF BREAD WITH EMBRIONIC PRODUCT FROM GRAIN PEAS DURING STORAGE

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Abstract

The study of changes in the quality of the bread with germinal product from grain peas during storage is made. It was found that after 72 hours of storage the elasticity of the crumb decreased. Humidity and porosity decreased, as well as increased the titrated acidity, shelf life of bread from wheat flour with the addition of 1.0 % germinal product of the grain pea lasts 72 hours.

Introduction.

Embrionic of grain peas are valuable supplier of biologically active substances (Shelepina, 2013). They are substantially superior than premium grade wheat flour content of protein, lipids, mono- and disaccharides, dietary fiber, vitamin B1, calcium, magnesium, sodium, phosphorus. The content of essential amino acids in the embrion of the grain pea is 4.5-4.8 times higher than the highest grade wheat flour. The provision in germ of protein products valine, isoleucine, leucine, tyrosine and phenylalanine, are respectively, 29.8; 9.3; 9.75; 8.0% higher on average than that of prime grade wheat flour.

It was found that the best way to add embryonic product in the dough for bread is forming a slurry with portion of flour with subsequent agitation, this causes more intense color crusts, lighter crumb and higher porosity baked bread (68,1-74, 2%) (Shelepina, 2014). The best consumer properties had bread with the introduction to dough of 1.0% of the germ product instead of wheat flour, this exceed the control in porosity at 1.1 (tin formed) -1.6% (hearth), specific volume - 3.2 (tinformed) - 6.2% (hearth), dimensional stability - 0.86.

Purpose. The aim of the study was to investigate the changes in the quality of bread with embryonic product of grain peas during storage.

Subjects and methods. The object of the study was the bread made from wheat flour and bread from wheat flour with the addition of 1.0% of embryonic product of grain pea variety Temp instead of the wheat flour.

In laboratory trial was produced bread according to GOST 27669. Quality of fresh bread was evaluated for it cools after 4 hours. The quality of bread during storage was evaluated at 24, 48 and 72 hours after generation.

Organoleptic characteristics of the baked bread was determined according to GOST 27669; humidity - by drying method according to GOST 21094; porosity - according to GOST 5669; the specific volume - according to GOST 27669-88; dimensional stability was determined by the ratio of the height to the diameter of the hearth bread; acidity - in accordance with GOST 5670.

Results. Organoleptic parameters of bread quality with additive during storage mostly not significantly changed. The pleasant aroma and taste of bean persisted throughout the period of storage. However, after 72 hours of storage the crumb elasticity decreased slightly. Evaluation results of physical and chemical parameters of the quality of the bread with CP pea grains in comparison with the control sample are given in Table 1.

Mass bread with addition RFP or without decreased during storage. However, after 72 hours of storage mass of test sample in relation to the initial weight of the product was 99.5%, and the weight of the bread with the introduction of 1.0% CP - 98.9%.

Humidity crumb of bread with the addition of PO pea grains during storage decreased by 4.1% compared to the fresh, alkaline bread. And the greatest moisture loss occurred after 42 hours of storage. Drying of the control sample bread was less significant - 2.7% in relation to the fresh bread. This indicates that water retention of grain from the introduction of PO pea grains lower than bread made from wheat flour without additives.

Table 1

Physical-chemical quality of bread with germ-product of grain peas in storage

Indicators	Fresh bread		Bread during storage,t					
			24		48		72	
	1	2	1	2	1	2	1	2
Mass, g	300,0±0,3	300,0±0,3	299,6±0,2	299,3±0,3	298,8±0,1	298,1±0,2	298,4±0,2	296,6±0,3
Humidity, %	42,0±0,1	40,9±0,1	41,2± 0,2	39,2± 0,1	39,4± 0,2	38,8± 0,2	39,3± 0,1	36,8± 0,1
Acidity Degree	1,8± 0,0	2,1± 0,0	2,2± 0,1	2,4± 0,1	2,3± 0,0	2,6± 0,0	2,3± 0,0	2,8± 0,1
Porosity, %:								
form	73,1±0,2	74,2±0,2	72,9± 0,2	73,6± 0,1	72,6± 0,3	73,0± 0,2	72,2± 0,1	72,8± 0,2
hearth	73,2±0,1	74,8±0,2	72,6±0,1	73,9±0,1	72,1±0,2	73,4±0,2	71,6±0,2	73,1±0,3
specific volume, $см^3/кг$:								
form	3,1±0,1	3,2±0,1	3,1±0,2	3,1±0,1	2,9±0,1	3,0±0,2	2,8±0,1	2,9±0,1
hearth	3,2±0,1	3,4±0,1	3,0±0,2	3,2±0,2	2,9±0,1	3,1±0,1	2,8±0,1	2,9±0,1
Dimensional stability	0,93±0,01	0,86±0,02	0,90±0,01	0,82±0,01	0,88±0,02	0,80±0,02	0,86±0,02	0,76±0,01

Note: 1 - control; 2 - bread with addition of 1.0% of embryonic product

The acidity of the bread with the addition of increased study at the end of the shelf life of 0.7 degrees. with respect to the initial value. In the control sample and the acidity of bread rose, but less dramatically - by 0.5 degrees. Porosity as a control sample of bread and bread with a PO content of 1.0% during storage decreased. Moreover, the greatest reduction in porosity prototype bread was observed after 24 hours of storage - 0.6 and 0.9%, respectively, in the hearth and tin. Despite this, at the end of the shelf life of bread additive has a higher porosity than the control bread and consistent with EU standards for bread made from wheat flour. The specific volume of the samples of grain during storage has dropped slightly: tin - 0.3; hearth - 0.4 (control) -0.5 cm3 / kg (bread with 1.0% CP). Dimensional stability of bread with the addition of the study by the end of shelf-life decreased by 11.6%, the control sample - 7.6%.

Conclusions. Based on the results of the study of organoleptic and physico-chemical indicators of the quality of bread with embrion-product of grain peas it was established that the optimum shelf life of bread from wheat flour with the addition of 1.0% of embryonic product of grain peas is 72 hours.

The research results obtained in the framework of the state task of the Russian Ministry.

WORLD EXPERIENCE IN DEVELOPING AND USING OF GMO

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One of the modern world problems is the demographic development. According to UN forecasts the world population will reach 9.1 billion people by 2050 and the most part of the population increase will come from developing countries. This situation also entails several social and environmental problems. Conventional methods aren't enough to provide food for all the population of the Earth.

Biotechnology plays the role of one of the basic and important tools in struggle for the opportunity to provide for the mankind. Biotechnology became a science due to the French scientist Louis Pasteur's (1822-1895) work and research. Biotechnology (from Greek: *bios – life, techne – mastery and logos – word, doctrine*) is a field of knowledge based on the production use of living organisms and biological processes or systems. The use of microorganisms and their metabolic products favored the development of biotechnology areas, among which the genetic engineering stands in the foreground.

Genetic engineering is a set of methods and technologies including the technologies of the production of recombinant (or hybrid) deoxyribonucleic and ribonucleic acids (DNA and RNA are genetic data carriers in living organisms), identification the genes in any organism, genetic manipulation and insertion the genes into other organisms. By changing the hereditary material to give it any desired properties, genetic engineering methods make it possible to get genetically modified organisms (GMO).

The GMO discovery history started in 1953. It takes a lot of researching time to get new GMOs. But in spite of this, the production process is adjusted and automated as a rule. Special laboratories that control the synthesis of nucleic sequences by means of the computer are used for this purpose. A significant investment is needed for everything, because the process is quite impossible to predict, and the research and test equipment is expensive.

The first transgenic plants were obtained after 50 years of research in 1983. Long ago, cheese was prepared using rennet, the stomach enzyme of newborn calves. Scientists prevented the death of calves by cloning the rennet gene into bacterial organisms. But nowadays many kinds of

cheese are produced with a genetically modified enzyme. So in 1990 the first foodstuff was prepared in the USA. Not long after this success the first tomatoes with the gene from the deep-water plaice were grown in the United States in 1994. To make wheat more drought resistant, the scorpion gene was inserted into it. The Japanese have firstly compounded the pig genes with spinach. Genetic modified tomatoes (added the jellyfish or fish genes) are usually gathered unripe. After that they have been stored in the refrigerator for months and then are put on the shelves after ripening for a few hours kept warm.

After the experience and several experiments done not so long ago we can say that at the moment there are no obstacles to improve any organism or obtain a product in another way. It has an influence on the global use of genetically modified crops and also on the food production.

In 2016 the 20 years anniversary of commercial cultivation of GM – crops will be marked. The first large-scale plantings were made in the US in 1996, and the total area under GM - crops took to about 200 million ares. Since that time the area under GM - crops has grown 100 times. So rapid industry growth due to the fact that the cultivation of GMOs lets save on fuel and reduces the pesticides use that means a tremendous savings for farmers, who has already done their fortune on GMOs. In 2015 there are about 40 countries cultivating of GM - crops, and this number started with 6. And the world area of arable land is growing fantastically. In 1996, the area under GM - crops counted 166590 thousand ares and today it has grown to 150 billion ares, what is larger than the United States area.

Despite the rapid growth of the areas under GM - crops in all over the world and the increasing popularity of this subject this issue was raised in detail in Russia only on 23 of September 2013 by the Government resolution “Of the state registration of genetically modified organisms released into the environment and the products obtained by use of these organisms or containing them”. One solution of this resolution took effect on 1 of July 2014. It allowed the sowing of genetically modified crops, the first harvest of which will be gathered in 2016-2017. For the present GMOs can only be grown on experimental plots in Russia and some sorts of maize, potatoes, soybeans, rice and sugar beet can be imported. The food based on the achievements of geneticists in our country is allowed, but the producer should only state this information on the packing. The assistants of the Center of Bioengineering busy themselves with developing of a new seeds generation in Russia. However, these researches haven’t been so popular recently. Now the experts are predicting an unprecedented growth of interest in genetically modified crops. Not without a reason Russian consumer supervision service started to develop a positive image of genetically modified crops so actively last year. 10 years ago this service argued GMO products are killers. But now it names them the agricultural sector rescuers. However, at present the Russian government postponed the enactment of the resolution until 2017.

Agriculture is not the only application area of GMOs. Genetically modified organisms are used in basic and applied researches, with the help of which the occurrence and development patterns of rare diseases are studied. They are also used in medicine to produce medicine.

Talking about the use and production of anything, there are always questions about security. This problem comes to the fore nowadays abroad. In Europe the permitted content of GMOs in food is limited – not more than 0.9%; in Japan – 5%; in the United States and Canada – not more than 10%. Moreover, the nanotechnology industry researches are being developed widely. The researches like this are carried out in USA by Food and Drug Administration (FDA), by European Union and also by several international organizations as World Health Organization (WHO), the Food and Agricultural Organization (FAO), International Life Sciences Institute (ILSI).

As in any life situation there are "pros" and "cons" in the discussion about GMOs, there are opponents of GMOs and their followers. Despite the evident benefits of genetically modified organisms a lot of hot discussions occur in the wide scientific community about the possible influence on human health and the environment. Opponents of biotechnology say that the invisible undeclared chemical, bacteriological and genetic world war is led against all the humanity. But scientists have their own arguments for GMOs. All living organisms contain four basic life

components (A, G, T, C). In DNA molecule and in the hybrid DNA there are also these bases. Identical triplets of DNA encode any natural amino acids. They are 20 and they make all the biosphere proteins. All plant metabolites (transgenic, too) already exist in nature. If it is known that GM plants contain toxic or pharmacological substances, then the first problem of biosafety leads to the research whether the GM food has any allergenic, toxic, carcinogenic effects of on human beings and livestock.

Paying no attention to all the negative arguments about GMOs, I think it is the effective solution of many problems of farming and the whole living. It is necessary to consider all the development alternatives, to pay more attention to researches in studying the influence of GMOs on human health.

References

1. Food and Agricultural Organization URL: www.fao.org (date of visit 03.04.2015)

2. Kochneva M.V., Syrtseva M.A., Kotelnikova Ye.D. Obespecheniye prodovolstvennoy bezopasnosti v ramkakh tamozhennogo soyuza «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.366-368

3. Abramova L.S., Kochneva M.V. Tendentsii na rynke pishchevoy produktsii i vzglyad v budushcheye «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.213-215

4. Makarova E.P. GMO: vozmozhnosti, vizovi i myeri ryegoolirovaniya Byoollyetyen' «Mosti» (izdayetsya Myezhdoonarodnim tsyentrom po torgovlye i oostoychivomoo razvitiyoo (ICTSD)), vipoosk 5, july 2014, s.20-24 http://ru.ictsd.org/node/91788

5. Makarova E.P. Ekonomichyeskaya effyektivnost' mirovih agrobiotyehnologiy na primyerye gyenyetichyeski modifitsirovannih kool'toor / Syegodnya i zavtra rossiyskoy ekonomiki Moskva, Izd-vo «Ekonomichyeskoye obrazovaniye», 2012 № 56, s.123-126

STATISTICAL METHODS FOR ASSESSING THE QUALITY OF PRODUCTS

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Introduction. The main objective of the statistical methods of control is to ensure the production of usable products and the provision of useful services at the lowest cost.

One of the main principles of quality control with the help of statistical methods is the desire to improve product quality by monitoring at various stages of the production process. [1]

Application of statistical methods is a very effective way to develop new technology and quality control of manufacturing processes.

All statistical methods are based on the notion of variation. Application in the workplace statistical methods to control the spread of the parameters of manufactured products is a graphic representation of the easiest to understand statistical quantities characterizing the spread.

Evaluation of the spread of data often makes it possible to understand the nature of the process. If the spread of data is small, it is possible to weaken the control if large - this should be taken as a signal for the need to regulate the process to improve its stability, improve the quality of raw materials, identify and troubleshoot equipment and so on. The collected data can be used not only for decision-making the time of receipt and analysis, but also to evaluate the different problems addressed over a longer period, for example, for a month or a year.[2]

Statistical methods are the basis for the effective recognition of the problems and their analysis. Thus, it is possible to achieve a complete picture of the possible causes of the problems. Set priorities and based on the facts decisions..

Statistical methods are classified on the basis of community into three main groups [3]:

• graphical methods;

• methods for the analysis of statistical aggregates;

• Mathematical Economics.

Graphical methods. This so-called "seven tools of quality control." [4] These include:

1) checklists, allowing to improve the data collection process and organize data to facilitate their future use.

2) Pareto charts that allow to find out the causes of the few essential defects and to focus on the elimination of these reasons.

With the aid of diagrams, Pareto analyze marriage patterns, the amount of losses from marriage, the time and material resources to use it, the contents of the claims and the costs associated with claims, the number of breakdowns. Pareto charts are also used for the analysis of temporary factors, cost, safety, demand for different types of products, to determine the effectiveness of measures to eliminate the causes of defects.

3) Diagrams of the causes and results (Ishikawa diagram) showing the relationship between the quality indicators and factors affecting it. Using diagrams Ishikawa effectively in solving issues of product quality, increase productivity, develop innovations, more efficient use of equipment, improving safety, the development and implementation of standards for manufacturing operations and others.

4) histograms reflecting the process conditions in the period during which the data were received. Comparison of species distribution histogram benchmarking provides important information for process control. Histograms are useful in the preparation of monthly reports on the quality of the products, the results of the technical control, the demonstration of quality level changes monthly, etc.

Scatterplot that reveal the causal relationships of quality indicators and influencing factors in the analysis Ishikawa diagram. Scatter diagram (scatter) chart is constructed as a relationship between two variables x and y [5].

6) Control cards, allowing to separate variations in the quality due to certain reasons, the variations due to accidental causes. Checklist is a special form on which held the center line and two lines above and below the mean, called the upper and lower control limits. On the map points plotted measurement data or control parameters and operating conditions. Exploring the data change over time, monitor, point to the schedule is not out of control limits. If the detected emission of one or more points for the control limits is perceived as information about the deviation parameters or process conditions from the established norm. In order to identify the reasons for rejection investigate the influence of the quality of the raw material or components, methods, operations, conditions of the manufacturing operations and equipment.

7) Method bundle (stratification), in accordance with which data are grouped according to their conditions of preparation. Each data processing is carried out separately. Bundle helps to clarify the causes of defects, if it is found in the difference between these "layers".

methods of analysis of statistical aggregates:

1) comparison of the mean;

2) comparing the variances;

3) the regressive type of analysis;

4) dispersion type of analysis;

c) the economic and mathematical methods:

1) mathematical programming;

2) design of experiments;

3) simulation;
4) method of assessing risk and consequences of failure (FMEA);
5) queuing theory;
6) scheduling theory;
7) functional-cost analysis;
8) Taguchi methods;
9) quality function (SCF) or "Voice of the Customer".

In accordance with the provisions of ISO 9000, statistical methods are regarded as one of the highly effective quality assurance and are the basis for the effective recognition of the problems and their analysis.

They are focused on the development of cross-cutting mechanism at all stages of the product life cycle, beginning with the study of market requirements for product quality and finishing its disposal after use. Introduction of statistical methods should be directed to guarantee the continuity of the quality assurance process in accordance with the requirements of the consumer.

Application of these methods, without requiring costly, allows with a given degree of accuracy and reliability to judge the state of the investigated phenomena (objects, processes) in the quality system, to predict and regulate the problem at all stages of the product life cycle and on this basis to develop optimal management decisions

SECTION 4

ECOLOGICAL RISKS IN AGRICULTURE AND PROBLEMS OF FOOD SECTURE

JOINT EFFECTS OF BIOBRÁS-16 TIMES AND INTENSITIES OF LIGHTING PLANTS BANANA (MUSA SPP CV FHIA-18) IN THE DIFFERENT ACCLIMATIZATION PHASES

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Introduction

Possibly the banana is the world's oldest cultivated plant. Makes more three thousand years already mentioned in Chinese writings as one of the first food of primitive man. The ancients called "fruit of men wise" given its superior nutritional qualities (AEBE, 2009). While bananas generate about 5,000 million annually in profits, just traded 13 percent of world production, about 104 million tonnes, indicating the potential in its cultivation and trade global food (Domino, 2008).

In the world crop production in 2009 was 95,595,965 tons, average yield of 19.7 t ha and the total harvested area 4843595 hectares. In Cuba its production in 2009 was 280,000 tons, agricultural yield 7.4 t ha-1 and the total harvested area of 33,034 hectares, (FAO, 2011).

Therefore, in Cuba today are plotted strategies to encourage this cultivation and increase yields. Plantains and bananas are a source critical of carbohydrates in the Cuban diet therefore has a huge importance in any feeding program. Its greatest advantage is that bananas can be in production throughout the year and therefore have a huge importance in any program of self-sufficiency (Crouch et al., 1998). Since 1984 the Honduran Agricultural Research Foundation (FHIA) has been developing a program to search for resistant hybrids to Black Sigatoka disease among which is the cv. FHIA-18 (AAAB).

According Averdaño (2006), in the coming years is expected to reach the figure of 15,000 hectares planted with this clone. For these reasons, Cuba plans to improve technologies for this crops of economic importance such as plantain and banana (Musa spp.). Occuping a prominent place, introducing new techniques of crop research is conducted.

The successful production of this species is largely conditioned by Seed quality. Vitro propagation has been widely used as an alternative and efficient method for the rapid spread of several plant species (Hazarika, 2006). In banana, the application of this technology has enabled the rapid dissemination and validation of new genotypes, which is the base material recovery propagated with high quality plant (Gübbük and Pekmezci, 2004

The establishment of these technologies implies a system economically efficient acclimatization to respond to the interests of the biofactories. This phase aims to achieve the acclimatization of plants in vitro to the external environment with high survival rates in a short period time and at low costs. It is necessary for this, accelerate growth and plant development in vitro by managing several factors in this stage such as: proper selection and treatment of the propagation material, irrigation regime, disease control especially fungal and employment substrate and light intensity according to the requirements of the species.

MATERIALS AND METHODS

The research was conducted in the area of acclimatization of in vitro plants of the University "Vladimir Ilich Lenin" from Las Tunas, during the period from 30 January 2003 to 12 March 2004 period.

Five experiments were conducted, two for determining the intensity of optimal, two more to determine how and application rates of Biobrás-16 lighting and a final experiment where the best results of the above experiments were evaluated together. As plant material in vitro plants were used in all experiments banana (Musa spp., cv. FHIA-18), from the 12th subculture biofactory You belonging to the Seed Company Several of Las Tunas, obtained from axillary buds via organogenesis, using multiplication medium MS (Murashige and Skoog, 1962) supplemented with 4.0 mg.L-1 of 6-BAP; 0.65 AIA and 30% sucrose.

Poliuretanic trays with 70 wells were used for each treatment, and 35 plants evaluated in all experiments, except for the variable leaf area and root system in ten plants were used in vitro.

Irrigation was performed in all experiments using manually 15 ml / socket daily the first 10 days and then 20 to 45 days. As measuring instruments graduated rulers and calipers were used. Was used in all experiments a completely randomized design and each plant considered as an experimental unit.

	Tratamientos							
Variables	**Traits 45 días2**	**45 días2 + Biobrás-16**	**10 días1 + 35 días2**	**10 días1 + 35 días2 + Biobrás-16**	**10 días1 + 30 días2 +5 días3**	**10 días1 + 30 días2 +5 días3 + Biobrás-16**	**C.V %**	**E.S. Media**
Survival	91.43	92.86	85.71	91.43	94.29	94.29	1.30	0.012
Height plants	2.73d	3.46c	3.75bc	4.59a	4.06b	3.77bc	23.58	0.15
Diameter of pseudostem	0.44c	0.57b	0.59b	0.66a	0.61b	0.55b	19.02	0.018
Number of leaf	8.86 c	9.95 ab	10.49 b	12.02 a	10.09 ab	7.19 d	15.64	0.48
Large leaf	3.91c	4.68 bc	4.83 ab	5.54a	4.62 bc	4.67bc	18.26	0.27
Size No. of roots	8.86 c	9.95 ab	10.49 b	12.02 a	10.09 ab	7.19 d	15.64	0.48
No. of roots	15.03 c	18.59 b	20.52 b	25.93 a	18.71b	21.37 b	18.32	1.16
Large high of roots average length	6.00 c	7.10 bc	7.70 abc	8.10 a	7.10 bc	6.80 bc	19.31	0.43
Large high	11.91b	12.96 ab	13.04 ab	13.54 a	11.62 b	13.86 a	11.46	0.46
Average length Roots	3.52 bc	3.68 bc	4.30 b	3.65 bc	2.95 c	5.04 a	21.14	0.25

RESULTS AND DISCUSSION

On his left, explains that this increase is due to an increased of carbonaceous skeletons, which can be used by the plant for the synthesis of new compounds. The table shows that the larger diameter of the treatment was for 10 days at 75% RI + 35 days at 50% R.I. significant difference with the other treatments.

The treatment with applications had the lowest pseudostem significant difference with the other treatments. All treatments that were applied Biobrás-16, as compared with those not treated, showed higher values, demonstrating the positive influence of the substance. Hector et al., (2007) had favorable responses to the implementation of Biobrás-6 at doses of 0.01 and 0.05 mg.L-1 in evaluating the seedling height in the acclimatization of in vitro plants of plantain.

The behavior of the number of sheets always showed that the control had the lowest number of sheets with significant difference to most treatments. The treatment for 10 days at 75% RI + 35 days at 50% R.I. showed better response with significant differences with the other treatments at 45 days. The length, width of the penultimate leaf and leaf area at 45 days was when the best treatment plants remained 10 days 75% of RI + 35 days with 50% of significant differences with the most treatments. Treatment with lower results was the witness.

Hector et al., (2007) had favorable responses to the application of Biobrás-6 with doses of 0.01 and 0.05 mg.L-1, the number of sheets in the acclimatization of in vitro plants plantain. The behavior throughout the penultimate showed that the witness always had the lowest length, width

and area with significant differences with most treatments where lighting was gradually reduced and simultaneously applied Biobrás-16 showed the best with significant behavioral differences.

In this respect the positive response of better treatment of the interaction between light and Biobrás dose-16 may be due to the relationship between the cytochrome P450 monooxygenase enzyme complex, in plants is very similar to the P450 enzymes involved in the biosynthesis of brassinosteroids, although its share is still not fully established (Tanabe et al., 2005).

Behavior of the root system Table shown that the number of roots was the best treatment which remained for 10 days at 75% IR + 50% 35 days RI with no significant difference with the most significant difference with treatments and treatments with decreased illumination where the last 5 days 25% of RI with and witness, which were the least number of roots. The maximum length of the roots as well as the average length, reached its highest value in the treatment 10 days 75% of RI + 30 days 50% of R. I. + 5 days at 25% R.I. with Biobrás-16.

When comparing treatments with and without Biobrás-16, it is observed that in most of the treatments that were applied the product better outcomes although without significant differences between them.

Significant differences were observed with the control without differences with some treatments with respect to the medium length. The maximum length showed significant differences in all treatments. Hector et al., (2007) obtained favorable responses Biobrás-6 in the dry mass of roots at doses of 0.01 and 0.05 mg.L-1 in vitro acclimatization plantain plants.

CONCLUSIONS

By interrelating the best results from reduced lighting with and without Biobrás-16 at a dose of 0.01 $mg.L^{-1}$ by immersing the roots, it was found that the best response was when the bio-stimulator was applied.

RECOMMENDATIONS.

Using reducing lighting to 75% 10 days early days of transplantation and 35 days to 50% reduction in lighting, may be optional depending on the conditions in each Biofactory the spending the last 10 days 25% RI Using the dose of 0.01 $mg.L^{-1}$ Biobrás-16 by dipping the combined reduction of the proposed lighting roots.

BIBLIOGRAPHY

CRUNCH, J., VUYLSTEWKE, H. & ORTIZ, R. 1998. Perspectives on the application of biotechnology to assist the genetic enhancement of plantain and banana (*Musa spp*). International Institute of Tropical Agriculture. Nigeria.

GÜBÜK, H. & PERKMEZKI, M. In vitro propagation of some new banana types (*Musa* spp.). Turkish Journal of Agriculture and Forestry, v.28, p.355-361, 2004.

HAZARIKA, B.N. Morpho-physiological disorders in *in vitro* culture of plants. Scientia Horticulturae, v.108, p.105-120, 2006.

TANABE, S.; ASHIKARI., M.; FUJIOKA, S.; TAKATSUTO, S.; YOSHIDA, S.; YANO, M.; YOSIMURA, A.; KITANO, H.; MATSUOKA, M.; FUJISAKA, Y.; KATO, H. and IWASAKI, Y. 2005. A novel cytochrome P450 is implicated in brassinosteroid biosynthesis via the characterization of a rice dwarf mutant, dwarf11, with reduced seed length. Plant Cell.17:776-790.

DOMINO. 2008. Bananas wasted on fighting hunger. [Online]. Disponibleen:http://domino.ips.org/ips%5Cesp.nsf/vwWebMainView/D6BA9FE04E31B1E0C12574DE006C8146/?OpenDocument. [Accessed 15 March 2015].

FAO. 2008 FAO Statistics. [In line]. Available in: http://faostat.fao.org/faostat/notes/citation.htm. [See December 29, 2010].

HÉCTOR, E., TORRES, A., Algoe, M., CABINS, S. and A. LOPEZ. Propagation in vitro of plantain (Musa spp. AAB) Clone Sobrino with Cuban biostimulator BB-6 and Biostan as substitutes for growth regulators. Crops tropical. 2007. Vol 8 No-1.

LEFT CH, MIRIAM Núñez, MARY C. González, RUTH Proenza Effects of the application of a brassinosteroid analogue espirostánico in vitro plants of banana (Musa spp.) During the acclimatization phase. vol.33 no.1 cultrop Havana Jan.-sea. 2012

NUNEZ, MIRIAM. and Robaina, C. (2000) Brassinosteroids. New plant delcrecimiento regulators with broad prospects for agriculture. Document IAC, 68, P. 83, Campinas (SP).

RIQUENES, MILAGROS. and OJEDA, A. 2006. Software "simple and complex calculation of leaf area. Register: 1559-2006.

LERCH. G. 1977. Experimentation in Biological and Agricultural Sciences. Edition Technical Scientific.

THIMIJAN, R. & ROYAL, D. H. 1982. Radiometric, and Quantum Light Units of Measure: A Review of Procedures for Interconversion. [en línea]. Disponible en: http://www.apogeeinstruments.com/conv_lux.htm[Consulta: junio 12 del 2003]. Havana.

YOKOTA, S., ZIAUL, M., KALAM, M., MAHAMBUR, A., EIAZAWA, J. YASUNO, S. & ISHIGURI.,F. 2007. Histological observation of changes in leaf structure during successive micropropagation stages in *Aralia elata* and *Phellodendron amurense*. Plant Biotechnology 24, 221–226)

PROBLEMS AND CHALLENGES OF BREEDING AND THE DEVELOPMENT OF NEW VARIETIES OF WHEAT CROP IN THE REPUBLIC OF IRAQ

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Abstract

Result of the intensification of the process of breeding is to reduce the time it takes to develop new varieties of wheat; therefore it is necessary for the use of modern biotechnology, especially molecular parameters and protein, as well as working on finding new sources to develop the economic and biological characteristics with high value.

Problem of food security in the Republic of Iraq are linked to a large extent to producing important cereal crops such as wheat, where the need increased for grain production in the country, with a constant increasing of population. Therefore, the development of varieties of wheat with good genetic characteristics such as increased resistance to factors biotic and abiotic and high productivity and quality of grain, which is very important especially for agriculture in the tropics, because biodiversity is a key element in wheat breeding.

To resolve this issue by plant breeders in Iraq, there is a need to find new ways and methods of modern scientific breeding which suit the development of new genetic combinations regarding climatic conditions for each agricultural area.

Besides, traditional methods (classic) for plant breeding such as: hybridization methods (self, humoral), franchise and the input, it is necessary to use modern methods to speed up the election process and reduce the time to develop new varieties, in particular, the establishment of a promising target using molecular markers and protein. In addition, there is a need for scientific development and take the technology to varietal development of agricultural measures, taking into account the peculiarities of soil and climatic conditions of each region.

At present, new varieties began to spread mainly those produced by the Ministry of Science and Technology (IPA -99, Iraq, Tamyz- 3), as well as varieties generated in other research institutions such as IPA Center for Agricultural Research (IPA -95). In addition, there are several varieties have been introduced from foreign countries (IPA -95, Sham 6 and Iraq).

There are three different agricultural areas in Iraq for the cultivation of wheat crop: - North, Central and South. In general, the optimal planting dates in the country - in the second half of

November. For the optimal time to sow wheat to different regions as follows: the northern region is the second half of October - the first half of November. For central and southern regions, the optimum sowing date is in the first half of November. The reason behind this is the need to ensure the normal germination of plants in the fall before the cold weather.

The most favorable conditions for the cultivation of wheat are in the northern region of the Republic of Iraq, where the relatively high levels of humidity and rain and fertile soil available, followed by the central region that is less productive while in southern region conditions of growth are not good because of the high salinity.

Areas vary greatly in terms of the quality of the soil and climatic conditions and the quality and characteristics of the grain. The cultivation of wheat in dry areas is characterized by the production of bread with a good quality, whereas in humid areas soft wheat (Triticum aestivum L.) is grown to be used in the confectionery industry. The harsh wheat used to produce pasta.

The increase in grain production in the Republic of Iraq needs to develop new varieties of wheat which are more resistant to the harsh conditions of high-quality properties. In this direction specialists and plant breeders are working in particular on the events of mutation by using fast neutrons among them (Mohammed Al-Obeidi, 2013). Where the researcher found that the average production of these different varieties through studying them in three different areas reached 5.2 tons / ha. Research and Studies continued to identify the level at which the new genotypes of wheat can endure drought and other abiotic factors (M.M.Elsahookie, A.O.Alfalah, A.F.Almehemdi, 2009).

TECHNOLOGICAL AND BAKING PROPERTIES OF GRAIN ALLOCATEFLOPPIES IN WINTER WHEAT WITH ALIEN CYTOPLASM OF AEGILOPS OVATE

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Abstract

Comparison of the results, indicators characterizes the prospectiveness of grain quality of the studied winter wheat form *АЦПГ - 154*, in general it indicates that this winter wheat form is at the same level of the standard cultivar “Zarya”, and in some individual aspects it is above the standard cultivar “Zarya*”*.

Nowadays, in agricultural production, more and more attention is paid to cereal breeding and grain quality. Therefore, for varieties and hybrids evaluation, one need the information about the grain protein content, grain quality and other information on the technological properties of the grains.

The last decades have witnessed a rapid development in researches on the cereal crops' biochemistry in particular the grain protein qualities, gluten, as well as the bread baking properties of wheat grains.

In selection, when assessing the grain quality, the main feature is the gluten content and gluten quality. However, the grain protein content is one of the most important indicators of the grain quality, as it determine the biological value of grain.

Guided or in accordance with good quality bread production, the milling and baking industry requirements are that the protein content in grains should be at least 13-14% , and 25% crude gluten. For strong wheat in wheat categories, crude gluten should not be less than 28%, in the first group.

Vitreous (consistency of the endosperm) is one of the main features of the flour milling properties. Usually within one type, more vitreous grain mills better, gives a higher yield of grits and high quality flour. At the same time there is a direct link between the vitreousness and grain protein content and gluten content. Vitreous grains (along with its color) is the basis for product classification of wheat grain categories. Vitreous refers to hereditary traits, the manifestation of which depends on the climatic and agronomic factors.

Selection and genetic program on the creation of allo-cytoplasmic winter wheat hybrids held at the Peoples' Friendship University of Russia (PFUR), aiming at the realization of the targeted breeding features such as resistance to biotic and abiotic factors in crops as well as high bread baking properties grains. (Семенов О.Г., 2000). As a result of the breeding program a variety of promising genotypes were identified, among them is an "*АЦПГ" - 154* form, which has a high grain yield and resistance to a number of abiotic factors (winter resistance, resistance to damping-off and moisture deficit). The hybrid form *(АЦПГ - 154)* mentioned above, is partially vitreous grain group, with at least ¾ vitreousness.

The study of promising allo-cytoplasmic winter wheat hybrid form with an Ae. ovata cytoplasm (*АЦПГ – 154*) revealed that the protein content in the grain of this genotype is at the same level as that of the standard sample "*Заря"*, consists of, 13.28% and 14.19%, respectively.

During the analysis of technological properties of mass 1000 kernel, grains' dry substances given out were taken into calculation; grinding was carried out using a *Quadrumat Junior* mill; baking one loaf of bread - 25 g of flour; sedimentation figures were determined in a 2% solution of glacial acetic acid.

Crude gluten content promotes the gas-retaining ability of the dough, which is an important technological indicator. According to this indicators *АЦПГ – 154*, is at the same level as that of the standard varieties "Заря", and have shown a high gluten content (above 30%) (Казаков Е.Д., 1987).

An important indicator such as sedimentation figures shows the indirect characteristic of the grain quality, because between this indexes, protein content and gluten quality, there is a positive correlation. It turn out to be that the indexes of *АЦПГ – 154,* shows the characteristics of a middle wheat baking properties (sedimentation figures - 20-40 ml) and in some cases it is marked superiority (44 ml) higher than the standard indicator of "*Заря"*, and this is a sign of good bread baking properties (40-60 ml). (Table 1)

Table 1

Changes in parameters of grain technological properties, depending on the growing conditions

Variant	Mass 1000 grains g	Overall vitreousness%	sedimentation figures ml	Crude gluten content in flour, %	Gluten quality group
Variant 1					
St. Заря	45,8	75	34	36,3	I
АЦПГ 154	38,7	49	31	33,0	I
Variant 2					
St. Заря	36,8	56	42	38,0	I
АЦПГ 154	34,6	18	44	35,1	II
Variant 3					
St. Заря	40,6	74	39	38,0	I
АЦПГ 154	39,2	40	32	35,1	II

Analysis of the technological properties of flour, such as bread volume yield, 525 ml and above, is considered to be of a good baking properties of flour. In our studied forms *АЦПГ - 154*, it reaches 920 ml, indicating the good baking properties of flour.

Table 2

Changes in parameters of technological properties of flour

Variant	Bread			Overall rating
	Volume	Porosity points	Overall rating, points	
Variant 1				
St. Заря	880	5,0	4,7	Good
АЦПГ 154	760	4,0	4,2	Good
Variant 2				
St. Заря	960	5,0	4,7	Good
АЦПГ 154	920	50,	4,6	Good
Variant 3				
St. Заря	740	4,5	4,6	Good
АЦПГ 154	720	5,0	4,5	Good

Comparison of the results, indicators characterizes the prospectiveness of grain quality of the studied winter wheat form *АЦПГ - 154*, in general it indicates that it is at the same level of the standard cultivar "*Заря"*, and in some individual quality indicators, it is above.

Currently, the studied form *АЦПГ - 154,* is planted for breeding purpose in Dmitrovsky district, Moscow region on the area of 12.0 hectares in preparation for the transfer to the (ФГБУ) "State Commission of the Russian Federation for Testing and Protection of Selection Achievements".

TRENDS IN THE DEVELOPMENT OF THE SUGAR BEET INDUSTRY OF RUSSIA

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Abstract

The basic trends in the development of the sugar beet complex of Russia have been considered.

Russian sugar beet industry has an important place in the structure of the agri-food sector of the country, making a significant contribution to food security of the country. It includes two sub: beet and sugar production.

In accordance with the directions of the Food Security Doctrine of Russia to assess the state of food security as a criterion is determined by the proportion of domestic agricultural and food in the total volume of commodity resources (including carryover) internal market relevant products. To sugar the threshold value is not less than 80%, but this value can be increased to 90% in the volume of production of beet 5-5,2 mln. Tons. In 2011, this figure reached a value of 5.3 million. M., In 2012. - 5 million. T, 4.5 million in 2013g.-. M. Sugar beet.

The functioning of the sugar beet industry should be aimed at increasing the production of sugar at the lowest cost, efficient and economical use of natural, material and labor resources.

The efficiency of sugar beet production is estimated by the following main characteristics: yield, sugar content, purity beet juice, sugar yield per hectare of crops, the ability to maintain the properties during prolonged storage, the ability to provide the raw material area to the maximum the minimum distance from the plant cost, high-margin.

The raw material base of beet sugar industry.

Area under this crop in recent years, declined slightly (2011g.-1291.9 thousand hectares, in 2012, 1,143.0 hectares) in 2013 amounted to 905 thousand. Ha. Gross harvest of sugar beet fell (in 2011 - 47.6 million tons, in 2012 - 45.1 million tons) and 39.3 million in 2013 g.-. M. Productivity has some growth (in 2011 -392 kg / ha, 2012g.-409 kg / ha) in 2013 was 442 kg / ha. The bulk of the sugar beet produced agricultural enterprises - 89.6%, the share of farms accounted for 10, 4% (2013). [2]

The rate of harvest of sugar beet in the 35.5-36.0 mln. T. Is sufficient to produce 5.0-5.2 mln. Tons of sugar, with sugar content of beets 17% and purity of 87.5% beet juice. The yield of sugar beets such should be 14.65%.

To achieve this goal must be the improvement of technological parameters of root crops: yield, sugar content and purity of beet juice, as these indicators depends sugar yield from 1 hectare.

Sugar beet production is concentrated within the forest-steppe and steppe zones, in areas with favorable agro-climatic and soil resources - in 25 regions of Russia (2013). The main beet-growing areas are located in the Central (50-55%), South (18-20%), the North Caucasus (4-5%) and Volga (20% - 22%) federal districts, and the Altai Territory (up to 2%). The highest yield observed in the Stavropol Territory - 603 kg / ha, Tula - 519 kg / ha, the Krasnodar Territory - 518 kg / ha, the Tambov region - 505 kg / ha. According to the reports of sugar factories, the highest sugar content of beets says: in the Altai region - 16.47%, Karachay-Cherkessia - 16.34%, the Tambov region. - 16,30%, Tula region - 16.26%, the Orel region - 16.16%. On average, the Russian beet sugar was 15.7% (2013).

At the cost of sugar beet affect not only the sugar content, the purity of beet juice yield, but also the formation of compact zones beet (raw areas) with a seal of sugar beet in crop rotation to 15-20%.

Producers of raw materials should be within a radius of 60 km from the processing plant capacity of 12 thousand. Tonnes per day. So far, only 20% of them are located at a distance of 25 kilometers from the sugar factories (average power of 4 th. Tonnes), more than 25% removed from them at 75 km and higher, including 10% - 100-120 km [3].

The imbalance in production of sugar beet and sugar mills capacity at its processing causes in some regions of large radii of delivery of raw materials for processing, which leads to higher losses sveklomassy, considerable transportation costs and reduces the profitability of sugar beet production. [2]

Processing unit sugar beet industry is represented by 79 existing sugar factories, of which 34 enterprises put into operation in the pre-revolutionary and pre-war period, with a significant part of the life of the equipment sugar mills over 20 years, and the state of the art corresponds to less than a third of operating equipment. The capacity of existing plants range from 2 thousand. To 10 thousand. Tonnes of beet processed per day. The average power plant 1 in Eastern Europe and the USA from 8 to 20 thousand. Tonnes of beet processed per day.

The total production capacity of existing sugar factories as of 1 January 2012 amounted to 316 thousand. Tonnes of beet processing per day. They are placed in 22 regions. The bulk of the production capacity is concentrated in the Central Federal District (53%), the share of the Southern Federal District accounts for 25.6%, 16% Privolzhskogo-, North Kavkazskogo- 3.5% and the Siberian Federal okruga- 2.2% [1].

The positive aspect of the functioning of the sugar beet subcomplex is exporting sugar, bagasse, molasses (from 2011)

Russia's accession to the WTO has led to a change in the current system, in recent years the state support of agriculture of the country, increased costs and reduced profitability of sugar beet, which can not be fully compensated by the increase of production efficiency of sugar beet and sugar in the medium term. Sugar beet production could become unattractive for agricultural producers, which will reduce the acreage and a drop in production of beet sugar.

Thus, the need to create economic conditions to improve the competitiveness and efficiency of the Russian sugar beet industry, encourage the development of raw material base to a qualitatively new scientific and technological basis, further development of the domestic sugar market.

THE IMPACT OF ENVIRONMENTAL RISKS IN AGRICULTURAL PRODUCTION

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Abstract

The agro farms development is impossible without studying the question of ecological risks management. Analysis of the impact of environmental risks enables the efficiency of agricultural production.

Environmental issues each year are becoming more relevant. In this regard, the study of the impact of environmental risks on agricultural production is necessary and causes a number of difficulties.

The purpose of research - to examine the impact of environmental hazards on agricultural production.

Object of research are environmental risks, their impact on agricultural production.

Research methods:

- abstract-logical method - to study the basic directions of environmental risk management agroformations;
- economic-statistical method - to analyze the current state of agricultural companies;
- monographic method in the generalization of the experience;
- the experimental method (questioning, expert opinions) - to test research results in agricultural companies.

The risk faced by agroformation always - in solving both current and long-term objectives. Certain types of risk are subject to all the organizations, without exception, but there are specific risks specific to certain activities.

Environmental risks can be caused by anthropogenic impacts or other impacts on the environment. All environmental risks are assessed through research that combines the study of facts and scientific forecasts. The result is a work for understanding the subsequent degree of impact on this area of polluting factors or other agents harmful to the environment.

In assessing the environmental risks are taken into account the following rules acceptable environmental risk:

- The amount of inevitable losses in the environment;
- The minimum volume of losses in the environment;
- The possibility of a real recovery of losses caused to the environment;
- -no harm to human health;
- Proportionality of the economic effect of the conduct of agriculture activities and environmental damage.

Environmental risks are classified and are characterized by the following types:

Individual. The object of this environmental risk is directly person. He, or rather his sources of life and are a source of risk. As a result of this environmental risk can be applied to a person injured, a person can get sick because of a disability or death.

Technical. The object of this risk are the various technical objects and systems. The imperfection of technology and improper use of such objects could lead to accidents, explosions and catastrophes.

Environmental. Ecological systems can also be subject to environmental risk. It can become a source of human intervention in terms of the natural environment of the area or region as a whole.

Social environmental risk has as its object an established social group. Its source may be an emergency, and reduced quality of life. As a result, the social group may occur following adverse events - Group of injury, illness, increased mortality.

Economical. Material resources may be subject to environmental risk. This may occur as a result of increased danger or adverse production conditions of the natural environment for its organization. This assesses the environmental risks the possibility of increasing the cost of safety and possible environmental damage from insufficient security.

The basis for the systematization of environmental risks in agricultural production are the sources of their occurrence in the manufacturing process, their attitude in the external environment and internal structure.

The proposed classification of environmental risks specific to the specifics of agricultural production, the management of these types of risks helps to reduce vibrations risks, effective management of risky situations, improve the sustainability of agricultural production, the creation of a favorable situation for the development of agricultural companies.

In fact, work on the environmental risk assessment is reduced to the assessment of the possible environmental damage, as well as economic losses and damages as a result of an event or change in the environment.

Environmental risks in agricultural production:

- Productive land is being depleted due to unsustainable water reclamation;
- The widespread development of wind and water erosion;
- Inefficient use of chemicals, the use of herbicides and pesticides, not only contributes to combating noxious weeds and insects, but also affects the beneficial micro-organisms, flora and fauna of fertility, by the massive use of chemicals, polluted drinking water sources;
- The lack of financial and material resources, lack of over the years the program of protection and improvement of the environment.

Ways of solving environmental problems in the agricultural sector: agriculture intensification of production to be carried out by sophisticated biotechnology, changes in land use patterns, rational irrigation, use of alternative technologies (drip and subsurface irrigation, sprinklers).

One of the areas of effective land-use and environmental - conservation of biological organisms, the soil, the creation of biological fertilizer, improves soil fertility. Since drip irrigation allows water to draw on the capillary tube directly to each plant, along with dissolved mineral fertilizers. It is necessary to return to the cultivation of monoculture crop rotation, soil returning its natural biological turnover.

For prompt warning of environmental hazards in Kazakhstan is necessary to establish a comprehensive and integrated monitoring of the state of the environment as a result of its influence on it of human activity.

Moldboard plowing not only eliminates the need to plow the ground, using heavy machinery, but also preserves the soil from wind erosion.

An important condition for the survival agroformation acute competition is the ability and the ability of its management - to build a competent and effective policies in the field of environmental risk management.

Proposed factors to consider environmental risk assessment based on the analysis of the impact of external and internal environment, taking into account changes in the market, SWOT - analysis, focusing on the characteristics of agricultural production [1].

Assessing the impact of environmental risks - it is a serious scientific work, which is performed exclusively by professional ecologists. Improper environmental risk assessment may lead to irreversible consequences, for a particular area, and for the region as a whole.

Substantiation of ways of solving the food problems of Kazakhstan should be carried out in close connection with the development of measures to maintain the equilibrium of the environment, protection of the landscape sphere from pollution and destruction.

FEATURES OF FORMATION OF INTERNODES IN SPRING WHEAT PLANTS OF ALLOCYTOPLASMIC FORMS DEPENDING ON THE AVAILABILITY ALLELE RHT8B OF THE SHORT STEMS GENE RHT-8, LOCATED ON CHROMOSOME 2D

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Abstract

The presence of allele Rht8b, of the short stem gene Rht-8, located on chromosome 2D, in allocytoplasmic spring wheat T.aestivum L genotypes. was reflected in the formation of the middle and upper internodes of wheat plants, therefore it is appropriate to be taken into consideration in the breeding process for lodging resistant varieties.

Lodging is extremely a severe problem in cereals and other crops , not only in terms of intensive farming, but also on gradual transition to adaptive intensification of agriculture. There is a direct relationship between resistance to lodging and plant height, hence there are two approaches to the solution of this problem. Firstly, the creation of varieties that combine high productivity with short stem plants according to the requirements of intensive technology; Secondly, the use of retards as means of lodging prevention in cereals. In modern conditions, genetic-selection is particularly a relevant approach in solving this problem, because it eliminates the use of retards and corresponds with the concept of adaptive intensification of agriculture.

It is well known that lodging often occurs in tall stem cereal varieties. The negative relationship between the height of the stem and its resistance to lodging, however, is not universal. There are known varieties with long stems and at the same time they possess strong resilient stems. There many important external features defining lodging resistance, such as stem length, internodes length, , stem wall and its thickness, number of leaves and other features. The immediate cause of lodging the stem bending (in the nodes) caused by an abrupt shifts in the metabolism of plants (Turkova, 1967). There is a relationship between the structure of underground internodes, nodal roots strength and a degree of varieties' resistance to lodging.

Resistance to lodging is closely related to the internal anatomical structure of the stem. There is a direct link between the toughness of the lower internodes and the anatomical structure of the cereal stems (Kuperman, 1950).

Resistance to lodging is a complex trait and is caused by physiological, biochemical, morphological and anatomical features of the stem, in particular, such as the thickness of the stem, the degree of development of mechanical tissue, the number of vascular bundles, the relationship between stem length and stem diameter and other features. Wheat varieties that are resistant to lodging, are distinguished by powerfully developed mechanical ring. The thicker mechanical ring, bigger cross-sectional radius, shorter stem length, the higher resistance to lodging, i.e. the ratio

between the length and diameter of the stem serves as one of the main criteria in varieties' resistance to lodging.

In our opinion, the solution to this problem is possible, by creating new genetic systems in the form of allocytoplasmic hybrids wheat varieties , in which the effect of nuclear cytoplasm's interactions determines quite a number of properties that provides a higher level of plant adaptation to environmental stress factors.

The subjects of our study were thirty forms allocytoplasmic spring wheat with different types of foreign cytoplasm. From each form, we selected the three of most productive ears from 2013 harvest, which were planted in 2014.

Table 1

Comparative characteristics of allocytoplasmic wheat genotypes by internodes length and the presence of alleles Rht8b of the short stem Rht-8 gene, located on chromosome 2D (allele Rht8b)

Characteristics	Overall characteristics (30 genotypes)	Presence of alleles Rht8b	
		First group (9 genotypes)	Second group (21 genotypes)
		Detected	Not detected
Plant height	81.2±0.97	79.2±2.10 100	82.1±1.30 103.7*
Internode I	4.5±0.14	4.4±0.41 100	4.5±0.12 102.3*
Internode II	7.8±0.22	7.8±0.54 100	7.8±0.23 100*
Internode III	14.6±0.58	12.9±0.80 100	15.3±0.71 118.6*
Internode IV	35.4±1.72	32.7±3.95 100	36.5±1.80 111.6*
Internode V	40.7±2.27	34.3±6.63 100	43.5±1.36 126.8*

We carried out the structural morphological analysis in all thirty studied forms, including the crop yield structure, plant height and internodes length. At the same time, all thirty studied forms were analyzed using molecular markers to detect the presence of Rht8b alleles for short stem gene Rht-8, located on chromosome 2D. It was found out that, in all thirty studied genotypes, Rht8b allele was detected in nine forms the the remaining twenty-one genotypes this allele was not detected.

Table 1 illustrates the results of the formation of plant height and internodes depending on the presence of the Rht8b allele. It was found that the average plant height of the compared genotypes in different groups, selected on the basis of the presence (or absence) of the Rht8b allele is almost the same - 79.2 cm in the group where the allele was detected (9 genotypes) and 82.1 cm, where Rht8b allele is absent (21 genotypes).

In both studied groups, the parameters characterizing the average length of the first and second internodes were at the same level. The difference in internodal length of in comparison of this groups was found in the upper internodes (III - V). Thus, in the second group, where there is no short stem of alleles, the average length of III, IV and V internodes exceeds the average length of internodes in the first group by 18.6%, 11.6% and 26.8% respectively (Table 1).

Table 2

Growth and development of wheat plant stem and formation of internodes in the III–VI stages of organogenesis (by F.M. Kuperman, separate schema fragment) 1961

Organogenesis Stages		Development phases	Internode growth
III stage	Differentiation of inflorescence axes	Stooling (booting)	Lower
IV stage	Differentiation of inflorescence blades	Stooling	Middle
V stage	Differentiation of flower, the Archesporogenesis	Stooling	Middle
VI stage	Micro-macrosporogenesis	Stooling	Upper

The final structure of the wheat plants, like other higher plants, is determined by growth, development and reduction processes throughout the ontogeny, obviously the presence of the short stem genes in the studied genotypes allocytoplasmic form is fully reflected in the formation of the middle and upper internodes, thats on the IV, V organogenesis and VI phases (Table 2)

The level of realization morphogenesis process, including the formation internodes, largely depends on the conditions of vegetation as it indirectly determines the magnitude functions of plant growth.

The presence of allele Rht8b, of the short stem gene Rht-8, located on chromosome 2D, in allocytoplasmic spring wheat *T.aestivum L* genotypes. was reflected in the formation of the middle and upper internodes of wheat plants, therefore it is appropriate to be taken into consideration in the breeding process for lodging resistant varieties.

EFFECT OF COMBINED APPLICATION OF NITROGEN FERTILIZERS AND CHEMICAL PLANT PROTECTION PRODUCTS ON THE PERFORMANCE OF GRAIN QUALITY OF MALTING BARLEY.

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Summary

The paper presents data on the effect of combined application of nitrogen fertilizers and chemical plant protection products on the performance of grain quality of malting barley.

The quality of spring barley depends on the variety and on the evidence-based use of fertilizers, chemical ameliorants, pesticides and other of chemicals. Conducting such experiments is very important at the moment, because it allows to optimize the level of chemicalization and nullify unjustified high load of chemicals per hectare of arable land in intensive agriculture and eliminate unnecessary drug treatment, which is important from an economic point of view (Ilyasova, 2007).

Investigations were carried out in the field and laboratory conditions. Field experiments were laid in the fields of the Central Experimental Station of All-Russian Research Institute of Agricultural Chemistry named by D.N.Pryanishnikov DSP VNIIA located in the Domodedovo district of Moscow region, on the basis of long experience in multivariate SI-11 (executive in charge of Dr. of agricultural sciences Vaulina G.I.) in 6-crop rotation, headed by academician of the Russian Academy of Agricultural Sciences V.F.Ladonina.

Two-factor (4x4) analysis. The factor A: four doses studied with P60K120 nitrogen in doses of 0 (N0), 45 (N1), 90 (N2), 135 (N3) kg / ha. Mineral fertilizers that were used in experiment: ammonium nitrate, triple superphosphate and potassium chloride.

The factor B: four studied factors of plant protection: no protection (B0), some protection (use of seed disinfectants, herbicides) (B1), an integrated system of plant protection products on the economic threshold (the use of disinfectants, herbicides, retardant, fungicide in the tillering stage and during the emergence of the flag leaf) (B2), a standard system of plant protection (use of disinfectants, herbicides and fungicides) (B3).

As a seed protectant was used Baitan universal 2 kg/t.

According factor B1 for herbicide used Dialen (1.2 l/ha) + Lontrel (0.3 l / ha) during tillering phase. The embodiment B2 is the same herbicide in late tillering. Tilt fungicide (0.5 l / ha), and during the phase of flowering was treated with drug Rex (0.5 l / ha). In the embodiment B3 amid herbicide used Tilt fungicide (0.5 l / ha) at tillering stage.

Soil in experimental plot is heavy semipodzol. In the experiment spring barley varieties Elf selection TSRNZ Research Institute (included in the State Register of Breeding Achievements Approved for use in 2014) was used. Farming cultivation is common in the Central District of chernozemic soil zone of the Russian Federation. The experience was repeated three times. The size of the plot: total 168 m2 (6m x 28m), lot of 54 m2 (24m x 2,25m).

The protein content in grain was determined in accordance with State standard (further referred as GOST) GOST 10846-91, full-scale weight of grain according to GOST 10840-64, uniformity and grain size in accordance with GOST 30483-97, GOST germination ability 10968-88, the extract by calculation method. For the statistical evaluation of the results of experiments we used the method of variance analysis (Armor, 1985).

For malting properties of barley the requirements for size and equalized in size grain are important. GOST for grain size in class 1 is not lower than 85% and not less than 60% for the second class. Our research has shown that the average size of the last three years in the lot without protection ranged from 64% to 79%.

The usage of herbicides increased this figures, but the grain of spring barley was at level of the 2-d class. The usage of fungicides in the lots of B2 and B3 contributed to the formation of spring barley grain by size of the 1-st class.

The full-scale weight characterizes of barley are not so significant in the assessment of grain quality. The full-scale weight of grain malting barley ranges from 600 to 750 g / l. Grain with nature 610 g / l is considered good, 680-750 g / L excellent (Titov, 2008). The full-scale mass during the study was high and unchanged on average in the years from 676 to 720 g / l.

During all the years of research with increasing doses of nitrogen fertilizers full-scale weight decreased as on untreated plots pesticides so in the cases with crop protection products.

Our research showed that nitrogen fertilizer had no significant effect on the increase in vigor and laboratory germination. In the background the embodiment of the block B0 vigor of spring barley grain ranged from 90.7 % to 92.7 %, and laboratory germination from 93.6 % to 94.3 %, that corresponds to GOST second class.

In the application of plant protection products in the studied years there was tendency of increasing germination and vigor. However, the usage of herbicides with minimum plant protection products, as well as on the block B0, form a grain of spring barley for brewing at the second class level in accordance with GOST. Only the options with the introduction of the nitrogen dose of 90 and 135 kg / ha on the block B2, and 45, 90 and 135 kg / ha, in the block B3 laboratory germination of barley seeds and vigor were more than 95 %, that correspond to the first class.

The important indicator of the quality of malting barley is the protein content. In our studies, a significant impact on the protein content put weather conditions. The usage of nitrogen fertilizers with high rate of precipitation significantly increases the yield of barley, but decreases the content of protein. During the investigation the higher than the average annual numbers were received, ranged from 1.32 to 1.63.

Studies have shown that spring barley variety Elf over the years formed high-quality grain. The protein content in grain barley in average ranges from 8.2% to 11.8% and meets the quality standards (GOST 5060-86).

The usage of herbicides with minimum plant protection products significantly increased the protein content on average to 10,2-11,7%. Fungicides on protein grain during the years of study did not affect. The highest yield increase in our experience has been obtained by using an integrated system of plant protection in the variant with nitrogen at the dose of 135 kg / ha and that provide additional 31.9 t / ha. However, the protein content of this embodiment (11.7%) was more than in the embodiment with integrated plant protection with the dose of nitrogen of 90 kg / ha (11.1%) by 0.6%, however application of nitrogen fertilizers at the dose 135 kg / ha is impractical.

An important indicator of the malting barley quality is the extract. According to the national standard for grain extract content must be 79-82 %. Studies have shown that the extract average data on all experimental variants was within the standard and ranged from 79.2 to 82.2 %. In the embodiment with the application of nitrogen at the dose of 90 kg / ha in the block B2 in average for three years, the extract was 80.2 %.

Thus, the combined application of fertilizers and plant protection products in spring barley produces on semipodzolic soils of the central part of Russia's black soil region more than 60 kg / ha of barley grain . The study of the various combination of nitrogen fertilizers and pesticides showed that in all systems of protection the most efficient usage of nitrogen at the dose of 90 kg / ha. The most promising proved to be the integrated system of protection taking into account the economic threshold of diseases and weeds. Complex application of plant protection products and fertilizers in the framework of the integrated system of plant protection with the application of nitrogen at the dose of 90 kg / ha, leading to the formation of the grain's properties that correspond to the 1-st class quality standards of GOST for malting barley: protein content (11.1%), extractive (80.2 %), vigor, laboratory germination (95%) and size (86 %).

References:

1. Armor, B.A. Methods of field experience (with the fundamentals of statistical processing of the results of research) . - 5th ed ., Ext and rev. - M: Agropromizdat , 1985. - 351 p.

2. Ilyasova N.I. Influence of level of nitrogen nutrition and plant protection products on the phytosanitary state and yield of spring barley / Ilyasova N.I., Vaulina G.I., Timofeev O.V. // Bulletin of the Russian Peoples' Friendship University . A series of agronomy and animal husbandry. Moscow: People's Friendship University of Russia, 2007 , № 4. S.45-50 .

3. Titova E.M. Efficiency and quality of malting barley varieties / E.M. Titova, M.A. Vnukovo // Herald OrelGAU - 2008. - №3 (12). - P. 5-8.

BASIC METHODS OF ASSESSING OF FOOD SECURITY IN THE REGION

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Introduction. One of the major problems of our time is the problem of food security. It became relevant when the world faced a serious risk of shortage of food resources (Nikiforova I.V., 2008). Most scientists such as N. Kondratyev, A. Chayanov, N. Bukharin, V Mayer V Rutgaizer, V Sergius, I Shevtsov and others have dedicated their works to this problem.

The interest shown by many scientists, to the problems of food security has led to the formation of a large number of methods and models for assessment. Thus, the aim of this paper is to review the main methods of food security assessment.

The results of the study. At the present time a lot of indicators that do not allow fully appreciating of all aspects of the category are used to assess the state of food security. So, the system of indicators and their thresholds are more preferred. It covers all components of food security - physical and economic access to food, stability, including food safety (Nikiforova I.V, 2008).

Most models are made only for the analysis of food security at international and governmental level. For example, at the macro level, there are several predictive models of food security assessment - BLS, EPACIS, Aglink. At the heart of EPACIS a partial equilibrium modeling on agricultural markets is and the foreign trade of the CIS countries is considered. BLS model reproduces the purpose of market participants, as well as constraints in the form of a mathematical programming problem. Model Aglink is a recursive dynamic partial equilibrium model for regions and nations of the world.

Also predictive, simulation models, which allow you to define agricultural policy measures to ensure the achievement of the set goals, are applied. For example, we can name model of self-sufficiency of some types of food at a certain level. This type of model is practically not help solve the problems of food security, except in some cases when they can detect prospect of harmful imbalances in the food supply (Antamoshkina E.N., 2013).

Evaluation criteria of food security at the country level are listed in the Food Security Doctrine of the Russian Federation and formulated into 3 groups, which should be used in evaluation of food security. These are criteria in the field of production, consumption and management.

In the sphere of production criteria include:

1. The level of food self-sufficiency.
2. The level of production of major agricultural products and foodstuffs.
3. The level of budgetary support of agricultural producers.

In the sphere of consumption criteria include:

1. The level of satisfaction of physiological needs for nutrients and metabolic energy, basic foodstuffs.
2. Energy criterion (consumption of calories for 1 person per day);
3. Criteria for Food Safety (compliance with quality requirements of technical regulations).
4. The level of physical access to food for the various categories of the population.
5. Component criterion (the number of proteins fats and carbohydrates, vitamins which people consume per day).
6. The level of economic access to food for various population groups.
7. The level of social support from the state of the poor.
8. Level of agflation.
9. The threshold values of food security (the proportion of domestic agricultural raw materials and food in total sales in the market must be at least: grain and potato 90-95%, meat and meat products - 85%, fish and fish products - 80%, milk and dairy products - 90% vegetable oil and sugar - 80%) (Galiahmetova A.M, 2014).

However, many of these criteria cannot be applied to the assessment of food security in the region. For example, the main criterion of food security is the level of food sovereignty, which is defined as "sustainable domestic food production in the volume not less than the set threshold values of its share in the domestic market commodity resources" (Food Security Doctrine). However, it does not apply to the regional level, because the pursuit of food self-sufficiency due to the complete maintenance of the population of the region from own production, first of all, is not economically feasible, especially in regions with unfavorable conditions for that, secondly, this approach creates obstacles and restrictions for the development and formation of the national food market. Thus, all that will reduce the food security of the country as a whole (Ibragimov MT 2012).

In addition in the analytical practice an integrated food security index, which is calculated with two components is used. Index of economic security of the person in the field of food is the

degree of satisfaction of basic food needs (the fund personal consumption which is formed with meat, milk, grain, eggs, grain products, fruits and vegetables, potatoes, melons food ,vegetable oil, sugar, fish, is considered,). Index of economic security of the person is calculated in accordance with the calorie and nutritional value of consumed food. Index equal 1 corresponds to a balanced diet, and the index value equal 0.766 corresponds the minimum consumer basket.

In world practice, the individual standards of proper nutrition are used. They are determined by national and international agencies, including the World Health Organization (WHO) and FAO. In recent years, this figure is 2,700 kcal per day, on the brink of malnutrition and hunger - 2150 kcal per day per person, and the category of starvation is a population that consumes approximately 1520 kcal.

But norms of indicators of WHO and FAO should not be considered sufficient for each country, because they supplement each other and are specified taking into account the climatic conditions of the populations, its anthropogenic and other characteristics.

By the example of Russia, the use of foregoing indicators permits to give a more precise definition. For example, regarding the availability of the required three-month supply of grain carryover (as an indicator of the critical limit food security), it should be borne in mind that setting this level, FAO was based on a high level of development of transport infrastructure of the global food market, namely the ability to quickly deliver food to needy countries.

As a result, we can say that the main factors shaping the level of food security are:

- Own production;
- Population;
- Solvent balance;
- Production of agricultural raw materials consumption of food appointment;
- Foreign economic relations, namely the export and import of food products.

It is important to note that the assessment of the effectiveness of the import of products in comparison with their local production is carried out taking into account transportation costs and product quality. It is necessary to take into account that some of the food that is produced in the region depends on the supply of certain agricultural products for international and interregional exchangeю Assessment of capacity of satisfaction of demand for the types of food that are produced in the region has significance. (Khubaev TA, Totrova IK, 2013).

DEFINED CRUDE INCIDENCE DATA OF CHILDREN IN BRYANSK REGION BY CHERNOBYL NPP ACCIDENT

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January 1, 1996 in Bryansk region 2154 responders of Chernobyl NPP accident lived, 95% of responders subjected to regular medical dispensary check-up, at the time 225 responders has invalidity[1].

At the beginning of 2015 Bryansk region continues to be the territory of "risk" where average mortality rate due to common mortality rate was exceeded; malignant neoplasms; mortality after malignant neoplasms; sick rate of adults, young people and children. Citizens of south-west territory who are victims of radiation disaster by Chernobyl NPP accident examined in the course of different screening programs organized as at the territory of Russian so abroad.

The aim of this article is common morbidity rate studying of children who live in mostly radionuclide polluted south-west territory for the period from 1996 till 2013 years.

High rate of common children mortality in 1996 in comparison with 1995 is registered according to the classes [1,2]:

- Diseases of the musculoskeletal system and connective tissue– in 4,3 times
- Endocrine, nutritional and metabolic diseases – in 2,5 times
- Diseases of the genitourinary system – in 4,2 times
- Diseases of the digestive system – in 1,7 times

Early diagnosis and preventive measures initiating of children's diseases is the main problem of Healthcare Service. Morbidity rate of children composed 2473,9 at 1000[1].

Table 1

Common morbidity rate of children in the age of 0-17 years old in Bryansk region (at 1000 of children)

№	Classification of diseases MCB-10	Year		
		2003	2008	2013
1	endocrine, nutritional and metabolic diseases	69,3	77,9	83,1
2	diseases of the circulatory system	33,4	37,5	38,7
3	diseases of the respiratory system (including influenza, A.R.V.I.)	1237,4	1264,8	1253,7
4	diseases of the digestive system	50,1	163,9	235,6
5	diseases of the skin and subcutaneous tissue	80,1	134,6	131,7
6	congenital anomaly/birth defect, deflection and chromosomal defects		20,8	25,8
7	symptoms, characters and abnormality, diagnose in clinical research study and laboratory assessment		50,4	46,5

According to the data in the table № 1 endocrine, nutritional and metabolic diseases dominate.

We analyzed data in the table above for the 10 year period (from 2003 to 2013). As for diseases of the skin and subcutaneous tissue it should be noticed that it occurred hard surge of rates for the period from 2003 to 2008 [3,4]. The highest rate in the class - diseases of the respiratory system (including influenza, A.R.V.I.).

Thus health of population in Bryansk region is characterized by the next tendencies:

1. Steady growth of common morbidity registration according to the statistics of medical aid appealability with many classes of diseases.
2. Growth of children's common and primary disease incidence.
3. Stably high level of common morbidity is detected in south-west of Bryansk region. Morbidity rates exceed average data.
4. During latest yeas diseases of the respiratory system head the list in common children's morbidity structure and diseases of the circulatory system in common adults' morbidity structure.

It should be pointed out that longstanding radioactive contamination as the result of Chernobyl NPP accident rub off population's health in Bryansk region.

POLLUTION OF SEWAGE TEXTILE PRODUCTION IN ECUADOR, THE PROVINCE TUNGURAUA, THE CITY OF PELILEO

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Introduction

From the moment of the creation the textile industry causes essential ecological impacts on water objects in Ecuador and all around the world. Various processes which are carried out for production of clothes demand a big consumption of such chemicals as Cr 3, Cr 6, cadmium, copper, etc. which are dumped in water reservoirs without preliminary processing to soften these polluting effects.

According to population census of 2010 Pelileo counts about 56.573 inhabitants, the main economic activity is intensive trade, the first place in which wins production and tailoring of jeans clothes.

The production of jeans clothes makes about 30 000 indirect workplaces, and, by estimates makes more than one million jeans clothes a month, thus in day about 600 units of ready-to-wear clothes poshivatsya in everyone behind a workshop. (Masabanda, 2013)

The textile industry became the important direction in development of Ecuador, and it is under construction round difficult and various production and service actions, such as washing and dyeing of clothes.

Target

To apply the advanced methods of oxidation to reduce the content of heavy metals in sewage.

Research methods

The studied territory is located in the province Tunguraua, in of Pelileo of 202 km 2 and has the population of 56 573 inhabitants (fig.).

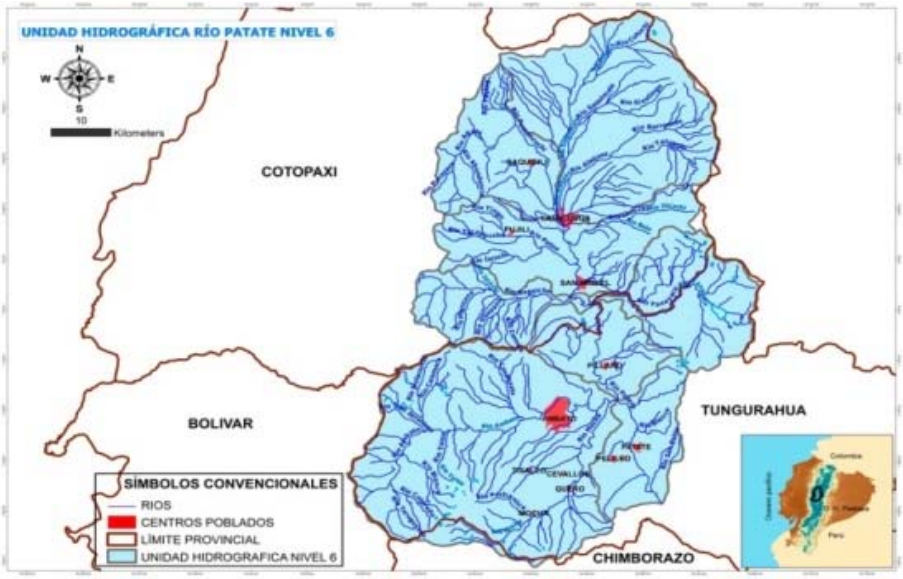

Fig. Map of province Tunguraua

In this research the experimental analytical method on the basis of physical parameters of sewage of the textile industry through tests of water and monitoring on various sites of the river of

the pool Patatya, which will be defined according to the arrangement applied in this research of dumping of the polluted sewage is applied. (Tulas, 2010)

Results

Nro	Q(l/s)	*Cadmio*	*Cobre*	*Cromo Total*	*Hierro*	**Mercurio*	*Níquel*	*Plomo*	*Vanadio*	*Zinc*	CUMPLE/NO CUMPLE
		0,02	*1*	*0,5*	*25*	*0,01*	*2*	*0,5*	*5*	*10*	
1	0,66										
2	1,43	<0,04	0,03	<0,030	0,53	<0,0001	<0,2	<0,3	<0,05	0,05	NO CUMPLE
3	1	< 0,04	0,08	< 0,3	0,75	< 0,0001	< 0,2	< 0,3	< 0,5	< 0,05	NO CUMPLE
4	2,8	< 0,02	0,28	0,04	0,68	< 2,00	< 0,05	< 0,10	< 0,50	0.36	NO CUMPLE
5	0,45	< 0,02	0,33	0,31	0,80	< 0,002	< 0,05	< 0,10	< 0,50	0,28	NO CUMPLE
6	1,4	< 0,04	0,02	< 0,3	0,25	<0,0001	< 0,2	< 0,3	< 0,5	< 0,05	NO CUMPLE
7	3,78	< 0,04	0,02	< 0,3	0,2	< 0,0001	< 0,2	< 0,3	< 0,5	< 0,05	SI CUMPLE
8	2,4	< 0,04	0,07	< 0,3	1,60	< 0,0001	< 0,2	< 0,3	< 0,5	0,12	NO CUMPLE
9		< 0,04	0,03	< 0,3	0,25	< 0,0001	< 0,2	< 0,3	< 0,5	0,09	NO CUMPLE
10	1,20	< 0,04	0,04	< 0,3	2,05	< 0,0001	< 0,2	< 0,3	< 0,5	0,14	NO CUMPLE
11	1,23	< 0,04	< 0,02	< 0,3	< 0,2	< 0,0001	< 0,2	< 0,3	< 0,5	< 0,05	NO CUMPLE
12	0,74	<0.04	<0.02	<0.3	<0.2	< 0,0001	<0.2	<0.3	<0.5	< 0,05	NO CUMPLE
13	0,67	< 0,04	0,02	< 0,3	0,2	< 0,0001	< 0,2	< 0,3	< 0,5	< 0,05	NO CUMPLE
14	1,10	< 0,04	0,03	< 0,3	0,76	< 0,0001	< 0,2	< 0,3	< 0,5	0,06	NO CUMPLE
15	1,34	< 0,04	0,02	< 0,3	0,23	< 0,0001	< 0,2	< 0,3	< 0,5	< 0,05	NO CUMPLE

CONCLUSIONS

Such elements as cadmium, barium, chrome, mercury directly and directly influence health of inhabitants of this region as the polluted water is used in irrigational systems of agricultural production and thus through agricultural production do harm to human health.

References

Texto Unificado de Legislación Ambiental Secundaria del Ministerio de Ambiente (TULAS)

Echevarría, M., Vogel, J., Albán, V., Meneses, F., 2002: Impact Assessment of Watershed environmental Services: Emergin lessons from Pimampiro and cuenca in Ecuador. Ecodecisión. Project sponsored by International Institute for Environment and Development.

Maddela N. R., M. Masabanda and M. Leiva-Mora Novel diesel-oil-degrading bacteria and fungi from the Ecuadorian Amazon rainforest Water Science & Technology Vol 71 No 10 pp 1554–1561. IWA Publishing 2015

THE QUESTION OF THE RELEVANCE OF SELECTION VARIETIES OF WHEAT WITH IMPROVED AMINO ACID COMPOSITION OF THE PROTEIN

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Abstract

High quality gluten contend in grains is one of the key conditions for obtaining flour that has the best baking properties and nutritional value for high quality bakery products. Creating wheat varieties with improved protein composition of amino acid is an important challenge in breeding and selection of quality wheat grains.

Hybrids of allocyplasmic wheat, that are different in types of alien cytoplasm, are of great breeding importance as donors of agriculture valuable traits, resulting from nuclear-cytoplasmic interaction. (Семенов, 2000)

One of the key features is a quality of gluten. Gluten is a protein complex that is produced due to washing a flavor from starch and possesses resilient and elastic properties. Although gluten is mainly composed from proteins, it also contains carbohydrates, lipids and minerals. Protein content predominantly determines the quality of the original product.

It is known that gluten quality always causes an increased interest among bakeries, because the most light and flavorful dough is obtained from a flour that is rich in gluten. This is explained by the fact that the amount and quality of gluten determines the gas-retaining capacity of dough and creates a mechanical basis, which ultimately defines the structure of the baked bread.

The content of raw gluten in wheat grain is between 5 to 36%. Because gluten is composed mostly from a protein (the content ranges from 75-99%, and is represented mainly by gliadin (45%) and glutenin (42%)), then its biological value is very high for a human (Canadian Grain Commission, 2013).

It consists of 18 essential amino acids for people, which cannot be synthesized by human's body alone and are not found in animal food (Shewry, 2008). Among the essential amino acids include alanine, arginine, aspartic acid, cysteine + cystine, glutamic acid, glycine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, series, threonine, tryptophan, tyrosine, valine. Methionine is a particularly important amino acid that is directly involved in the synthesis of hemoglobin that is a major component of blood; lysine is an amino acid that is needed for growth and tissue repair and possesses antiviral and immune stimulating effects; threonine is an amino acid that is important for the growth process of the body, lipotropic substance that supports normal functioning of the gastrointestinal tract.

Furthermore, it should be noted that gluten is a valuable source of vitamins B, vitamin A and vitamin E (Ortalo-Magne, Goodwin, 1990). It also contains considerable amounts of digestible calcium and phosphorus that are needed for the skeleton formation.

Different content of amino acids in composition of gluten determines its strength, which in turn is an indicator of the quality of wheat. Gluten provides dough with such characteristics as plasticity, elasticity and extensibility. Thus, the higher gluten strength, the better the quality of dough. Good wheat flour contains from 11% to 13% of gluten, while a bread that is baked from this flour, includes only 9.5% of gluten **(**Ortalo-Magne, Goodwin, 1990**)**

This proves that high quality gluten is one of the key conditions for obtaining flour and cooked from her bakery products with the best baking properties and nutritional value. That is why it is important to get high-quality gluten. Gluten quality is defined by different content of its components, which in turn is caused by a number of different factors, such as wheat variety,

preparation of flour to knead, duration of washing, etc. It is better to pay attention towards factors that play a role in the formation of gluten while it is in the grain.

During the vegetation period mostly environmental factors influence the gluten development. Thus, abundant precipitation usually has a negative impact on the strength of gluten, when the disulfide bonds are

restored with - HS- groups that significantly reduce the ability of elastic deformation. The optimal amount of precipitation that is needed to achieve the greatest strength of gluten is 250-1000 mm per year. Furthermore, abrupt changes or prolonged freezing temperature until complete ripening may stop the formation of protein components in gluten (Деревянко, 1989). Quality flour, respectively, as well suffer.

In many ways, the quality of wheat, growing under the unfavorable conditions, will depend on genetic factors that determine the sustainability of wheat. (Семенов, 2000) The next group of factors that influence the quality of gluten refers to the stage of processing of grain for flour production.

The properties of gluten can depend on such factors as active ventilation, thermal drying, low temperature, gassing, some operations relating to the preparation of grain for milling (hydrothermal processing), milling into flour, some processes occurring during storage of grain and flour and, finally, processes associated with the preparation of dough and baking bread.

For example, under the influence of high temperature gluten denatures, loses connectedness and becomes tight, non-elastic, low-stretch. Moreover, the higher grain moisture, the more sensitive it is to heat denaturation. However, if the grain has low gluten, then the transient thermal

effect can be used as a way to strengthen it.

The substances that decrease the elastic properties of gluten include bisulfites, cysteine, urea, glutathione, nonionic emulsifiers, proteolytic enzymes.

Depending on the gluten content and quality, wheat flour is divided into three groups; first group includes “good” quality flour, second group refers to flour with “satisfactory” quality and the third group refers to flour with “poor” properties. There are also several sorts of flour: the highest sort (28% raw gluten), first sort (30% raw gluten), second sort (25% raw gluten) wallpaper (20% raw gluten), peeled (20% raw gluten), krupchatka (30% raw gluten).

Samples of baking are presented on the following pictures:

Thus, we can see that the quality of the grain depends on its glassy (gluten content). smic Alloplasmic wheat is an excellent base for production of wheat sorts that possess high productivity and grain with high content of gluten which is a subject of interest in the baking industry who concerned in providing customers with products of high quality.

THE ROLE OF INVESTMENT IN THE AGRICULTURAL SECTOR OF THE KRASNODAR TERRITORY

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In developed countries, the transition from industrial to post-industrial (innovation) economy, there is an urgent need for incentives (investment) innovation.

Now in Russia, under the next wave of financial and economic crisis caused by the fall in world oil prices, military conflicts, geopolitical turbulence in its agricultural sector, there is an urgent need for innovative renewal of the technical and technological base, the organization of production, the system of its management.

Obviously, you first need to develop those areas where it can be ensured competitiveness, expansion of sales in the market to be used to generate additional income for the further development of production to a new level. This requires innovative reasonably selected priorities, the implementation of which would achieve the set targets such policy documents as the Food Security Doctrine of Russia and the State program of development and regulation of agricultural products, raw materials and food for 2013-2020gody [1].

Key mechanisms for implementing the strategy of innovative development of the Russian agricultural sector on the active participation of the state in regulating the innovation and creation of conditions for attraction of private business. These include preferential loans, government support for science and innovation sphere, the development of venture capital funds, the approach of research activities to the needs of production, development of specialized X, helping domestic producers to innovate, the organization of retraining, wide attraction of investments, the commercialization of innovative projects [2].

Defining characteristics of investment processes, should first of all identify the term "process." The process can be defined as a succession of events or conditions, and following each other and meet the requirements of continuity. It is obvious that the process may have a different focus, including the investment.

Overview of the main directions of development of the innovation system in the agricultural sector, on the basis of modern literature sources allows us to generalize the constituent components of the formation of the innovation system in the agricultural sector aimed at developing mechanisms to improve the efficiency of agriculture and related industries.

The main problem of the development of innovative systems in the agricultural sector is the lack of efficient organizational and economic mechanism of investment in regional innovation policy.

Investment management in innovation should include the use of methods of state regulation of investment activities, which include the following: government funding of major projects; competitive-contract system of investment planning; rational depreciation policy; taxation of investment; investment insurance; financial aid; smooth processing of documents for opening of financing.

The pace of innovation in the development of agro-industrial complex of Krasnodar territory can not be considered satisfactory. Backlog at the technological level, agro-technical potential is so great that requires action of national importance. The impact on the development of innovation and effectiveness of agriculture could be more significant, if it were possible to overcome:

-nerazvitost legislative framework regulating and stimulating innovation, and an acute shortage of professionals in the field of innovation management, who know the specifics of the industry, as well as the inertia in the perception of innovations, many farm managers;

-boundedness and misallocation of budgetary resources for innovation, a lack of funds attracted from other sources (private investment, resources, extra-budgetary funds, borrowed funds from international financial organizations, and others.);

-a constant lack of coordination and fragmentation of agricultural enterprises, the lack of mechanisms for management of innovation processes and the interest of the authorities of the federal and regional levels to the creation of sector funds for R & D by private investment and venture capital organizations extrabudgetary funds;

-neeffektivnoe regulation of processes of licensing and protection of intellectual property in the agricultural sector, infrastructure innovation.

The main directions of the state regional innovation policies in the agricultural sector of the Krasnodar Territory are:

-Define the priority scientific and technological areas, to ensure the dynamic development of the agro-industrial complex of Krasnodar region;

-Formation areas of scientific, technical and (or) the innovative development of the agro-industrial complex of Krasnodar region;

-Increase the number of innovation-active agricultural organizations (industrial parks);

Working out and adoption of departmental target programs in the sphere of innovation to meet the challenges of agriculture in Krasnodar Territory;

-Support innovative projects, providing development of agriculture of the Krasnodar Territory;

-Formation effective system of state regulation, to support and stimulate innovation;

-development of infrastructure of regional innovation system and the formation of an environment attractive to investment in the agro-industrial complex of Krasnodar Region;

-informing public about the scope and the progress of science, technology and innovation policy of the regional government in the agricultural sector of the Krasnodar Territory;

-development of international cooperation, including the involvement of foreign companies to implement innovative projects in the Krasnodar Territory.

The main criteria for the priority of the innovative project of agro-industrial complex of Krasnodar region are:

-use of scientific and technical developments and technologies for:

1) a significant increase in labor productivity;

2) reducing the cost of agricultural output;

3) issue of new types of agricultural products;

4) reduction of the energy intensity of production;

5) other significant improvements expanded agricultural reproduction [3]

The institutional basis for the formation of the innovation system in the agricultural sector of the Krasnodar Territory must be strategic planning of innovation aimed at improving the space in which the process of the creation, selection and commercialization of innovations by the actions of the subjects of innovation [4].

Therefore, an innovative system in the agricultural sector of Krasnodar region must be regarded as a self-organizing, dynamic system of meso-level exposure to public policy changes in the innovation and investment climate, etc. Therefore, management of innovative development within the framework of regional innovation systems (RIS) involves a combination of self-organization, free market and state regulation, especially in the transition period to an innovative economy.

INSURANCE OF AGRICULTURAL ANIMALS WITHIN STATE SUPPORT

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Abstract

This article is an overview of the situation in insurance of agricultural animals within state support in the first quarters of the year 2013. The main problems of insurance of agricultural animals are shown. The prognoses is difficult to give though as in 2014 the legislative bases did not changed some growth is expectable. The need of trainings of specialists in agricultural insurance of farm animals is underlined.

The plan of agricultural insurance by the state support, is the basic document which is important for all participants of legal relationship on insurance with the state support. Its acceptance

by the Ministry of Agriculture of the Russian Federation allowed to define what species of farm animals can be insured, and also what are the subsidizing rates.

Adoption of the Plan of agricultural insurance for 2013 on March 14, 2013 was caused by attraction of agricultural producers, and also their unions and associations of insurers to discuss the rates of subsidizing and risks which will be covered within insurance with the state support. Discussions allowed to accept the Plan based on the abilities of market participants. According to the Plan of agricultural insurance for 2013 the subjects to insurance are following.

Table 1

Agricultural animals that are subjects to insurance.

Groups of agricultural animals	Types of agricultural animals	Age structure
Cattle	buffalo s, bulls, oxen, cows and yaks	except for calves aged less than two months
Small cattle	goat and sheep	except for kids and lambs aged less than four months
Swine	pigs	except for pigs aged less than four weeks
Poultry of egg and meat breeds, broilers	geese, turkeys, hens, quails, ducks, guinea fowls, broilers	without restrictions

However, there are some more questions needed to be solved before the insurance campaign started. In particular, in March the Rules of insurance of farm animals with state support developed by the National Union of Agroinsurers (NUA) and Association of Agro-industrial insurers "Agropromstrakh" were published. It should be noted that the unions prepared rules in 2012, however because of difficult process of coordination and attempt to prepare uniform rules of insurance with participation of the Ministry of Agriculture of the Russian Federation, final rules were issued only in March, 2013 in two independent editions.

Adoption of all specified documents formally allowed to begin insurance process, but in practice participants of the market met the next difficulties. According to article 8 of the Federal law "About the state support in the sphere of agricultural insurance and about modification of the Federal law "About development of agriculture" agricultural risks include infectious animal diseases that are listed by the Ministry of Agriculture of the Russian Federation. It should be noted that up to September of the current year of the specialized order approving such list was not accepted and only the order of the Ministry of Agriculture of the Russian Federation No. 62 "About the approval of the list of infectious and other diseases of animals" could be applied for insurance of animals.

Furthermore, since the beginning of the year in Russia sharp deterioration of the epizootic situation on a number of infectious diseases of animals was observed. According to the Information and analysis center of Rosselkhoznadzor the greatest threat for animal husbandry in the current year is posed by the outbreak of the African plague of pigs (APP). Only in 8 months 2013 in the territory of Russia 142 new centers were registered. In the conditions of absence of the list of diseases of animals suitable for the insurance purposes, insurers don't ask to assume all risks even with interest from insurants.

Adoption of the specialized order was complicated also by the fact that insurance companies and agricultural producers had disputes on the list of cases which can be recognized as the insurance cases. According to the agricultural producers and their unions, the list provided by the 62nd order of the Ministry of Agriculture of the Russian Federation has to be applied because it calculates the rate of subsidizing (provided by the Plan of agricultural insurance with the state support) based on

statistics containing data on all cases of death of animals including the infectious diseases specified in this order of the Ministry of Agriculture of the Russian Federation. On the other hand expert and insurance communities insisted that many diseases mentioned in this order are curable and in proper animal's maintenance do not lead to death. On the basis of the available statistics with participation of Department of veterinary science of the Ministry of Agriculture of the Russian Federation the optimum list was found and the order which approved the list of those diseases of animals which are the reason of their death was prepared. However the acceptation of this order didn't promote noticeable increase in volumes of insurance, due in particular to the reasons described earlier.

It is expedient to note that the operating technique of determination of insurance cost and amount of loss (death) of farm animals in practice allows to solve only partially the problem arising at a loss occurrence. Just to remind that according to Art. 5 of the Federal law "About the state support in the sphere of agricultural insurance and about modification of the Federal law "About development of agriculture" in the presence of disagreements of the parties of the contract of agricultural insurance the insurer carries out expertize by independent experts for confirmation of the fact of loss occurrence and determination of the size caused to the insurant damage.

However in practice realizing this situation will be extremely difficult – not even due to the shortage of experts in the field of animal husbandry, but the absence of standard requirements to experts and absence of the special commission on their selection and certification. The experience of formation of a pool of independent experts in the field of plant growing shows that it is not enough for the expert to have knowledge in the field of plant growing (or animal husbandry). Knowledge in the field of insurance business and definition of interrelation between the occurrence of insured case and the size of the loss suffered by the insurant is also necessary.

Considering stated, before the Ministry of Agriculture of the Russian Federation arise a question not on technical selection of experts in the field of animal husbandry, but on carrying out a complex of the actions on training specialists for realization of the rights of the parties of contracts of agricultural insurance with the state support.

Summing up the results of three quarters 2013, it should be noted that from the funds allocated on insurance of animals with the state support by the state to regions so far 274 million rubles that makes about 27% of the allocated annual limit. Today, according to the Ministry of Agriculture of the Russian Federation, 173 contracts of insurance are signed. Taking into account that insurance of animals began in September, many regions didn't manage to execute the reference points declared by them earlier, and now within the features of the budgetary process prefer to return the funds allocated for insurance.

Analyzing the situation in agricultural insurance with the state support, it is possible to note that interest in insurance exists, however lack of clear and convenient mechanisms leads to refusal of this type of insurance in favor of commercial insurance which is more flexible, and meets requirements of agricultural producers.

It is so far early to declare a failure of insurance of farm animals, taking into account how the insurance of agricultural plants began in 2012. All told doesn't mean that legal problems in regulation have to remain. Today the national agricultural producer is urged to believe in the new mechanism of protection – insurance, thus this mechanism abounds with gaps and different interpretations, insurance with various conditions which are created in a pursuit of low cost protection illusion is offered. In these conditions it is difficult to predict growth of volumes, at least the ministry and expert community have to conduct explanatory work, via electronic and printing channels in order to report about features and rules of insurance, to work with cattle breeders. We should not forget that insurance is focused more not on the largest holdings but on wide audience of agricultural producers.

The Plan of agricultural insurance for 2014 accepted in October, 2013 established the similar list of farm animals and the rates of subsidizing. Considering existence of all mechanisms, it is possible to assume that volumes of insurance of animals in the coming year will grow on a number of groups.

References

1. Ministry of Agriculture of the Russian Federation www.mcx.ru (date of visit 03.03.2015)

2. Plyushchikov V.G. Finances: there is need for common methods and standards // New agrarian journal №2 (6), 2013 http://www.newagro.info/articles/006-finansyi-nuzhnyi-edinyie-metodiki-i-standartyi/ (date of visit 03.04.2015)

3. Medvedeva D. Russia: Agroinsurance of agricultural animals with state support [http://www.agroinsurance.com/ru/agribusiness_insurance/?pid=25631] (date of visit 03.04.2015)

4. Plyushchikov V. G., Dovletyarova E.A., Ilyasova N.I. Methodical aspects of expert and technological support of insurance of risks in agroindustrial complex.//Vestnik RUDN : Agronomics and animal husbandry, 2007. №1-2 page 4-10. (date of visit 03.04.2015)

5. NSA: the market of agroinsurance in 9 months – growth proceeds [An electronic resource]:

National union of agroinsurers. – Access mode: http://www.naai.ru/presstsentr/

novosti_nsa/nsa_rynok_agrostrakhovaniya _za_9_mesyatsev_rost_prodolzhaetsya/. (date of visit 03.04.2015)

PERSPECTIVES OF DEVELOPMENT OF AGROEXPERTISE IN INSURANCE

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Abstract

The article underlines the problems of agricultural insurance that face agricultural producer especially when the disagreement between insurance contract occur. The institute of independent expertise is an important element of the new system of agricultural insurance which is urged to resolve the sharpest issues for participants of the insurance relations. The article gives the order how the expertise should be carried out. The non-profit partnership "AGROEXPERTCENTR" was created on the basis of agrarian faculty of Peoples' Friendship University of Russia with the main objective of partnership is association of experts and the expert organizations for the purpose of creation of the uniform methodological mechanism and approaches for the expert work in branches of agro-industrial complex, and also ensuring the valid independence of the expert.

In practice questions of development of institute of independent expertise in agricultural insurance with state support bring disputes within subjects of insurance legal relationship. For protection of an agricultural producer the Federal law introduced institute of independent expertise which provides a duty of the insurer to carry out expertise with involvement of the independent expert in the case of occurrence of an insurance event and in the presence of disagreements of the parties of the contract. In these conditions independent examination becomes the protective mechanism for an agricultural producer.

Institute of independent expertise is an important element of the new system of agricultural insurance which is urged to resolve the sharpest issues for participants of the insurance relations. The independent expert has to confirm not only the fact of loss occurrence, but also estimate interrelation between insured event and the extent of the damage suffered by the insurant.

Rules of carrying out independent expertise and the order of involving independent experts are regulated by the Resolution of the Government of the Russian Federation dated 30.12.2011 No. 1205 "About carrying out expertise for confirmation of the fact of a loss occurrence and

determination of the extent of the damage caused to the insurant under the contract of agricultural insurance" and relevant bylaws of the Ministry of Agriculture of the Russian Federation.

Certification of new experts is carried out on the basis of the solution of the certifying commission approved by the Ministry of Agriculture of the Russian Federation in case of compliance of the candidate to all established requirements:

a) possessing of higher education in "Agronomics", "Agrochemistry and agrology", "Gardening" or "Technology of Production and Processing of Agricultural Production";

b) possessing of work experiments on the specialties "Agronomics", "Agrochemistry and Agrology" and " Technology of Production and Processing of Agricultural Production" not less than 5 years (including research, educational institutions and the agricultural organizations);

c) knowledge of the legislation of the Russian Federation of the insurance business governing the relation in the sphere and agriculture.

Nowadays the work on improvement of the certification mechanism of independent experts is conducted, including the question of its transfer to a special program. However in spite of the fact that control over certification of independent experts is exercised by the state represented by the Ministry of Agriculture of the Russian Federation, many agricultural producers still have question concerning interest of the accredited experts. It is connected with that fee of the independent expert is paid by the insurance company according to provisions of the Federal law.

Role of "Agroexpertcentr"

To solve this problem at the First scientific and practical conference "Independent Expertise in Agroinsurance: Development Prospects" the decision on establishment of non-profit partnership "The Analytical Center of Expertise and Audit in Agro-industrial Complex" (AGROEXPERTCENTR) was made (further –partnership).

The partnership was created on the basis of agrarian faculty of Peoples' Friendship University of Russia; the main objective of partnership is association of experts and the expert organizations for the purpose of creation of the uniform methodological mechanism and approaches for the expert work in branches of agro-industrial complex, and also ensuring the valid independence of the expert.

The partnership does not take part in accreditation of experts and can act as the independent arbitrator in case of identification of the circumstances testifying the violation by the expert of rules of agroexpertise. This circumstance allows to guarantee the parties of agroinsurance and court the independent and professional conclusion.

Even more the partnership is provided:

- Assistance and help in activity of specialists in an assessment of insurance risk and losses;
- Rendering the consulting and information help;
- Implementation of expert control;
- Expert support of contracts of insurance of mortgage crop;
- Expert assessment of loss of crop yield at insured events.

In brief work of non-profit "Agroexpertcentr" is presented in the scheme (fig.10; however it is necessary to bring some specifications in the course of work which show advantages of work. In case of insurance event proceed by the Federal law and in existence of disagreements at participants of the insurance contract the insurer carries out by own expense an expertise with involvement of independent experts. The purpose of this expertise it to authentically establish the fact of a loss occurrence and to determine the extent of the damage brought to the insurant.

According to the legislation and rules of insurance the insurer, in the presence of the notice from the insurant on disagreement with insurer's assessment, is obliged to organize expertise in period, not exceeding 5 working days from the date of obtaining the corresponding notice. In this case to obtain the reasonable conclusion the quality of which will be controlled by "Agroexpertcentr", the insurer addresses to the partnership who, on the basis of the cooperation agreement, provides data of the expert according to territorial division and professional skills. At consent with this offer the insurer signs the contract with the independent expert.

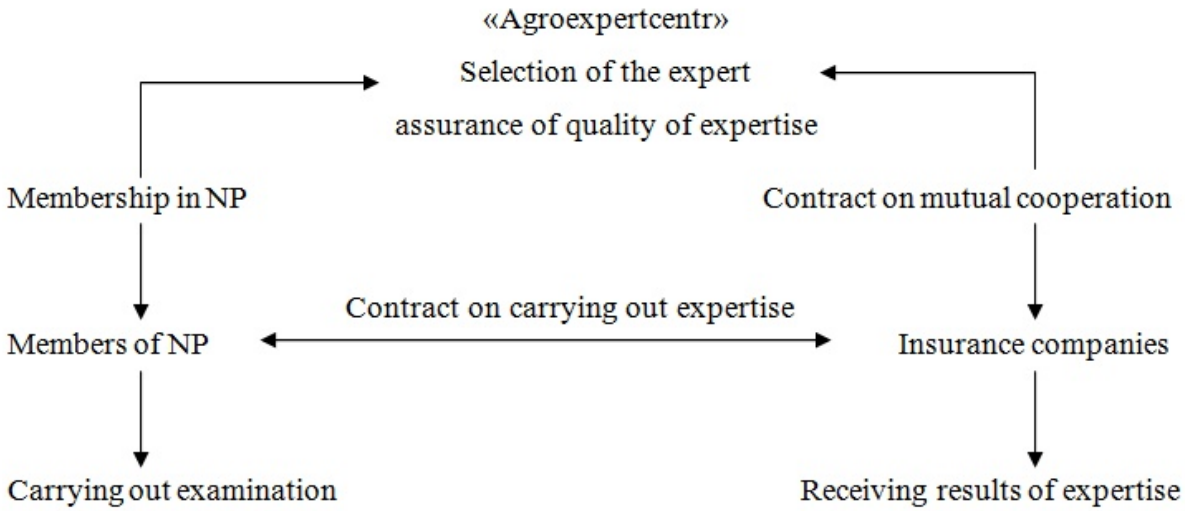

Fig. 1. Development of institute of independent examination: conceptual scheme of interaction.

It should be noted that the insurant is also included in expertise process; in particular terms of carrying out the expertise and the description of its subjects (objects) are coordinated by the insurer and the insurant and certified by the signature of the insurant.

For coordination the insurer sends to the insurant the notice in writing with a statement of terms of carrying out examination and the description of its subject. The insurant in time not exceeding 3 working days from the date of obtaining the specified notice sends the coordinated notice to the insurer.

Inspection of a condition of crops (fields) of a crop and (or) multiannual plantings is carried out by the independent expert in a place of their existence together with the insurant and the insurer. The independent expert notifies the insurer and the insurant on a place and time of carrying out inspection and the insurer in 3 working days prior to day of carrying out inspection. On the basis of the carried-out expertise the independent expert makes the expert opinion in which are specified:

A) place and date of making the expert opinion;

B) basis for carrying out examination;

C) initials of the independent expert;

D) subject (object) of examination;

E) list of the documents, materials and tests presented to the independent expert for carrying out examination;

E) contents and results of inspection with the indication of the applied methods, the used devices and equipment, assessment of results of inspection, conclusions on the subject (object) of examination and their justification.

Conclusions in the expert opinion are stated in the form of the answers to the questions put concerning the subject (object) of expertise. The prepared expert opinion is signed by the independent expert. The expert opinion has attached copies of the documents and materials presented by the insurer and the insurant and are its' integral part of the expert opinion.

The expert opinion is formed in 3 copies (on 1 copy for each: the insurer, the insurant and the independent expert). The copy of the expert opinion within 3 working days from the date of its signing is send by the independent expert to the Ministry of Agriculture of the Russian Federation. It should be noted that if the expert has difficulties at carrying out examination than all analytical and methodical assessment is rendered by "Agroexpertcentr". In this case the independent expert not only can use the scientific potential of partnership, but also sends within the agreement with partnership the copy of the conclusion.

Conclusions

The further development of institute of independent agroexpertise should be made in the following directions:

Methodical help: Standards and rules of agroexpertise; Introduction of the innovative; Training and professional development.

Consulting help: On legal issues; Collecting technologies and exchange of expert practice; Involvement of specialists in difficult questions. Information help: Agrometeorological monitoring; Agricultural statistics; Agricultural insurance.

References

1. Plyushchikov V.G. Finances: there is need for common methods and standards // New agrarian journal №2 (6), 2013 http://www.newagro.info/articles/006-finansyi-nuzhnyi-edinyie-metodiki-i-standartyi/ (date of visit 03.04.2015)

2. Insurance of agricultural yields with state support: practical manual on organization of insurance of agricultural crops 8-th edition / Ministry of Agriculture of the Russian Federation, Moscow, 2009, 11 p, See more at: http://www.agroinsurance.com/ru/agribusiness_insurance/?pid=15436#sthash.126E7vCG.dpuf (date of visit 03.03.2015)

3. Plyushchikov V. G., Dovletyarova E.A., Ilyasova N.I. Methodical aspects of expert and technological support of insurance of risks in agroindustrial complex.//Vestnik RUDN : Agronomics and animal husbandry, 2007. №1-2 page 4-10. (date of visit 03.04.2015)

4. Insurance of agricultural producers in Russia [An electronic resource]: agroinsurance.com. –

Access mode: http://www.agroinsurance.com/ru/agribusiness_insurance/? pid=14324a.

ENVIRONMENTAL WATER TREATMENT METHODS

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Abstract

The problem of natural environment pollution is very topical nowadays. The rapid development of industry, active using of fertilizers and pesticides in agriculture, accidents in transport and enterprises with oil spilling lead to increased pollution. All this makes the development of water purification methods especially topical, including using sorbents.

The problem of environmental pollution in recent years is relevant worldwide. The rapid development of the industry, extensive use of fertilizers and pesticides in agriculture leads to increased environmental pollution.

The volume of discharged polluted urban waste water is high enough. The presence of iron, hardness and other impurities in drinking water contribute to the development of various human diseases and the emergence of stains and rust stains on the surface of sanitary ware and tiles, corrosion of household appliances, scaling, overgrown pipes and development of harmful microorganisms. As a consequence of all these problems, there is a need for mandatory post-treatment, even tap water, which runs water treatment before going to the consumer. Clean water can be various methods using a special water treatment devices containing sorbents.

Sorbents for water purification - are substances that have a high adsorption capacity, that is, which can delay and accumulate a variety of impurities in the water [2]. There are specific sorbents

for purification of water are used to remove impurities, dissolved iron, manganese, hydrogen sulfide, elimination of color and turbidity, suspended particles, rust, silt, colloids, heavy metals. The sorbents are used in virtually all fields of industry, agriculture and medicine. The use of sorbents is primarily due to cleaning of various pollutants and is closely related to the protection of the environment. The last decades are marked intensification of anthropogenic impacts on the ecosystem as a result of contamination of soil and water bodies. The spread of many pollutants in the world has become not only the local, regional and even global. Therefore, these contaminants have been a major international problem.

One of the major problems of ecological safety is a massive volley pollution accidents during transport of dangerous goods, especially in the transport of petroleum products and a variety of toxic substances. Oil spill on the water is a very serious environmental disaster, the consequences of which are harmful to all living things. Create sorbents oil - this is a very important discovery mankind to protect the environment. Accidents on the existing pipelines, road and rail transport, as well as plants are accompanied by large emissions of toxic substances and hit them in the soil and water.

Therefore there is an urgent need to provide means and methods for collecting contaminants, both solid and water surface. These methods include adsorption, and biological methods. If biological methods are designed to deep clean water or soil by recycling minor contamination by micro-organisms, the adsorption methods used in the elimination of consequences of emergency spills, collect the bulk of the spilled material to prevent major environmental disasters.

Who in the world is produced or used for oil spill nearly two hundred different sorbents, which are divided into inorganic, organic and organic-natural and synthetic. As sorbents is determined mainly by their capacity to oil, the degree of hydrophobicity buoyancy after sorption of oil desorption lets oil sorbent regeneration or disposal. The use of sorbents can be combined with mechanical collection methods of oil. Thus, mechanical methods can be used both before and after application of sorbents fixing oil and prevent the formation of emulsions.

There is a wide range of sorbents to collect oil spills. Sorbents based on inorganic materials (diatomite, zeolite, clay, sand) have a low oil intensity, hydrophilic (can not be applied on the water), require additional modification to cause difficulties with recycling and did not hold the lighter fractions of petroleum products (gasoline, kerosene, diesel fuel) . Synthetic sorbents have good absorbency, but are more cost and complexity of recycling because of the high toxicity of the combustion products. The most attractive and promising sorbents vegetable (organic) origin.

They are an integral part of an ecosystem or best meet environmental requirements. As such adsorbents can be identified on the basis of peat moss or coconut shell chips (Sheltic C). But unlike peat moss, production of which is destructive interference in the ecosystem, coconut shells - a waste of food production and manufacturing of coconut absorbent - an excellent example of the effective use of natural resources of the ecosystem. Vegetative sorbent has a high sorption capacity and hydrophobicity.

The organic sorbents can help create an enabling environment to achieve the desired environmental economically rational ways [3].

The problem of sewage treatment - one of the most important in the field of environmental safety in our country and around the world. The most effective measure to address this problem is the pre-treatment and prevention of entry into waterways pollutants.

The industry should create a water cycle at the enterprises with the regeneration of spent process solutions, wastewater and local water use closed systems, which are the main link of the closed systems of water supply for industrial enterprises as a whole.

There are many ways for industrial wastewater treatment:

Mechanical treatment - sedimentation and filtering. Before thinner sewage water is filtered through the bars and mesh, which set settlers with a view to the extraction of large impurities that can clog pipes and ducts. Settling is used for the deposition of suspended solids wastewater.

By physico-chemical methods of wastewater treatment include coagulation, flotation, adsorption, ion exchange, extraction, distillation, evaporation, distillation, reverse osmosis and ultrafiltration, crystallization, desorption, and others. These methods are used to remove from wastewater fine particulate matter (solid and liquid), soluble gases, minerals and organic substances.

The chemical methods of wastewater treatment include neutralization, oxidation and reduction. These methods are related to the consumption of reagents, so they are expensive. They are used for removal of solutes and water in closed systems. Chemical cleaning is sometimes carried out as a preliminary to the biological treatment or after as a method for post-treatment of wastewater.

Membrane cleaning methods (reverse osmosis, ultrafiltration, evaporation through the membrane, dialysis and pervaporation) found in recent times increasingly used for industrial wastewater treatment. They compete with ion exchange purification techniques, and in some cases exceed them. When cleaning a large volume of water is best - ion exchange purification process and for small volume better - membrane method of cleaning. The choice of method depends on the size of the particles separated.

One application is as sorbents cleaning and softening of drinking water in the home. With that faces every man, because the quality of the water consumed is an important component of human health depends on its performance and life expectancy. Currently, there is also available for each consumer a variety of models of household filters with varying degrees of water purification. For example, the use of activated carbon as the cleaning of the filter is the most efficient and sufficiently inexpensive means for improving the quality of drinking water and prevention of many diseases. Activated carbon can absorb all of the substance harmful to the body, including heavy as lead, mercury, radon and its decay products, chlorine, pesticides and others. At the same time, the activated carbon leaves the valuable minerals in water [1].

In an age of rapid technological development of water pollution is very often - because of carelessness, negligence or accident, caused by man. Water is an essential and necessary condition for the existence of biological life on Earth. Therefore, it is worth considering not only the creation of new environmentally friendly sorbents and more efficient methods of water purification, but also try to reduce, and eventually nearly eliminate the negative influence of the human factor in the hydrosphere and the whole environment, to teach future generations to take good care of nature.

References

Plyushchikov V. G. Byezopasnost' zhiznyedyeyatyel'nosti v otraslyah agropromishlyennogo komplyeksa. — M.: KolosS, 2010. — 471 s: il. — (Oochyebniki i oochyeb. posobiya dlya stoodyentov vissh. oochyeb. zavyedyeniy).

ENVIRONMENTAL PROBLEMS IN SHALE GAS PRODUCTION

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Abstract

Shale gas development is of great interest, both from economic and political parties. But many countries have imposed a ban on the extraction technology of the enormous damage to the environment. This article is devoted to information on the consequences that arise during production of this type of fuel.

At all times the rule in a particular area to bring people enormous satisfaction. In today's world one of these areas is a competitive energy - fuel. Countries with this resource can influence the actions of neighboring countries need to import. At the same time the country's exporters by any means trying to "pull the blanket" over, not limited to any moral, social, and human values. One of these values is the environment, and the need for constant its safety, because it is our home!

This article addresses the question more and more growing popularity of shale gas production and environmental impact during its production.

Shale gas development are of great interest, both from an economic and a political party despite the fact that in this industry there are many problems, ranging from cost-effectiveness, feasibility and ending with the destruction of the surrounding area, where mining takes place.

Currently, the largest realized project of shale gas can boast United States, which are also campaigning on the example of Europe to deploy similar projects and to use their energy resources, and get rid of the exporting country.

For example, the United States, as well as under their influence in Europe was planned exploration of shale gas. The media has deployed a large-scale PR campaign of "security", "cheap" fuel reserves are everywhere and easy to extract. European governments have received appropriate instructions and began to adjust local legislation. American oil companies engaged in exploration in Europe.

In fact, the situation was fundamentally different. In Europe, shale gas is strongly hindered by high population density and the deep location of shale formations. Under public pressure, the European governments one after another imposed a moratorium on shale gas. [4]

Naturally, all is strictly political and economic nature, while those who seek to benefit everyone forget about the environmental problems associated with this industry.

Shale gas - a natural gas produced from oil shale, and consisting mainly of methane. Gas production is done by fracturing. Method of fracturing is that the drilled hole, which open shale, then pumped under great pressure exclusive solvent: mixture of water, sand and chemicals. Further, the crack formation is formed, on which there is migration of fluid in the well and its subsequent recovery to the surface. Until the end it is not known exactly which chemicals are used in the composition of the fracturing fluid, as this is strictly confidential. For each part of the mining company has individual character. Independent ecologists have estimated that a special drilling fluid contains 596 names of chemical substances, corrosion inhibitors, thickeners, acids, biocides, inhibitors for the control of oil shale, gelling agents.

For each drilling is required from 4 to 26 thousand. Cubic meters of solution, and for a drilled well is required each time up to 26 thousand. Cubic meters of water. 450 thousand wells drilled in the United States are used to a maximum of 18 times, it uses 26 thousand. Cubic meters of water. If you multiply, you get 150 billion. Cubic meters of water containing chemicals.

The main problem, which is associated with the extraction of shale gas - a huge area, is exposed to contamination. Since deposits of oil shale in the world are great, then at a certain zeal and serious cost of these can produce a decent amount of methane. However, this production makes extensive land uninhabitable and agricultural production in the tens or even hundreds of years. [5]

Fracturing requires huge amounts of water, which when mixed with chemical additives, contains toxic wastes, including volatile radioactive elements, and heavy metals. This gas, together with chemical solutions that can not pump enters the ground water, soil fertility deteriorates. Also part of the waste obtained in this process evaporates transformed into airborne carcinogens. The other part is stored in a storage or disposed of.

Most sewage treatment plants do not have the necessary equipment to deal with toxic compounds. Most of the drilling mud is just in the rocks, contaminating drinking water and evaporates, the surrounding atmosphere. The fluids used in the drilling, is utilized in the tanks, which are dug in the ground with silt bedrock, but anyway the water penetrates into the ground. Waste water from the well sprayed into the tanks and the sun evaporate faster. Toxic substances evaporate, forming a chemical ozone pollution, which falls as acid rain in the meadows. Each well

has in its composition and storage plant, as in the storage gas is released from moisture in the atmosphere every second ejecting a part of the moisture poisonous substances, volatile chemicals, benzene, toluene and others.

In connection with the extraction of resources, the activities of companies has led to disastrous consequences. It's no secret that the inhabitants of these areas complain about the quality of drinking water, namely, increasing the concentration of methane in the 6 times, causing him burning. Water containing a substance such as ethylene glycol can not be cleaned even the most advanced filters, and thus may not be suitable for drinking. Some states have banned not only the residents of drinking tainted water, but swimming and even erase things!

Extraction of shale gas in the United States covering 34 states. With such vast territorial scale is likely the complete destruction of the natural environment. National governments, should think not only about leadership in the world on a particular field, and mining companies must not only strive for financial and economic benefits. It is worth thinking about where we live, what will happen tomorrow, and what the consequences might bring certain of our actions. It should take care of our nature, because we are directly dependent on it, as we would have liked to look independent.

References

Plyooshshikov V. G. Byezopasnost' zhiznyedyeyatyel'nosti v otraslyah agropromishlyennogo komplyeksa. — M.: KolosS, 2010. — 471 s: il. — (Oochyebniki i oochyeb. posobiya dlya stoodyentov vissh. oochyeb. zavyedyeniy).

SCREENING OF ALLELIC GENES, ASSOCIATED WITH THE BAKING QUALITY OF GRAIN IN VARIOUS HYBRID ALLO- CYTOPLASMIC SPRING WHEAT

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Abstract

Forms allo-cytoplasmic hyprid wheat with good baking qualities in combination with the positive influence of foriegn cytoplasm on other agronomic properties are of practical interest as line with a set of genes responsiple for the quality of the grain can be used in breeding for improving wheat [*Semenov O.G*, 2000].

Key words:Baking quality; Gluten; polymer; glutenin; molecular markers; allelic variants;locus.

Baking quality of grain is determined by several factors, the main of which is the quantitative and qualitative state of gluten and the ratio of different groups of carbohydrates.

Gluten that is formed in the dough, is a polymer of short gliadin and glutenin subunits, together giving elasticity and strength to the dough. Each class of storage proteins influences the characteristics of the dough, such as strength, elasticity, etc., which in turn affects the quality of bread. The more the wheat grain gluten and the better it is in their physical properties, the higher is the baking quality of the flour[Удовенко, 1982].

Gluten content and the signs of its quality are the hereditary characteristics, however they also depend largely upon the growing conditions. When new varieties of wheat with good baking qualities are created, they are sought in the early stages of selection to increase the protein content and gluten. However, the baking and milling of grain grade is a very intensive process, requiring a certain amount of grain. One of the important things is the use of protein and molecular markers to

identify samples, valuable for its baking qualities in the early stages of the selection process[Grantham R, 1983; Климушина, Дивашук, 2013].

The main protein marker for quality baking of wheat is a pair of high-5 + 10 glutenins. Since each of the high molecular glutenin locus identified allelic variants, encoding subunit associated with high baking qualities(subunit 2* for locus Glu-A1, subunit overexpression 7 for locus Glu-Bl and subunits 5 + 10 to Glu-D1), analysis allo-cytoplasmic hybrids was aimed at identifying these allelic variants

Table

Allelic composition of the main genes, responsible for baking quality, in allo- cytoplasmic hybrids.

№	Lines ACHW	Type the cytoplasm	Glutenins		
			Glu-A1	Glu-B1	Glu-D1
1	2 /09	*T. timopheevii*	het	-	5+10
2	3 /09	*T. timopheevii*	-	-	-
3	4 /09	*T. timopheevii*	-	-	5+10
4	7 /09	*T. timopheevii*	-	-	-
5	9 /09	*T. timopheevii*	2*	-	-
6	11 /09	*T. timopheevii*	het	-	5+10
7	12 /09	*Ae. ovata*	-	-	-
8	12 /10c	*T. timopheevii*	2*	-	-
9	13 /09	*T. timopheevii*	-	-	-
10	14 /09	*T. timopheevii*	-	-	-
11	15 /09	*T. timopheevii*	-	-	5+10
12	15/10c	*S. cereale* L	2*	-	5+10
13	16/09	*T. timopheevii*	-	-	-
14	17 /08	*T. timopheevii*	-	-	5+10
15	16 /10c	*T. timopheevii*	2*	-	5+10
16	17 /11	*T. timopheevii*	2*	-	-
17	20 /10c	*T. timopheevii*	2*	-	5+10
18	28 /10c	*S. cereale* L	-	-	5+10
19	36 /10	*S. cereale* L	-	-	-
20	36 /10c	S. *cereale* L	-	-	-

Screening of 20 forms of hybrid collection ACWH allelic composition at the Glu-D1 gene revealed that nine samples (2/09, 4/09, 11/09, 15/09, 15 / 10c, 16 / 10c, 20 / 10c, 28 / 10c, 17/08) are homozygous locus 5 + 10. Identified eleven hybrids (3/09, 7/09, 12/09, 13/09, 14/09, 16/09, 17/11, 12 / 10c, 36/10, 36 / 10s, 9/09) having alternative subunit Macromolecular glutenins (Tab.).

The obtained results allowed the identification of three lines (15 / 10c, 16 / 10c, 20 / 10c), which have both subunits 5 + 10 and 2 * Macromolecular glutenin, associated with good baking qualities that is doubtless an advantage in the selection of lines on grain quality.

Forms allo-cytoplasmic hyprid wheat with good baking qualities in combination with the positive influence of foriegn cytoplasm on other agronomic properties are of practical interest as line with a set of genes responsiple for the quality of the grain can be used in breeding for improving wheat [Семенов, 2000].

SECTION 5

LANDSCAPE ARCHITECHTURE AND HURBAN ECOLOGY

ASSESSMENT OF THE STATE OF GREEN SPACES OF THE CITY ON THE EXAMPLE OF THE GARDEN "AQUARIUM"

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Article is devoted to assessing the state of green spaces of the city on the example of the garden Aquarium. Relevance of the work is determined by a complex ecological situation in the major cities of Russia, like Moscow. Special role in the improvement of the urban environment play a green area in form of urban parks, gardens and squares. In recent years, interests in planting new areas of Moscow has increased significantly, but often after the tree planting events in the city state of green spaces is not supported in the proper way and are subjects to human impact. The high degree of influence of negative anthropogenic factors inherent in urban areas naturally lead to a weakening of the vegetation, thus, urban spaces designed to restore the health of the urbanized environment; themselves thus, need to be protected. Therefore there is a need to develop a universal system for assessment of the state of green spaces and lawns, which are suitable and convenient for public use for the purpose of early detection of any changes in the state of vegetation. Based on the performance of green space, taken from the garden "Aquarium", and differences in the structure of green spaces and the number and condition of the lawn, as an indicator of health of the urban environment, it is possible to determine the impact of anthropogenic factors on vegetation. (Problems of the content of green space ..., 2003).

Garden "Aquarium" is located in the central district of Moscow, near the Sadovoye Ring, on the border of Presnenskiy and Tverskoy regions. In the garden there is a theater "Mossovet" that from an environmental point of view implies unconditional anthropogenic impact.

The aim is to research the state of green space on the example of the garden "Aquarium" and compare the data obtained with the norms of the content of green space in an urban environment.

The main objectives of the research are:

1. Assessment of the lawn by the method of A.A.Laptev
2. Landscape and taxation assessment of tree plantations on specific indicators
3. Assessment of tree plantations on the asymmetry of lamina
4. Comparison of the results with acceptable standards

Thus, the main methods of the research were:

Following the method of Laptev AA determined the density of grass swards, which characterizes the quality of the turf and the estimated number of shoots per 1 sq. meter (Tyuldyukov et al, 2002). During the research of the lawn, the garden was divided into five areas (lawn in the center of the garden "Aquarium", a lawn in the upper left corner of the garden "Aquarium", a lawn in the upper right corner of the garden "Aquarium", a lawn in the lower left corner of the garden "Aquarium" and lawn in the lower right corner of the garden "Aquarium") to more accurately determine the status. The lawn in all areas is known to be seeded.

The result of the research of the density of the lawn in the garden "Aquarium" gives the unsatisfactory final assessment of 1 (unsatisfactory) (Picture 1).

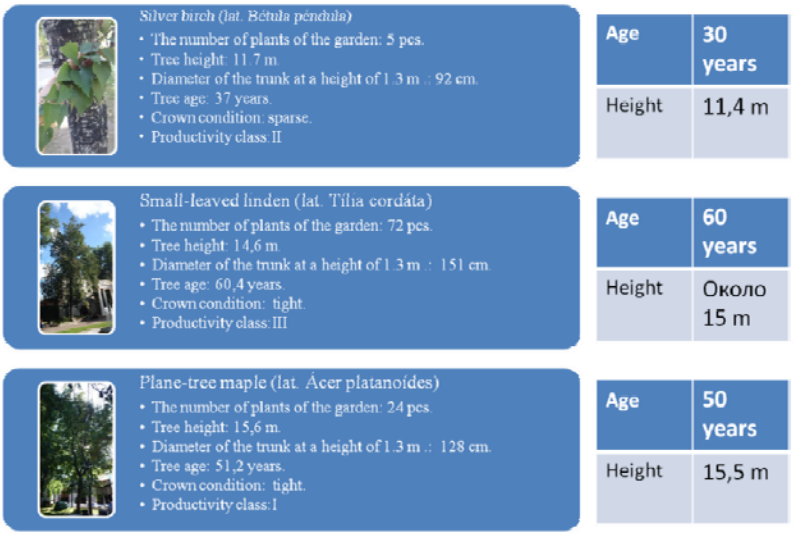
Indicators for the research of landscape and taxation assessment served: the number of green spaces, height of green spaces; diameter of the trunk at a height of 1.3 meters; age (the definition of the diameter of the trunk at a height of 1 meter); quality class (according to the table of Orlov MM); crown coverage (by calculating projections and clearances) (Zakharov et al., 2000).

In assessing the main objects of research were the following crops: Silver birch (lat. Bétula péndula), Small-leaved linden (lat. Tília cordáta), and Plane-tree maple (lat. Ácer platanoídes).

Number of area	1	2	3	4	5
The number of shoots per 1 m²	1830	560	1320	1170	960
Average					1168
Assessment					1 (Bad)

Picture 1

According to the results of landscape and taxation assessment according to the parameters you can see that the trees are developing satisfactorily for the urban environment (Picture 2).



Picture 2. The results of landscape and taxation assessment

Conclusion. In assessing the state of green spaces of the city on the example of the garden "Aquarium" have been studied and evaluated indicators of green space and a comparative evaluation of the data. The results of comparative assessment found that the lawn of the garden has a high anthropogenic load. While some indicators of landscape and taxation assessment (tree height) and the state of the asymmetry of lamina at the moment are normal. Assessing the status of green space and lawn shows the need to develop complex integrated assessment based on indicators of growth and development as wood and herbaceous crops, farming practices need to be developed in gardens and more in-depth research posed theme using additional indicators impact on tree plantation and lawn.

INTEGRATION OF NATURAL LANDSCAPES INTO THE STRUCTURE OF THE AREA WITH NATURAL HABITATS

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Environmental problems are relevant today for cities around the world, especially in Russia. Urban areas are used primarily utilitarian, a natural component of fades into the background. Huge areas are used to residential and commercial construction without green spaces in it. Nature gives way to urbanization. Balance areas in the city (natural / urban) is violated. Restoring this balance is one of the main tasks of modern landscape architecture.

The main strategy of the sustainable development of modern urban areas is the union of the environmental component and social dimension and needs of the population. It will form comfortable environment for humans. In the end, zones are created and combine urban comfort and dignity of a natural corner. In addition, similar approach to the design and organization of space can significantly reduce the cost of the arrangement and maintenance of parks in relation to the artificial environment.

Many areas in Moscow have lost their original function (former industrial zones, places demolished utilitarian buildings, the former settlements, etc.). During the time the territories are not used, they recover the natural habitats. It makes up the natural environment within the city; it does not require special care. Some of these spaces are arranged in such a way that logically can fit into the surrounding buildings as a recreational area based on the natural components of nature.

In the world, particularly in Europe, people have successfully practiced the creation of park spaces in cities with application in the design of existing habitats and conservation of natural landscapes. A good example is the landscape park "Isopuysto" in Kotka, Finland. This park is situated around the church of St. Nicholas (1799). It is designed in the English style, but in its territory it retains all original features of the natural landscape. Even in the presence of manicured lawns and large ornamental flower gardens in the territory, we can talk about the naturalness of the landscape, since zoning can introduce the original state to natural habitat.

Another Finnish park in Kotka "Sapokka" is fully formed on the principles of sustainable construction. The park is existed since 1917, but in 1990, park were taken to clean up and reorganization of the natural component. Vegetation was chosen in conjunction with spontaneous habitats formed on the territory of the park. Decorative forms are not the basis of the park, but only give some accents the natural territory. For such an approach to the organization of space professionals Green Building and illumination awarded park "Sapokka" for the better illumination (1993) as the best object of ecological building (1994) and for the best design of stone (1996).

In Austria, Germany, Finland, France, Switzerland, Sweden, the ecological approach isn't used only in large urban parks, but also in small spaces available on the streets, in yards and adjacent areas of industrial facilities. Landscaping are not used typical plants for a particular light and temperature conditions, and those species that grow on the territory before it was built, or are the result of the neglect of the site. Restoration of natural habitats in the urban environment is made in several European countries over the place. This approach greatly simplifies the content of the object in the form of a fitting and reduces the cost of its maintenance.

Creation of recreational facilities and transit landscape based on natural habitats has many advantages, such as:

1) Plants are guaranteed adapted to specific environmental conditions (climate, soil, humidity, and wind insolyatsionny modes, etc.);

2) Plants are compatibles with each other and do not displace each other;

3) Plants do not lose their decoration in the absence of labor-intensive and costly care;

4) Types used are resistant to the local fauna and the negative effects of industrial or transport facilities located nearby.

In Russia, unfortunately, the experience of territories on this principle is not used, even with a very large field of activity. However, in some innovative projects are increasing suggestions for "naturalization" of the urban landscape. Perhaps, as Moscow and other major cities of our country will take advantage of the principles of ecological construction and we will be able to explore our own objects as well with the foreign one.

PARKS OF EDUCATIONAL ESTABLISHMENTS

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This article deals with the principles, traditions and peculiarities of formation of tree plantations in the parks of educational establishments.

Nowadays the efforts of improvement of the environment, landscape gardening, planting of trees and shrubs and urban landscaping are getting greater meaning. The creation of new parks, squares and recreational forests becomes more and more important. The natural environment of Crimean coast, highlands, steppes are favourable for walking and recreation. While improving modern parks and gardens, while using modern trends of landscape architecture it is necessary to learn the style of those parks and garden structures which gained the world fame for Crimea (Likhachev, 1998) and have the historical and cultural uniqueness.

Trees, bushes and plants grow almost near every educational establishment. They are intended to take a function of social, ecological and educational meaning, to harmonize with the architecture of campus, to improve natural and health (sanitary and hygienic) factors. Park area of educational establishments is a link in urban gardening, which it is turn plays an extremely positive role.

The aim of the research: an introduction to the varieties of woody plants; discovery of historical pages of creation of parks; revelation of useful features of plants according to sanitary and hygienic principles; developing the recommendations and offers for definition of graphic and symbolical model of the park area of educational establishments.

Object and methods of research covers historical and system approach in creation of park area of educational establishments. Using the best patterns of Crimean landscape architecture, namely Nikitsky Botanical Garden, arises landscape planning, elements of greenery construction of the Enlightment epoch. In this period those rational kernels were laid, which formed the unique image of Crimean landscapes and which combined the natural and cultural landscapes in the organic entity.

Results and analysis: the process of formation of park and garden system in Crimea has a centuries-long history. Ancient travelers described the gardens full of “pleasant fruits” [Voloshin, 1964]. The interest to re-organization of Crimea was observed right after the joining to Russia. The exotic landscape of Crimea arranged the possibility for reformation the coast to trendy English parks. The defining role of landscape improvement of the south coast played the statesman – count Mikhail Semenovich Vorontsov – “one of a few true statesman of our Motherland, the man of enlighten thought and useful work” (Markov, 2006, Zamyatin, 2003). The cultivation of plantlets and wide range of species of plants became very important. By Royal degree in 1812 the Botanic Garden was founded. The organization work was charged to the famous Russian plant scientist Christian von Steven. The scientist developed “The plan for economical Botanic Garden on the

south coast of Tavrida near the village Nikita" (Kochkin, 1962). This plan goes about the tasks of the garden: "For the promotion of gardening … from which various useful plants must be taken out…the facilitation for those who want to cultivate gardens, get inside our borders moderately priced dependable seeds or trees…" In the course of the years of Russian scientist the main directions of development of Botanic Gardens were formed and they preserved till the present time and enriched: "fruits, parks, economical, flower garden, botanical; the rich collection of plants was gathered; large herbarium; the library was organized" (Shitikova, 2000).

Order of the Red Banner of Labour agro-industrial college of Federal State Autonomous Educational Establishment of Higher Education "Crimean federal university after V.I. Vernadsky" was founded in 1828 by Christian von Steven. First students – twelve soldier orphans from the public assistance orphanage of Voronezh vicegerency, boys of 11-13 years old were brought to Crimea by non-commissioned officer, for them to study for gardeners and winegrowers. The level of training was high enough. In 20 years after the foundation of the college was the second educational establishment – Nikitskiy college of gardening. In another 20 years they combined and Nikitsky college moved to Yalta. Educational establishment got a new status and a new name – training college of south special purpose crops. In 1964 training college moved from the south coast to the basis of the Crimean experimental station of gardening in the village of Malenkoye. The students moved from the south coast to steppe. The village, situated in 15 km to the north of Simferopol, had a small garden nursery. Bleak steppe landscape was revived only by old poplars. Dust and dry hot penetrated winds in winter, yellow clay and grass in summer. Great work on gardening and campus improvement was done by all the college staff. Today this is a flowering islet of life, oasis on the border of south and north, total area of which is 4.16 hectares. Park dendroflora has next biological groups of plants as deciduous, foliaceous and confirae. The total amount of botanical species is 85. They belong to 31 botanical families. These are: trees (48 species), shrub vegetation (33 species), vines (4 species). Representatives of 5 floral regions grow here: East Asian (13 species), Atlantic North American (7 species), Pacific North American (4 species), European Siberian (27 species), Mediterranean (34 species). Temperature and moisture regime is an important factors for most of plants, in other words thermophilicity and hydroscopicity. In the college park mesophytes, plants adapted to the moderate water conditions, prevail. It comprises 60 units. Xerophytes, the plants adapted to dry areas, are on the second place. Their amount comprises 31 species. The most of light-demanding plants in the park are: Indian bean (Southern catalpa L.), peach (Persica Mill.), pomegranate tree (Punica L.), Siberian pea shrub (Caragana arborescens Lam.), scholar-tree (Sophora japonica L.), Oriental plane tree (Platanus orientalis L.), Persian silk tree (Albizia julibrissin L.), Black locust (Robinia pseudoacacia L.), Four-stamen tamarisk (Tamarix tetranda L.). The group of shade-bearing plants is represented by Trailing mahonia (Mahonia aquifolium Hutt.), Hazelnut (Corylus avellana L.), Border forsythia (Forsythia intermedia Zab.), European privet (Ligustrum vulgare L.), Cotoneaster horizontalis (Cotoneaster horizontalis), Common box-tree (Buxus sempervirens L.).

One of the criteria of historical and scientific value of park is its uniqueness. There are rare species of dendroflora. Among the species, introduced there are Red Book ones: Boreal chickweed (Cerastimbie bersteinii L.), Snowdrop (Galanthus plicatus M.B.), Fern leaf peony (Paeonia anomala). Exotic trees and shrubs, which grow in the park are characterized by high decorative qualities. Among them are Chinese arborvitae (Biota orientalis Endl.), Horsetail ephedra (Ephedra equisetina Bunge.), Mock orange (Philadelphus grandiflorus Willd.), Japanese quince (Chaenomeles Japonica Thunb.), European redbud (Cercis siliquastrum L.), Kentucky coffeetree (Gymnocladus candensis Lam.), Engelmann spruce (Picea Engelmanni), Perfoliate honeysuckle (Loniceracaprifolium L.), Vanhoutte spiraea (Populus pyramidalis Roz.), Plum tree (Prunus cerasifera L.), Common juniper (Juniperus comunis L.), etc. Cornelian cherry plantings (Cornus mas L.) are the proud of the park. This wonderful crop is very useful – in the early spring in its blossom period the bees fly here to gather pollen and honey dew and from the middle of the summer till the late autumn ripe valuable by its officinal qualities fruits. They differ not only by its

colour (from light raspberry-red to crimson red), but also by its shape (oval, pear-shaped, egg-shaped). The park complex contains also mini Botanical Garden and experimental field which has several pieces with less-common plants. The pieces of perennial, monocyclic, dicyclic flower plants, potherbs and essential oil plants, field and fodder crops. The collection of phytoncids is creating for protection of green crops from pests and diseases.

Conclusion: In accordance with the research of landscape and shade gardening of the educational establishments was determined that most of them have sites for flower gardens, tree plantations including for gardens and vineyards, educational-experimental plots with officinal and fodder plants, etc. But its collection is not great with law efficiency in landscape, aesthetical and educational meaning. Most plantation has lost its intended purpose and needs reconstruction, renovation and refinement taking into account the ecological conditions of the territory, the elevation of decorativeness by means of diversity of species and forms of trees and shrubs, using of modern technologies of landscape design with the purpose of creation the park of educational establishment in prospect.

THE SOLUTION OF THE ENVIRONMENTAL PROBLEMS THROUGH THE PRESERVATION OF THE NATURAL HERITAGE OF CITIES

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In the era of world globalization and rapid technological development environmental problems become more essential every year. The shortage of the natural resources, the lack of the green spaces in urban areas, the destruction of the natural habitats, and the degradation of the territories on the periphery of the built-up city – all this is typical for the cities of any region in any corner of our planet. The modern landscape architecture is concentrated on the solution of such problems.

The question of the shortage of fresh water is particularly acute in the many regions of the world. And more and more countries chose the way of the economy and wise use of all available sources of this natural resource, essential for the life of any living beings over the planet. At this moment there are many programs that are being developed to more efficient exploit water sources, and many new technologies of its collection and purification. Several projects were proposed on more economical utilization of the resources in the urban environment, while ensuring minimum losses and costs.

In the world practice the system of collection and purification of rain waters were developed long ago. For these purposes the industrial constructions and devices, as well as natural areas, specially designed by landscape architects can be used to maximize distribute and purify water in the territories. This water may be either returning in the natural ecosystems or taking to the economic needs of the city like cleaning cars, streets, watering plant components. Any possible surface can be used for water accumulation: roofs, squares and roads. Special constructions for water intake are designed to increase the collecting surface, giving them attractive and original architectural forms. Such systems can be found in many European countries (Finland, Germany, France, Spain and others.), in some of Asian countries (China, Japan), also on the American continent (USA, Canada).

At the same time dense urban development, endless concrete and asphalt coverings, soil overstocking and degradation lead to the problems with the storm runoff. Without having opportunity directly to return to a natural ecosystem, water looks for an exit in the existing

infrastructure of the city, waterlogging structures, filling deep horizons and empty sites, provoking the erosion involving destructions, failures and developments of stagnation. For these territories the leading landscape architects develop projects of use the existing landscaped areas so that storm runoff is delayed and the space work as the green sponge which is clearing and collecting a city drain and interacting with other ecosystems. The projects also include the protection of wildlife, the aquifer and are used for a recreation, favoring urban development.

There are a lot of unused territories that have lost their initial functions in many big cities throughout the world that are quit suitable for the creation of such zones. During downtime a whole oasis of the "spontaneous" vegetation forms, as a result, full natural habitats in such sites. The vegetation of these places is perfectly adapted to the aggressive conditions of megalopolises and absolutely self-sufficient and do not require special care. Such space undeservedly lacking an attention - they have substantial ecological and recreational potential. With proper work of the landscape architect these areas can be returned into the "outline" of the city, creating a green "pause" in the densely built-up.

It is possible to find many examples of perfectly executed and successfully working projects of similar spaces in the world practice. For example, the project Sherbourne Common in Canada is both a public park, and the infrastructure to manage storm run-off. The park was appeared on the site of an abandoned industrial facility located along the waterfront of Toronto. Now this is the first park in Canada, which is applied for receiving the gold certificate LEED Gold Certification (Leadership in Energy and Environmental Design). The park serves as a system for collecting rainwater, which passes through the UV treatment before getting into Lake Ontario. The natural systems and urban infrastructure are integrated into a single unit. The control system of storm drains is arranged in such a way as to clearly demonstrate how any converted water on all way of the following - from falling to the ground as precipitation to flowing into the lake. All the elements of the park have their functions, providing water filtration, and are the part of an experimental system of purification of storm water.

The water in the park is present in many forms and variations: several thin water "mirrors", a 9-meter waterfall, small lakes with aquatic plants, the channel length of more than 200 meters and, finally, the water get the pavilion of the special design, where some time circulates and then is dumped to the lake.

Park Sherbourne Common is a perfect example of self-healing environment that not only answers the city purposes on providing the green spaces, but also is a model of the work of landscape experts with the planting material, as well as with the history and characteristics of the territory.

Unfortunately, a similar experience is not integrated and is not implemented into practice in any way in Russia, although we have a lot of such spaces in our regions. We hope the projects that take back our wastelands and "abandoners" into the urban infrastructure, preserve and increase the existing natural heritage, will come on very soon into our country. The water in the park is present in many the forms and variations: several thin water "mirrors", a 9-meter waterfall, smalls lakes with aquatic plants, the channel length of more than 200 meters and, finally, the water get to the pavilion of the special design, where some time circulates and then is dumped to the lake.

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Unfortunately, a similar experience is not integrated and is not practiced in any way in Russia, although we have got lack of such spaces in our regions. We hope the projects that take back our wastelands and "abandoners" into the urban infrastructure, preserve and increase the existing natural heritage, will come on very soon into our country.

LANDSCAPE ORGANIZATION OF THE AREAS OF PUBLIC INSTITUTIONS

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Abstract

Shortage of natural area is a problem of many government offices in central Moscow. Landscape improvement of the surrounding territory, could not be better able to demonstrate financial strength and corporate understanding of the importance of leadership to fill the green components.

In the course of urbanization, Moscow became not comfortable city to live in. This is due to climate change, in the process of growth and development of the city is decreasing the amount of clean air, water, green space and silence. Construction of various residential complexes, buildings and structures in the development of urban structure was carried out chaotically, usually by reducing the green areas of the city. A result we have highly built-up city, the center of which a large accumulation of buildings and almost no place for a green oasis in its structure (Gorohov, 2012).

Shortage of natural area is a problem of many government offices in central Moscow. All this territory is not used efficiently. There are many factors that influence the improvement adjacent territory, but the most important of them - the area of free land within the allotted plot of land. This territory may be planted and landscaped as a multifunctional area with different functional content. Landscape improvement of the surrounding territory, could not be better able to demonstrate financial strength and corporate understanding of the importance of leadership to fill the green components.

In order to properly organize similar territory, first of all you must do the following goals and objectives:

1) Creating a comfortable working environment for employees of public institutions.

2) Change the ecologic, economic, technological and social aspects of the projected area of these areas in the metropolis:

- The social aspect (requires constant adaptation to the environment is constantly changing needs of the people) - the variability of the environment;
- The economic aspect (no excuses necessary economic expansion is not commensurable with the cost of the subsequent recovery environment;
- The ecological aspect (person is not peculiar to objectively assess the resources of nature, and it is no reproduction loses the ability to maintain the viability of the parameters of the environment)
- The technological aspect (the destructive impact of humans on the environment must be compensated recovery technology) (Nefedov, 2002)

Maintaining the concept of sustainable development of territories is closely linked with the introduction of a systematic approach to restore the lost natural environment of megacities. The development of the landscape in time and preserve it for future generations is based on finding and promoting new principles of the design and construction technologies. By innovative areas of ecological design in urbanized environment worldwide practice includes:

- Collection and redistribution of rainwater to increase the biomass of vegetation
- Use a "green" technologies in order to change the structures of facades and roofs, as well as the preservation of natural "biotopes." (Zaykova, 2014)

Sustainable development government agencies can be expressed in the use of modern technologies, which will reduce the harm caused to the environment, as well as employees bring to nature in the urban environment.

In the world practice one of the most striking examples of organization of the territory government agency is the Federal Chancellery in Berlin. Swiss landscape architects Weber and Schurer have conceived it as a classic park with modern features. It consists of a spacious sunbathing lawn, where there are two symmetrical of inclined lawn level. At the crossroads of freely grouped trees, and along the shore promenade with open support wall, which integrates large ramps and stairs. Water walls forming part of the fountain area give a certain interest for the site. Groves of trees surround the area, continuing the architectural lines. Near the entrance to the office is an interesting sculpture of rusted metal, which gives this place of interest. This sculpture is surrounded by patches of lawn bionic.

Federal Chancellery in Berlin - is one of the main examples how it is necessary design the space around the government agencies. There executed directly the building itself, as well as the surrounding area, which made for a comfortable rest of people, which shows the country's democracy. And of course you should pay attention to how the building and decorated the entrance to it. The first thing that catches your eye - this macro sculpture next to the fence, made of rusted metal.

After analyzing the experience of other countries in the design of these areas, we can learn from these new technologies and techniques and adapt them to organize the space of our public institutions. After all, the external appearance government agencies can judge the status of the country, and if the area will be greened and everything will be done for the comfort of the person in the urban environment, it immediately becomes clear that the government cares about the environment of the city and its inhabitants, while ready to invest funds in the landscape.

References:

1. Gorohov V.A. – The green nature of the city – Arkhitektura -S – Moscow, 2012.
2. Nefedov V.A. – Landscape design and environmental sustainability – Poligrafist – Saint Petersburg, 2002.
3. Zaykova E.U. – City to humans. Landscape Design as a lifestyle – Collection of scientific papers on the materials of the International scientific and practical conference. 11 parts – Tambov, 2014. - № 7. – P. 60-63.

LANDSCAPE SPATIAL ORGANIZATION OF MEDICAL INSTITUTIONS AS A FACTOR OF HUMANIZING ENVIRONMENT

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Now the population of the cities faces one of the most complex problems in the sphere of ecology of environment and hygiene of the person. With an active growth of urbanistic settlements there is a topical issue of creating favorable conditions for activity of society.

The reasonable organization of space of the city, its competent functional zoning, and also esthetic balance of landscape composition will always cause positive emotions among users of any territory. On the contrary, prevalence of concrete outdated designs, lack of vacation spots and the oppressing type of not well-groomed vegetation hardly safely will affect on health and an emotional condition of the city dweller.

One of the most actual directions in reorganization of city space is arrangement of public territories – the medical centers, hospital complexes, hospitals, etc. The main aspect in the organization of such space is change of a psychological microclimate of establishment, providing with vacation spots in a natural environment not only sick hospitals, but also health workers.

Recently, when growth of incidence of the population increased many times, the successful landscape and planning solution of the territory of treatment-and-prophylactic establishments promotes active recovery of patients, and also timely recreational impact on the medical personnel. In this case the mission of green plantings is defined by creation and improvement of hygienic conditions of a microclimate, and also elimination of adverse influences of the surrounding external and internal environment. An important aspect in reorganization of the territory is change of functional structure of vegetation for the purpose of inclusion of sites with fitontsidny landings. Aromatic substances possess ability to destroy pathogenic microorganisms owing to what clear the air basin, and do it more useful to the person.

Considering relevance of the matter, we carry out work, for the purpose of full landscape reorganization of the territory of the operating medical complex, and also development of organizational measures for a choice of the most acceptable versions of planning decisions with observance of sanitary and hygienic and decorative functions of green plantings.

It is no secret that a main objective of any medical institution is the fastest restoration of a physical and emotional condition of patients, and also timely recreational impact on the personnel and visitors of hospital. Gardening of hospitals represents the whole complex of difficult actions for design new and to preservation of the available landscapes of the territory. According to the saved-up experience when developing the project the maximum gardening of the territory of a hospital complex, and also creation of a protective strip on object perimeter is recommended.

Competently thought over landscape zoning of the territory gives the chance to the workers, visitors of a complex and also sick of hospitals all the year round to use the hospital territory, thus, without interacting with each other. Construction of a multipurpose complex with a panoramic glazing in any weather promotes a free access of patients to surrounding environment that will very favorably affect them a psycho-emotional state, and will also accelerate recovery, and will reduce time of stay in a hospital complex. Existence during the winter period of massifs of the green plantings capable to emit phytoncides, useful to health of the person, and also to improve quality of the psychological and oxygen environment, will become for patients additional therapy, will help to cope with an excess stress. Adjoining to the nature, the person finds the sincere forces helping to cope with this or that disease.

At a choice of color accents the preference was given to quiet pastel tones. Pale shades I possess the calming and weakening action that well influences nervous system of visitors of hospital. In places of a mass congestion of people it is necessary to enter the additional elements inspiring feeling of a pacification therefore in the project the horizontal lines creating psychopreventive effect prevail.

In the course of work we studied world analogs of gardening of territories of hospitals and other medical institutions. It was noted that use of modern materials gives the chance most effectively and functionally to involve available spaces, without regard to adverse weather conditions, limitation of the territory or other arising problems.

The Children's hospital of Zurich (Children’s Hospital Zürich) can become one of modern examples in this area, it is known that construction will cardinally differ from standard projects of hospitals. The main accent of this project are the through round yards through which in the building the sunlight will get. In foundation of such yard the green oasis consisting of a set of plants of different specific category will be located. Planning of the building is thought over to trifles, it will allow visitors, patients and the medical personnel to move freely on hospital. Floor-by-floor zoning is also provided: rooms for diagnostics and procedures will occupy the first floor, on the second offices of experts will be located, and on the third chambers for stationary patients are placed. Modern development in the sphere of landscape design will make this object very attractive to society.

One more original object in world experience of gardening is the Hospital of the district Vendsyssel / Denmark (Vendsyssel Hospital). The project provides reconstruction of the available cases of hospital, and also construction of several new buildings. The decision on creation of system

of the courtyards added with gardening of roofs, and also creation on one of them of a playground was made. Such reorganization gives the chance to expand spaces for rest of patients and the personnel of hospital.

Three squared buildings are built on one axis thanks to what domestic spaces will be connected among themselves by means of public halls. Thus roofs of lower buildings will be planted trees and shrubs and turned into recreation areas for little patients. The part of the planted trees and shrubs roof will turn into a full-fledged winter garden: enclosed with transparent curvilinear partitions, protected from rainfall and the hot sun, it will turn into a year-round rehabilitation corner and a playground for the recovering children.

The last researches prove that the favorable situation can accelerate recovery of patients. Therefore implementation of projects of this type I gain steam, and are even more often used in world experience. Having united new technologies and fresh ideas in the sphere of landscape design it is possible to reach huge positive results.

As the ecological situation in the cities worsens every year, gardening and reorganization of spaces of medical institutions every day gains special relevance, and also makes a huge contribution to process of improvement of the air environment, and as a result increase of a psycho-emotional state and improvement of comfortable residence of the population in the city. Considering constant aspiration of the person to environment, the rational landscape and planning solution of gardening of the territory of medical complexes has huge value, and can play the leading role in the general recovery of health of patients, and also recreations in this territory of the personnel of hospital, and simple visitors.

References:

1. Kazarinova N. V., Tkachenko K.G. Emotional and esthetic features of a medical phytodesign//Resort sheets, No. 3 (24), 2004.

2. Nefedov V.A., Landscaping and stability of the environment, Prod. Printer, 2002.

3. http://archi.ru.

CATEGORIES ARCHITECTURAL COMPOSITIONS AND ELEMENTS OF RESIDENTIAL AREAS HAVE A MUTUAL RELATIONSHIP WITH CLIMATIC FACTORS ARCHITECTURAL ZONING

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Abstract

The author has found a correlation between climatic factors architectural zoning categories and architectural composition of the structural elements of residential areas rural settlements. The research results will help to improve the process of architectural zoning

I defined the purpose of scientific research. I have found a correlation between climatic factors architectural and zoning categories of the architectural composition of the structural elements of the residential territories of rural settlements.

I defined the object of study. I consider climatic factors architectural and zoning categories of the architectural composition of the structural elements of the object of research.

I used the following research methods: architectural zoning; analytical-climatic, mathematical-logical.

I believe that at architectural residential zoning of rural settlements need to install geographical data latitude and longitude zoned areas residential areas rural settlements /1-4/. I consider the example of the village of Red Wedge Kozelsky district of Kaluga region. Latitude is 53°58'60" North latitude, and the longitude is 35°58'00" East longitude. I have defined climate zone. The example is for climatic zone II. Climate zone is temperate continental. I determined the height above sea level. It amounted to 213, M. I defined the true noon. It falls on 12:47:37. The rainfall amounts for the year 654, mm Type of moisture of the soil is sufficiently moist. I analyzed the average day and night temperatures, monthly average wind speed, monthly average relative humidity for one year /1/.

I brought the results of the analysis of mean monthly temperatures day and night for this example for the year. I brought them in table №1.

The mean monthly relative humidity is in the range of 40 -71,%.

The climatic type of weather has the following grades:

Severe (without wind with wind)- Sz;

Cold (no wind, with the wind) - X;

Cool (no rain, with rain slanting) - Pr;

Comfortable - Km;

Warm (at normal relative humidity, with high relative humidity is over 60 %) -Tp;

Dry (without storms, dust storms) - Zsz;

Hot-Zsr,

They have the appropriate graduation on climatic criteria (mean monthly temperature, wind speed, relative humidity).

Table 1

The table contains mean monthly temperature and wind speed day and night for the year for the village of Red Wedge Kozelsky district of Kaluga region.

Month		1	2	3	4	5	6	7	8	9	10	11	12
The average temperature, t,°C													
Day	t,°C	-5	-9	-3	12	20	21	23	22	18	15	4	4
Night	t,°C	-6	-10	-3	8	18	19	20	19	15	13	1	-5
Monthly averaged wind speed													
Day	m/s	3	3	4	3	4	4	4	3	3	3	3	3
Night	m/s	5	3	3	2	3	3	2	3	3	2	2	3

I defined a formula type of climate the weather based on the data of table №1:

$$TKP \equiv 13\ Km\ 9X3\ Tp\ 2\ Pr \quad (1)$$

where Km is a superb climatic type of weather;

X - cold type of climate weather;

Tp - warm type of climate weather;

Pr - cool type of climate weather.

I proceeded from the highest value of 13 Km. I defined the type of climate the weather in the study area. He is comfortable /1/.

Comfortable climatic type of weather characterized by open-type houses with the typical loggias and verandas for categories of the architectural composition of the structural elements of residential site /1/.

Severe type of climate the weather is characterized by a solitary type of buildings, the transitions between the housing and the primary network service, the maximum compactness of buildings, heating of big capacity, artificial ventilation with heating and humidification, high airtightness and thermal protection, dual vestibules, have closets for clothes for the categories of the architectural composition of the structural elements of residential site /1/.

Cold type 1 of climate the weather is characterized by a closed type of buildings, protection from wind, orientation to the sun, compact spatial arrangement, closed staircase, have closets for coats, Central heating, average power, and exhaust duct ventilation, airtightness and thermal protection fencing for the categories of the architectural composition of the structural elements of residential site /1/.

Cool type 2 of climate the weather is characterized by semi-open type of buildings; the availability of protection from the wind, orientation to the sun, heating of low power, transformation and airtight enclosures for the categories of the architectural composition of the structural elements of residential site /1/.

Warm type of climate the weather is characterized by semi-open type of buildings, shading, aeration, through (angular, and vertical) ventilation of apartments, the presence of loggias and porches, the use of fans, transformation protections for categories of the architectural composition of the structural elements of residential site /1/.

Arid type of climate the weather is characterized by a closed type of buildings, shading, protection from dusty winds, artificial cooling without reducing the moisture, airtight, thermal protection fencing for the categories of the architectural composition of the structural elements of residential site /1/.

Hot the type of climate the weather is characterized by a solitary type of buildings, shading, aeration, compact dimensional composition, full air conditioning, impelling exhaust ventilation, airtightness, thermal protection fencing for the categories of the architectural composition of the structural elements of residential site /1/.

I installed the correlation between the climatic type of weather and in choice of the category of the architectural composition of the structural elements of the residential territories of rural settlements as a result of the conducted research.

Conclusions.

The research results enable to improve the process of architectural zoning, to make a reasoned choice of category architectural composition, to improve the economic performance criteria architectural objects through a more rational use of climatic factors in the architectural environment, to create a more comfortable living environment for present and future generations.

References

1. Arhityektoornaya fizika. /Pod ryed. Obolyenskogo N.V. /Litskyevich V.K., Makrinyenko L.I., Migalina I.V., Obolyenskiy N.V., Osipov A.G., Shshyepyetkov N.I. -M.: «Arhityektoora-S», 2007. – 448 s. ISBN 978-5-9647-0034—0.

2. Mikita G.I. Isslyedovaniye elyemyenta modyeli gradostroityel'no-informatsionnoy sistyemi organizatsii gorodov i syel'skih posyelyeniy kool'toornogo naznachyeniya s ooloochshyennim oformlyeniyem zvookovogo vnootryennyego prostranstva. – «Noosfyera». Naoochno-popoolyarniy zhoornal (s shirokim pryedstavlyeniyem oblastyey dyeyatyel'nosti). – M.: Izd-vo OOO «ANPT» - 116-127 s.

3. Mikita G.I. Proyekt transformatsii elyemyenta modyeli gradostroityel'no-informatsionnoy sistyemi organizatsii syel'skih posyelyeniy kool'toornogo naznachyeniya, privodyashshiy k ooloochshyeniyoo zvookovogo vnootryennyego prostranstva. – «Noosfyera». Naoochno-popoolyarniy zhoornal (s shirokim pryedstavlyeniyem oblastyey dyeyatyel'nosti). – M.: Izd-vo OOO «ANPT» - 128-136 s.

4. Mikita G.I. Arhityektoornaya akoostika. – M.: RUDN, 2013. – 18 s.

PROBLEMS OF A DISPLACEMENT OF NATURAL ELEMENTS FROM THE URBAN ENVIRONMENT AND THEIR SOLUTIONS

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Abstract

Urban gardening plays a very important role in creating a literate environment. The main pollutants of human activities. This problem can be solved with the help of additional funds landscaping.

For today, a well-organized urban environment in compliance with all existing rules and regulations is very big rarity for us. Architects create objects whose purpose is to educate people - drew attention to the beauty of the world, the fragility and vulnerability of nature. And can we, in the modern and rapidly developing metropolis, afford to enjoy the beauty of nature?

The problem of a nature's displacement from the urban environment becomes now more and more important. Lack of vegetation is a problem for most modern cities. In addition to the aesthetic component, it affects the climate and microclimate, as well as the level of contamination of the city as a whole. According to experts, for now about a half of humanity lives in cities, and by 2050 this figure will increase to 70% and will exceed 80% in industrialized countries.

One of the main causes of a nature's displacement from the urban environment became a direct activity of a human. Initially, the relationship between man and nature were a mutual influence to each other. As the formation of society and the state - the nature's ability to influence on a man has decreased, and the influence of a man on nature was intensified. Thus, a man was trapped of the contradiction between his conservative biological essence and increasing alienation from nature. Staying representatives of the wildlife, a man became her cruel exploiter. He is several orders of magnitude exceeded the number of its biological species and the abundance and even dozens of times - the amount of matter and energy to meet their biological needs.

For a healthy urban's environment is unacceptable negative impacts created by cities, technology and man. These effects include:

• Pollution, ie Adding to the environment uncharacteristic for it new physical, chemical or biological agents or exceeding existing natural levels of these agents;

• Technical transformation and destruction of natural ecosystems and landscapes. This kind of exposure is extremely dangerous, because it leads to a change in the foundations of the landscape;

• Depletion of natural resources (minerals, water, air, forests, and other.);

• Global climate impacts (climate change due to human activity);

• Esthetic impacts (changes in natural forms, the construction of man-made objects unfavorable for a perception).

Of all the human impacts, the pollution become the most dangerous factor. This factor significantly destroys nature, leads to irreversible changes of individual ecosystems and the biosphere as a whole. Pollution can be divided into 2 types: natural (natural disasters) and anthropogenic (caused by the activities of man himself). Anthropogenic, in turn, are divided on the physical, chemical, mechanical and biological.

How to reduce the negative impact on nature in an urban environment?

Planting of greenery - is a number of green spaces settlements, as well as the complex of works on their creating and using. Landscaping in an urban environment can increase the oxygen flow and reduce air pollution, as well as being an aesthetic component. It is also one of the solutions for rest and relaxation residents.

Traditional methods of urban greening are group and ordinary planting trees and shrubs in the residential and public areas, in the areas of schools and other institutions for children. They are complemented by planting citywide and regional value in the form of recreation parks, squares, avenues and boulevards, as well as nature reserves, sanitary protection and water protection zones.

Also, it can be forest-park and forest area suburb, creating conditions for public recreation in a natural environment. But in the modern developing city to create new green areas is not enough space, and therefore offers non-traditional methods of gardening: vertical gardening, green roofs, the use of plants in tubs, as well as the construction of eco-parking.

Vertical gardening with plants creates a more favorable microclimate facilities. Liana's leaves can reduce heating of the walls, especially in the south and the south-west sides. Air temperature of greened terraces and porches is below 2-3 ° C than of non-greened. Climbing plants reduce the penetration of dust and indoor air pollution, and their lush foliage reflects heat rays of the sun, without giving walls overheat. Can be used as annuals and perennials. In the middle zone are used girlish grapes, ivy, Diascia, Bacopa and bidens, some varieties of begonias. But the difficulty lies in the fact that in the winter, these plants will be unsightly bare branches.

Greened roofs are currently one of the most effective, and often the only possible way to urban gardening. Green roofs have been successfully applied in many cities around the world.

The benefit of green roofs is primarily in the fact that the vegetation on the roof helps to mitigate the impact of natural changes in temperature and, consequently, climate control in buildings. A green roof is a kind of buffer between the environment and the rooms of the building, allowing it to lower the temperature in the summer and avoid a sharp drop in the winter. The economic effect of green roofs is to reduce the cost of heating and air conditioning of buildings by an average of 20-30%.

Green roofs contribute to maintaining humidity, as moisture evaporates much more slowly with vegetation than with the roof covering. This is achieved by hydration of urban air. Plants for the garden on the roof should have a small fibrous root system, not require careful maintenance, have a high resistance to drought and frost, wind-resistant, light-loving and be quite decorative.

Creating eco-parking using lawn grids - it is the most practical solution in the city. High ecological and space saving complemented aesthetic advantages. Eco-parking - is the perfect solution for the city: strengthening the soil and root system of lawn grass using arrays turns neat lawn of live grass, which could easily enter the car without damaging the plants.

Modular lawn grids are widely used to create green pedestrian areas, lawns, eco-parking: withstanding heavy loads, lawn lattice successfully protect the root system of the grass from injuries to pedestrians and car tires. In this case, lawn grids perfectly absorb moisture in the soil and protect the soil from weathering and leaching.

Plants in pots are mobile and can be put where they are most needed. In the summer, they create an atmosphere of celebration on the balcony and terrace, and in the cold season the pots move for the winter. But not only classic Mediterranean plants such as oleander, olive trees, palm trees and citrus trees in pots feel at ease, many other shrubs, small trees, shrubs, roses, herbs and summer flowers can grow well in pots.

The most popular plants for pots, boxes and hanging baskets: fuchsia, pelargonium, lobelia, petunia, begonia, verbena, Aubrieta, alyssum, balsam, Levisa, heliotrope, nasturtium and other annuals. For hanging baskets, balcony boxes and installed at a height of pots and tubs select plants that have a tendency over time to spread and trail. A few weeks containers with the flower arrangements as an elegant cascades of greenery and flowers.

Urban landscaping touches on many important aspects, starting with the formation of environmentally friendly comfortable environment for humans and end positive emotional aspect that affects the physical and psychological health of the residents. Well-being of the city is based on the health and happiness of the citizens, which is impossible without creating a comfortable and beautiful urban environment. Judicious application of green spaces of the city will not only improve its environmental and aesthetic condition, but also to take the path of sustainable development.

"We are creating cities, and the cities make us' (Aristotle)

MODERN GARDENS AND PARKS OF BAKU AS A PICTURESQUE OASIS OF THE DEVELOPING CAPITAL OF THE "COUNTRY OF LIGHTS"

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Abstract

Baku - the capital of Azerbaijan and one of the most beautiful places in the Caucasus. Gardens and parks in Baku, almost was not. The city is considered one of the most backward cities in the number of green spaces. Now the capital pleases residents and visitors the beauty of modern architecture and city parks.

Baku - the capital of Azerbaijan. This is a city that is rapidly converted on the eyes. Until recently, there was not as developed gardening construction.

One of the features of the landscape architecture of the East, in particular, Azerbaijan, is the fact that in the cities occupy the central place the care of landscaping and beautification of a own corner and own yard. In view of the fact that green-building in urban areas was mainly a matter of individual feudal lords and individuals, rather than urban communities, the care of the landscaping of streets and squares of the city was ranked a secondary place. (Gasanov AA, 1996)

Baku - a city which is located in the steppe zone, where there is always a shortage of water. In addition, hot climate and small number rain also makes it difficult to greening the city. Nevertheless, as a result of this work, just over a century in Baku, tremendous changes have taken place scale green building. If in 1880 the area of green space in the city was only 3 ha, exactly one hundred years later in 1980 it was equal to 9520 hectares, increased more than 3170 times. (http://www.window2baku.com/)

At present, on behalf of the head of state in the capital are made consistent measures on capital reconstruction of parks and alleys and the creation of new parks that meet international standards, leisure spots for the convenience of residents and visitors alike. Each new garden and park meets the highest standards, modern requirements of infrastructure that contributes to the transformation of Baku into one of the most beautiful cities in the world. (1news.az)

Today in the developing Baku is already possible to see numerous modern beautiful places of recreation and public recreation and leisure: parks, gardens, avenues, such as «The Seaside Boulevard, The Memorial Highland park, Park Officers, Winter Park, Sahil park, park Huseyn Javid, Narimanov Park park Dede Korkut, Keroglu park, Garden Philharmonic garden of Khagani. Each of them carries its own uniqueness.

In landscape architecture Baku occupies a special place Primorsky Boulevard and is one of the business cards of the city. In 2009 celebrated its 100 year anniversary. In recent decades it has expanded significantly and repeatedly subjected to restructuring. Widely terraced strip boulevard, in essence, turned into a park, resolved with the opening of the space from the Caspian Sea. History of the Baku Boulevard goes back to the beginning of the XIX century when Baku city government has repeatedly discussed the issue of creating a seaside boulevard. But only in 1909 have been taken concrete steps initiated by Azerbaijan became an engineer Mamedgasan Hadjinsky. In connection with the presidential decree, in 2008 began a general reconstruction of the Seaside Park, on which the City of Baku has been allocated $ 500 million. The territory has increased fivefold. The length of the boulevard цфы about 5 km, but in the long term extended for additional 20 km. Has been updated and renovated 15 attractions, theaters, cafes, summer children's theater, parachute tower and musical fountains. The territory was filled with gorgeous flower beds, plants from around the edge of the world, as well as modern architectural elements and modernized coastlines.

In the park, opposite the Museum of Carpet, built picturesque canals, which are called area of Venice. On the banks of canals built houses in the Venetian style, and through the channel spanned delicate bridges.

Picturesque location has Nagorny Memorial Park. It is located in the central part of Baku, on the slopes of the hill where the panoramic view of the capital of Azerbaijan and Baku Bay. After the reconstruction area of the park was transformed. Park with a competent design and landscaping on complex terrain found his compositional features. Terraces, stairs, ramps, decorative green filling and beauty of waterfalls give the area a beautiful aesthetic appearance.

Garden Philharmonic (former name - the Governor's garden) - the most beautiful and oldest park of Baku, situated near the eastern Minor fortress walls of the old city Icherisheher fortress gates between the Eastern and the area Azneft. Over its history, the garden several times changed its name. Previously, it was named in honor of Nicolas II brother - Michael. However, residents mostly call him "Mihailovskiy garden" and "Governor's garden" - for the reason that the garden was in front of the governor's house. During Soviet times, the name was changed to "Pioneer Garden". In the end, after in the garden has been a bust of the poet Aliaga Vahid, it became known as the "Wahid Garden". Since last overhaul garden began to wear the name of entertainment buildings Philharmonic.

In 2009, the garden was reconstructed. Particular attention was paid to increase the green band. Ornamental plants, planted in 1865, attracts attention with its beauty, new trees and shrubs that provide additional shades in the garden elements. During the reconstruction were also planted new kinds of trees - oak, cedar and ash, there was a new site with a variety of ornamental plants.

Along with the existing parks in various districts of Baku formed new modern park pass arrays and improvement works. Particular attention is moving away landscaping of public importance. For example, the Cultural Center of Heydar Aliyev. Parkland on 13.58 hectares attracts people with its esthetically made landscape organization, as well as, and architecture of the building. The whole territory as a whole has finished artistic image.

By the beautiful landscape gardening zones of the Baku city, built in recent years and transferred to the use of residents and guests of the capital, can be attributed Winter Park, and Dede Gorduta. In both areas used modern design. This is the place where you can spend time and enjoy the design ideas and views.

In addition, in the coming years will be built in Baku even more grandiose projects landscaping facilities that will meet modern world standards. One of them, a botanical garden, covers an area of 16,500 m2. The project is a huge modern building and adjacent park arboretum enthralls.

Every year, like every developing cities, requiring an increase in gardens and parks, more absorbed in new buildings than exacerbate the ecological situation. But with the increase of green areas of any city becomes a beautiful view. Widely developed network of gardens, parks, green areas of the city are changing climate, reduce the strength of dry winds, are protected from the adverse effects of precipitation, are the natural filter for dust and harmful emissions of the industrial enterprises.

Garden and park area is also one of the means of forming the architectural appearance of settlements. It is important to keep the area of landscape art, transforming them with modern elements and welcome the new landscape objects.

ARCHITECTURAL CAPITAL

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Washington is the administrative capital of the United States, but many American cities have far greater fame: New York is the world financial capital, Los Angeles is the world capital of the film industry, Las Vegas is the capital of gambling, Miami is the World Resort, and Chicago is called the architectural capital of the world.

Chicago is the third largest city in the US with a population of 3.5 million. The city received its name from the word "shikaakhwa" which is translated as "wild onion" from the language of Native Americans. The position of Chicago has a number of features that has had an impact on its architecture. Firstly, it is a very small area of the city, caused the greatest density of tall buildings and structures, including multi-level transport routes; secondly, there are strong winds on the coast of the vast Lake Michigan, which make high demands for the structure of tall buildings.

The city was founded about 200 years ago, but thanks to its favorable geographical position - between east and west, at the intersection of land and water transportation routes, Chicago has been progressing rapidly. In 1871 there was the Great Chicago Fire, which destroyed most of the city, but it was the cause of a new architectural image of the city.

The first skyscraper, that is a building of an insurance company, was built in 1885 in Chicago, which height is 10 floors or 42 meters. In general, the most ancient city of skyscrapers in the world is considered the Yemeni city of Shibam, where the houses from clay brick with the heights from 5 to 11 floors up to 30 meters were built even in the 16th century. Shibam City has still survived including about 500 houses are in the UNESCO World Heritage. Nowadays a building over 150 meters is considered to be a skyscraper. 300 skyscrapers are located in Chicago City where there are the most number of such buildings in the world.

Willis Tower is the tallest building in Chicago, which height is 443 meters and 110 floors. Later television antennas were set on the roof, which increased the height of the building up to 527 meters. At the time of its opening in 1973, Willis Tower was the tallest building in the world. The significant features of the building are its complex of the massive metal structure includes nine towers that can withstand high wind loads and the opportunity to make additional completion. The asymmetric design of the building creates an uneven load on the foundation because the building is tilted to the west of the lake by 0,1 meter. In the strong winds from Lake Michigan deviation of the

tower from its set can reach 0,9 meter. On the 103rd floor the observation deck is located that is called "heavenly deck", where you can feel how the building is swinging from the wind. In addition, there are 4 balconies with transparent glass floor for visitors. But the abundance of massive beams disfigures of appearance Willis Tower, whereas the Eiffel Tower in Paris or Shukhov Tower in Moscow where the metal “lace” emphasize the elegance of structures.

The dark glass of the tower, probably, intended to disguise the piling up of beams, further reinforce the gloomy impression. In Hong Kong, the architects have solved this problem in another way: they used a part of the beams that can be seen through the glass in the form of a white zig-zag line with backlit at night time. It looks particularly impressive in the evening, when it seems that the building is permeated with a bright lightning that is organically included in the evening light show.

The second tallest building in Chicago is a very elegant hotel "The Trump International". Almost next to the hotel there are two high-rise buildings in the form of corncobs, which won several architectural awards. The lower 19 floors are a spiral parking lot. Above there are residential apartments, a hotel, restaurants and a concert hall.

The most famous and beautiful place in Chicago is the Millennium Park where you can see some works by contemporary architects and sculptors. The most famous sculptural form in the park is The Bean, which is also called Cloud Gate, but in the representation of its author it was a drop of mercury. This sculpture by a British artist and sculptor of Indian origin Anish Kapoor consists of a lightweight frame and 168 stainless steel plates welded together and carefully polished. Tourists are always going around this sculpture and looking at their deformed reflections in curved surfaces.

Next to The Bean there are two fountains with walls made of LCD screens with female physiognomy, which appears on the walls and from time to time starts spewing a stream of water.

There are very beautiful lawns on the streets of Chicago City and all the lawns are different from each other. Probably, because of these lawns the height of skyscrapers do not create the sense of pressure. This is a very vivid example of how seemingly a small component of the city affects on the architecture of the city in the whole.

The main and most beautiful street of Chicago is Michigan Avenue. The city with such a high density of skyscrapers should be a very busy with traffic, but it is not so, because in the center of the city there are many roads located at different levels, i.e. in the tunnels, so there are usually no traffic jams. Because of the huge number of cars in the US a lot of attention is paid to the organization of traffic. The good example is New York City, where trestles in several tiers along the shore of the bay above the water surface were built for the expansion of the street.

Two years ago on Michigan Avenue in Chicago was installed "traveling" 8-meter high sculpture of Marilyn Monroe by designer Seward Johnson. "Traveling", as it was periodically moved to different cities. Prior the Chicago the sculpture was built in New Jersey, after Chicago it had already visited Palm Springs in California, and in 2014 moved back to New Jersey to an exhibition in honor of its author - 80-year-old designer Johnson.

The Museum of Architecture and Design located in Chicago City dedicated to the art of design in all areas of the discipline: architecture, industrial design, graphics, landscape, architecture and urban planning. The Museum's mission is the advancement of public education about the value of Good Design and how design can positively impact the human environment.

Chicago is one of the most beautiful cities and deserved to be the architectural capital in the world.

HISTORY OF THE IMAGE “THE LINE AND THE FORM” IN SEMANTICS OF LANDSCAPE PROJECTS OF THE XX CENTURY

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Abstract

In the early landscape works of 20-30 years of the last century the design of the tablet is the main semantic reception providing the sign information transfer from the ground surface design. The simplest of them can be compared to the line and a form which filling by semiotics signs came by the principle from simple forms to difficult signs in a landscape conditionally.

On the examples of the world practice of the landscape projects of the XX-th century is possible to track the evolution of authors` ideas of forms and data carriers of semantic images. In the early landscape works of the 20-30-th years of the last century the design of the tablet is the main semantic reception providing transfer of sign information from the earth surface [1, p. 71]. The simplest of them can conditionally be compared with the line and the form which are filled by semiotics signs came following the principle from simple forms to complicated signs in landscape. Domination of the subject "the Line" is possible due to use of the active colour accent in landscape contrasting with the surrounding nature and is presented in design projects of the middle of the 90th years of the XX-th century by the work of 1986 of "The Red Garden" from the textile designer Jack Lenor Larsen by name. Already in the very name "Red Garden" the subject of an active red element is declared. Jack Lenor Larsen chooses as the background for the "red" composition in the style of Japanese Shintoism natural landscape with high trees and "green" support from shrubs and herbs. However the lane from the vertical columns painted in brilliant red colour from a cedar with scarlet bushes of an azalea creates prospect with almost shocking intensity in natural environment [2, p. 59]. Undoubtedly, the composition in the form of two lines crossing by the principle of vista not simply draws attention to itself, but also is remembered by the simple details as identical object. It is a historical sample for using of the semiotic subject "the Line" in the projects of XXI-st century in Germany, France, Spain, etc.

However in the esthetic heritage of many projects of the middle of the XX-th century the prevalence of one of the semantic images is distinctly traced. Similar strengthening happens due to visual domination of one of signs when it can be determined by characteristic features with confidence. Then the second and even the third figurative signs as if "appear" into the background, giving the way to new means of information transmission through landscape. The processed massives of vegetation or its accurate krone tectonics supporting vanguard landscape compositions can act as such dominating image in landscape composition. This domination "is read" in the massif and saturated colour range of trees and shrubs, creating an unforgettable identical image of landscape architecture object on the subject either the Lines or the Forms.

So the Arizonian cypress (Cupressus arizonica) in registration of a local cemetery is perfectly presented in the project of 1940 of Franco Guerrero under the name "Tulcan Gardens" [2, p. 21]. One of the first projects reveals the fine work with the formed live material when semantic information is transmitted through short-haired forms of the truncated pyramids, geometrical figures, arches and bas-reliefs, and also the forms executed in the form of figures of people, animals or birds. All of them are perceived in garden composition as volume macro - sculptures which supports with the help of semiotic using its utilitarian characteristics the modern figurative language of the subject "the Form". At the beginning, It as if “suppresses” the scale and the line read in a garden using its composition massive in the volume. And in general, "the art of a figured hairstyle of shrubs of the twentieth century reached apogee in this remote South American city" [2,

p. 21]. It is one of the first examples of landscape work with evergreen plants and its figurative representation in a short-haired form. Similar "the green sculpture" supports the esthetics of the composition in different seasons that answers the ecological principles of design and it is very important for the countries with the long winter period which also concerns Russia. The esthetics of the garden design of the XXth century in the work with vegetable massives passed through long stages of creative transformation before passing from the art of topiary hairstyle to drawing up the mono-vegetable compositions based on the principle of accretion of krone and fixing of an identical image of place. At the base of this work the knowledge of dynamics of the plant material development and the creation of conditions for its harmonious progress in time are founded. This also answers the modern principles of ecological design and decreases the cost of the maintenance of landscape in the future. Development of the subject "the Form" in volume vegetation can be traced in the project of 1970 of "Schoten Garden" of Jacques Virts (Jacques, Peter & Martin Wirtz) executed together with his sons Peter and Martin. It is an associative idea which came from the Japanese garden composition. However during the creative search authors establish the semantic element in a garden supported with "an organic formalism" [2, p. 45]. In the form of the established evergreen structure it becomes almost "uncontrollable" in the changing volume form. In landscape works Wirtz proved to be a devoted gardener, using abundance of perennial plants borders and a plantation of fruit-trees for figurative collision of natural and modern styles in his schemes.

Similar method will be actively used by landscape architects for transfering of semantic language of the modern landscape design in the XXI-st century through the new landscape means in the form of lines, forms, silhouettes, plasticity, the scale, images and a visual code of space.

The vegetation acting as a sculptural accent for mitigation of architecture in the Modern style is presented in the garden "The Valentine House" (1985) by Isabella Green [2, p. 58]. Appearance of the similar project at the end of the XX-th century is not casual. The above given examples light figurative transformation of using the green components from short-haired forms through accretion of krone to the domination of its tectonics.

And, as a result, there is the strengthening of the semiotic subject "the Form" in landscape compositions both the end of the XX-th and the beginning of the XXI-st century in Spain, Germany, France and Finland.

List of sources:

1. Nefedov V.A. City landscape design / Nefedov VA.: SPb.: "Lyubavich", 2012. - 320s.
2. The Contemporary Garden. Phaidon Press Inc. - 2009.- 111p.

TOURISM DEVELOPMENT IN THE RUSSIAN NORTH

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Abstract

The article is about the possibility of reorganization the Russian northern rural settlements for use in the tourism industry. The article explains the social appropriateness of their reconstruction for these purposes.

At the present time has become a topical issue of national tourism. One of the priority areas of development in this direction is the northern territory of Russia. The aim of this study is the possibility of adapting the northern territories of Russia for further profitable use today. The object

of the study are rural settlements Kenozero National Park. Research methods are: a survey of the local population, nature sketches, photographic images, measurements of objects of wooden architecture. As a hypothetical example is invited to consider the village Zehnovo This settlement is

located in the Arkhangelsk region in the territory Kenozero National Park. "Natural and cultural heritage Kenozerye truly unique. Here is the border of the Baltic Shield and the Russian platform, the watershed of the Atlantic and Arctic Oceans, the White Sea and Baltic Sea, the contact area of several flora and fauna complexes "[1]. Administrative and social changes taking place in recent decades and led to the partial or complete destruction of rural settlements of the Russian North, was not spared and the village. Difference can be considered only that this settlement is in the national park that is in place, endowed with the status of protected areas. But this special protection status and use applies only to natural resources and a relatively small number of surviving architectural public facilities. And as the capacity of the national park are quite limited, both financially and from the legal side, the continuing relevance of the social structure in such villages as Zehnovo very problematic. It should be noted that the Arkhangelsk region and in particular its Kenozerye rich historical and cultural heritage. "Here are preserved cult bands, live architectural environment, civil, economic and engineering folk architecture XVIII-beg. XX centuries., Where comprehensive studies ever conducted, scientific passport on the monuments of wooden architecture never is (except for churches, documentation that is not currently stored in or out of date). In the scientific revolution is entered and disarmed many interesting monuments of folk architecture. "[2]. Zehnovo village, located far from all modern highways maintained its authenticity and integrity with the natural landscape. There are no modern buildings. At the same time, the efforts of the administration Kenozero nat. Park here was restored one of the water mills and restored chapel Jonah theologian (18th century). Most of the surviving residential buildings date from the second half of the 19th - the first half of the 20th century. That is a very interesting place for both leisure as well as for scientific research. Despite the status of the territory of the bulk of the houses has its natural owners, most of whom no longer use their buildings, but legally remains the owner. Therefore, it becomes apparent that without personal interest owners of private houses changing for the better social situation almost impossible. Obvious need to engage in the overall economic and social process of private owners on the one hand and the National Park, on the other hand.

In view of the prevailing historical events and economic policy over the past 50 years, renewable natural resources are very hard hit. Natural regeneration on averaged estimates, will take several decades, so the question of natural resource extraction on an industrial scale, especially in the National Park can not go.

In this regard, the authors believe that one of the efficient ways of preserving this architectural - natural complex. is the use of the territory as a tourist destination with the possibility of a short stay. It is clear that modern tourism should be systematized and organized, and it requires a tourist infrastructure. It is for the establishment and maintenance of the infrastructure necessary to attract and those of private owners, who today do not even try to maintain in proper condition their buildings. And if there was interest, and settlement will be reborn.

Bibliography

1. Kuratov A., Shatkovskaya E.. - Read Kenozerskie / The wonderful world of Kenozeria / Compendium 1 All-Russian scientific-practical Conference / Arkhangelsk, 2004r. page. 3

2. Permilovskaya A. B. - Conducting integrated scientific studies relating to the project "unique historical settlements of the Russian North as an object of study. Conservation and utilization of/collection of articles "historical and cultural heritage of Russian North. Problems of study, preservation and use» Kargopol '2006 г. стр.120

SECTION 6

ECONOMIC AND MANAGEMENT ISSUES IN AGRIBUSINESS

PURPOSE AND FUNCTIONING OF THE REGIONAL POLICY OF THE EUROPEAN UNION 2014-2020

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EU regional policy aimed at reducing the gap between the levels of development in its region through the transfer of funds from richer to poorer regions. The Lisbon Treaty defines the regions covered by the Cohesion Policy as "rural areas affected by industrial transition", and "regions that suffer from permanent serious natural or demographic odds."

To eliminate the delay in the economic regions of the difficulty of economic development and strengthen the cohesion of the Union, regional policy focuses on three main areas:

- Support for economic growth and employment,
- The fight against climate change and energy dependence
- Tackling social exclusion.

Priorities

During the period 2014-2020, the European Union plans to allocate the budget 351.800.000.000 € to reform cohesion policy. Until 2020, resources will be focused on key areas of growth:

• research and innovation;
• Information and Communication Technologies (ICT);
• Improving the competitiveness of small and medium-sized enterprises;
• Transition to an economy with low CO2 emissions.

For example, investments of the European Fund for Regional Development will focus on innovation and research, a digital strategy to support small and medium-sized businesses or the economy with low CO2 emissions. Cohesion Fund will invest € 66 billion in funding for trans-European transport networks and major environmental infrastructure projects. The European Social Fund (ESF) will finance projects related to employment, training, education and social integration. According to the Commission, "in each State-member at least 20% ESF will be used to support this goal."

Principles

European regional policy is based on four basic principles:

- Perennial programming. Cohesion policy finances not individual projects but long-term national program for 7 years (2014-2020).
- Concentration of funds, creating favorable conditions for development in certain regions or in certain areas (70% of the resources for the period 2014-2020). For the purposes of territoriality aid is allocated on the map that meets the requirements.
- Partnership. Actions are carried out in a participatory process involving regional and local European authorities, social partners and civil society. This partnership covers all stages: design, management and implementation, monitoring and evaluation.

Additional factors. This principle means that EU funds can not replace national funding - they merely supplement it. Co-financing is generally

Europe 2020

During the period 2014-2020 Cohesion Policy is organized around five objectives that are aimed at promoting "smart, sustainable and inclusive growth."

Objectives for 2020 relate to the following five areas:

- Work - 75% of the population aged 20 to 64 years have to work;

- Innovation - 3% of the GDP of the European Union should be invested in research and development;

- Climate change. In this area "20/20/20" is to be achieved. This means a reduction of 20% of the production of CO2, increasing the share of renewable energy in the European energy mix to 20% and increasing energy efficiency by 20%.

- Education. EU commits reducing dropout rates less than 10% resulting in 40% of the working population aged 30-34 years will have a university degree or its equivalent by 2020

-Poverty. Poverty reductions, so that at least 20 million people will no longer live on the brink of poverty and exclusion.

Operation

`Regional policy has its legal basis in the Treaty on European Union. Its priorities established by the EU and applied on a national and regional level, in partnership with the European Commission. Period of seven years is set. Structural Funds budget and guidelines are established by the Council of the European Union and the European Parliament, on the basis of a Commission proposal; principles and priorities of cohesion policy are established during the consultation process between the Commission and the States-members. National and regional governments rely on the European cohesion policy guidelines to regulate their programs in accordance with the priorities of the Union**.**

Each State-member prepares a National Strategic Reference Framework (NSRF) and submits it to the Commission within five months from the date of adoption of the strategic directions. This document outlines the strategy of the country and offers a list of operational programs. Then, within three months, the Commission comments NSRF or requests additional information.

The Commission shall adopt strategic principles and each operational program. Workers, employers and civil society can participate in the planning and management of operational program.

States-member and their regions have the task of implementing the operational programs, which implies choice, control and evaluation of thousands of projects. This work is organized by governing bodies in each country or region

In France, for example, there is a multi-sectoral delegation of the Regional Planning and Regional attractiveness. The Commission must commit funding to help countries to run programs.

It is also involved in the monitoring of each operational program, together with the States-member. It is involved in the monitoring of each operational program. It prepares all strategic relationships throughout the program period. States are also required to report on the allocation of funds.

References

1. Boulineau E, Coudroy de Lille L., Rey V. (2004), L'élargissement de l'Union Européenne : réformes territoriales en Europe centrale et orientale, Paris, L'Harmattan.
2. Sénat (2012), La Bulgarie et la Roumanie: la transition inachevée, Rapport d'information n° 717 (2011-2012) de MM. Simon SUTOUR, Michel BILLOUT, Mme Bernadette BOURZAI, M. Jean-François HUMBERT et Mme Catherine MORIN-DESAILLY, fait au nom de la commission des affaires européennes, déposé le 26 juillet 2012
3. Stierle-Von Schütz U. et *alii*, 2008.*Regional economic policy in Europe*,
4. http://www.touteleurope.eu/les-politiques-europeennes/regions/synthese/objectifs-et-fonctionnement-de-la-politique-regionale.html
5. http://europa.eu/pol/pdf/flipbook/fr/regional_policy_fr.pdf

THE ECONOMIC IMPORTANCE OF THE PRODUCTION OF VEGETABLE RUBBER FOR CÔTE D'IVOIRE

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Côte d'Ivoire takes place between 4 ° and 10 ° 30 north latitude and 30 ° 30 2 and 8 ° 30 west longitude, with an area of 322,462 km2. It is agrarian country with strong demographic pressure. The number of population is 26202 000 (estomation of 2012), 66% live in rural area. On average economy of the country shows the sustained economic growth of 2.5 - 3% per year (adjusted for inflation), and GDP per capita in Côte d'Ivoire in 2009 amounted to 1.7 thousand, that is very high according to the standards of Sub-Saharan Africa (15 th place in the region).

After some decline of GDP growth in 2011 and despite of all trubles, rate of GDP groth in 2012 amounted to more than 9.8%. Arable land is estimated at 21 million hectares, that is about 65% of the total area of the country. In 2002 the planted area was about 6.9 million hectares that was 22% of the total land area or 33% of the arable land. Cocoa and cofee are the main export crops. During the last 10 years production of coffee and others crops significantly reduced but production and export of latex of rubber trees and palm oil significantly increased.

Over the past 10 years, the production of coffee and other crops, the production and export of latex rubber trees and palm oil significantly increased

Currently, Côte d'Ivoire is the first producer of cocoa beans (annually about 1.2 million tons, accounting for 35% of world production). The country is ranked first in Africa in the production of natural rubber and is the seventh largest producer of natural rubber in the world.

In 2012, the country had only 155 000 ha of plantations of rubber trees, only 127,000 hectares of them are actively exploited. Every year country produces up to 256,000 tons of rubber on this area. The future plans of the country intend to significantly increase the area under this crop, bringing them up to 330,000 hectares, and to raise annual production to 365,000 tonnes of rubber by 2015.

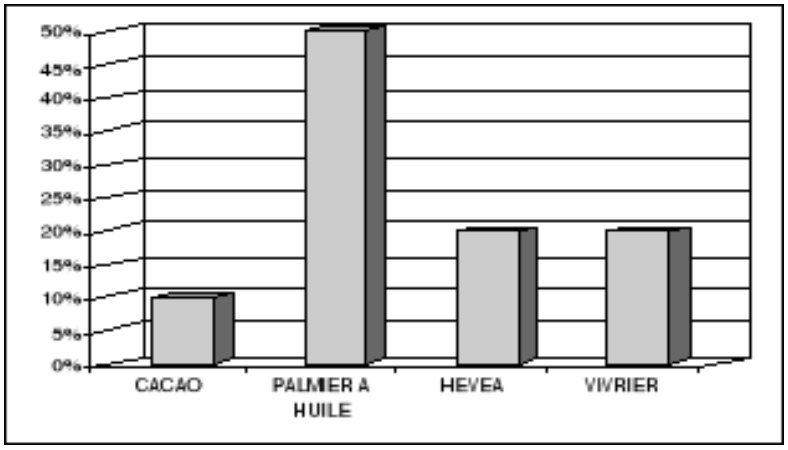

Fig.1: The share of plantation (%)

Ivory Coast's economy is based on agriculture which main resources are: vast areas of fertile land, hydrological resources, favorable climate and varied lush vegetation. Various crops (wood, coffee, cocoa, cotton, hevea, oil palm, pineapple, mango, banana, cassava, peanuts, soy, beans, fonio, papaya.) can be successfully grown in the country. Also livestock production and fisheries.can be developed

The share of crop production, animal husbandry and food industry is an average of 27% of gross domestic product. Agriculture provides 40% of export earnings. It is the main place of employment and source of income for the majority of the population. Agricultural production affects the entire economy and provides an annual GDP growth of 4% .But unfortunately, the main increase in export earnings is due to increasing of deforestation.

Currently, the production and export of coffee beans provides 70% of agricultural income, about 30% of tax revenues and 40% of export earnings, although these crops occupy about 60% of the areas that are currently in agricultural production. But in the long-term plan of economic and social development of Côte d'Ivoire great importance attaches to the cultivation of rubber trees. Growing of heveas and producing of latex can be very extencive production. However, in recent years, the industry receives a great impetus to the development due to both the improvement of culture on the basis of genetics and technology improvement of primary processing of latex, which ultimately provides a significant increase in total yield production of natural rubber. Examination of all elements of latex production (from selection of varieties and clones to primary processing methods) shows that the industy has undisclosed potential of development. Heveas as a main export product gave 106 billions CFA francs (220988000 dollars) of export earnings.

References

1. Dmitriev U.A. Vasyleva K.P. Regional economy: Manual - Moscow, KnoRus, 2015 – 264 p.
2. Plisetsky E.L. Cherkasov I.L. Regional economy: Tutorial – Moscow, KnoRus, 2015 – 272 p.
3. Fetissov G.G. Oreshin V.P. Regional economy and management - Moscow, Infra-M, 2013 – 216 p.
4. Makarova E.P., Makarov P.P. Modern Problems of Agrarian Economics. Moscow RUDN, 2013. - 134 p.
5. Popov R.A. Regional management and territorial planning – Moscow, Infra-M, 2013 – 288 p.

MODERNIZATION OF THE PROPERTY FUND OF AGRIBUSINESS IN RUSSIA

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The present stage of the development of the Russian agribusiness is characterized by a number of problems that significantly impede the development of the industry as a whole. The most significant of these problems are considered to be insufficient financing, high degree of equipment wear and shortage of assets, dependence on imported breeding stock and seeds, low wages.

One of the most pressing issues is the problem of the renewal of fixed property assets. Investment in the agricultural sector has fallen down sharply over the recent years, which resulted in the technical degradation of the industry. According to expert analysis, the depreciation of the property of agricultural enterprises is approximately 50%, 52% for machinery and equipment, 58% for transport, 57% for buildings and structures. The functional loss of equipment is four times higher than the commissioning of new equipment.

To solve this problem, the government uses such approaches as reducing taxation for agribusiness, federal leasing, issue of loans on preferential terms.

The most effective method is federal leasing, which is a kind of financial services in the form of loans to enterprises for the purchase of fixed assets. The implementation of the state program of agricultural development and regulation of the markets of agricultural products, raw materials and food for 2013-2020 (Approved by the Regulation of the Government of the Russian Federation of 14.07.2012 No. 717) provides for the use of the federal leasing for the introduction of resource-efficient technologies, improve the equipment and increase the profitability of agricultural enterprises, to implement technical and technological upgrading of the existing agro-industrial complexes and develop domestic nuclear stock by purchasing high-quality breeding stock. Joint-stock companies specialized in agroindustry are established for the purposes of the implementation of the programs, often with public ownership, such as Rosagroleasing OJSC and Leasingagro OJSC.

The main objects of leasing are agricultural equipment, forestry equipment, LPG equipment, livestock equipment and processing machinery, dairy farms and livestock farms, greenhouse complexes, vegetable stores, equipment for grain storage, equipment for aquaculture processing and storage, fishing vessels, equipment for irrigation and soil improvement, as well as breeding stock and residential buildings.

The advantages of leasing include income tax reduction, accelerated depreciation, property tax reduction, subsidies to pay for down payment and lease payments from the regional budget, and the fixed rate lease on preferential terms established by the government.

Thus, the implementation of federal leasing not only enables modernization of the material assets of the agricultural sector based on preferential funding, but also increases the investment attractiveness of the agricultural industry as a whole, contributes to the revival of agriculture by creating favorable operating conditions, and also supports domestic farmers.

References:

1. Rosagroleasing OJSC: web site. – URL: http://www.rosagroleasing.ru/company/ (Date of Access: 23.02.2015)

2. Agroinfo Portal: web site. – URL: http://agroinfo.com/pankov-proanaliziroval-osnovnye-problemy-apk-rossii/ (Date of Access: 24.02.2015)

3. Federal State Budgetary Science and Research Institution Council for Study of Productive Forces (SOPS): web site. – URL: http://www.sops.ru/novosti/741/ (Date of Access: 09.03.2015)

THE MAIN APPROACHES TO THE CONCEPT OF "RISK"

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In modern economic literature there is no uniform approach to the concept of risk and risk production. This is due to ambiguity, and insufficient knowledge of the phenomenon. It causes the possibility of the existence of several definitions of risk. Etymologically, the word "risk" comes from the Latin «risicare», which literally means "to decide" [1].

All definitions of the term "risk" can be divided into several groups.

The first group includes definitions used to describe real events (eg, fire). For example, in the development of forecasting of accident the following definitions are applied: "Risk is a measure of the multi-component quantitative measure of danger to the inclusion of the damage from the impact of security threats, the likelihood of these risks and uncertainties in the magnitude of damage and probability ..» [2].

In the second approach, the risk is considered as "attribute of general sociological characteristics of any kind of purposeful human activity carried out in the conditions of resource constraints and the availability of choosing the optimal way to achieve the objectives in terms of conscious information uncertainty. No genius, no person's ability can destroy risk. There are only ways to mitigate its effects "[3] On the basis of this approach, understanding of the nature of the risk is possible through the study of the following properties of the risks:

a) universality;

b) systemic;

c) dynamic probability.

a) Universality. The risk is not random events occurring in response to any action. Risk is a necessary and indispensable condition of human life, which implies continuous improvement and development of themselves and their living conditions. Man perceives the risk of potential changes in social or economic environment, if they in any way affect his interests

b) The system assumes that the risk is a typical for any activities. This is due to the uncertainty of goals if their nature, content, direction and conditions for achieving are not fully clear to the person who makes the decision.

c) Dynamic probability. In a situation where information is distributed asymmetrically, it is possible to estimate and predict the risk, investigate it as a constantly changing over time. To do this, they use the tools offered by the theory of socio-economic dynamics [1].

Most of the risks (its magnitude and probability of occurrence) depend on polysystemic factors that can not be controlled by decision management solutions. [3]. Balance of local markets to some extent may depend on changes in the systems of higher order. In this purpose higher-order systems may conflict with the economic interests of local subsystems. A characteristic example is the following situation:

- The debt crisis in Latin America, caused by rising interest rates in the United States in 1980 and 1984;

- In 1996-1997. due to a sudden rise of the dollar, the financial crisis in Southeast Asia went rapidly.

For both situations characterized by shock and increase of the degree of risk, due to the fact that developing countries have been unable to predict abrupt changes in US economic policy, and one way or another affect the dollar.

The theory of socio-economic dynamics based on different methods of estimation of asymmetric distribution of economic information and polysystemic effects make it possible to more accurately predict the structure and scale of a few groups of species risks. They include [4]:

– consumer risks. It should be noted that it is impossible to express in the currency of the consumer attitude to the potential loss or gain of the same unit of the good. If you look at these two phenomena on the basis of the law of diminishing utility, the consumer's attitude to them will have a different level of risk;

– industry risks that are associated with the assessment of the market and the international competitiveness of products manufactured by industry. For example the market industry can be at different stages of the cycle "flourishing - decline";

– territorial risks. These are the risks that are associated with a total estimate of social, political and economic attractiveness of local areas of investment. Such risks are relevant for international investment;

– political risks. They are the result of evaluating the effectiveness of specific policies, which should contribute to the stabilization and dynamics of economic growth;

– social risks. They could include the assessment of the risks of loyalty, labor mobility, attitude towards work, or the quality of the labor force.

These risks can be assessed through qualitative and quantitative shares that characterize the improvement or deterioration of the situation, and the probability of the same changes can be perceived by different social groups in the range of "negative - neutral - positive."

In the third approach, the risk can be considered as a result of the accumulation of regressive potential. This approach has a long historical tradition and has its roots in the theory of historical and technological progress. In these theories, the study focuses on the following characteristics of destructive risks:

- irreparable loss properties, quality, material and spiritual values that were useful in the past, but disappearing in the present;•
- the emergence of new properties, quality, material and spiritual values, the scale of threats and regressive potential which in the future is unclear and undefined;
- reduction in the threshold security as new industries, technology and the spread of new types of weapons;•
- increase of environmental threats and challenges with the growth of the industrial potential.

If we analyze scientific literature, we can conclude that there are two types of consequences. On the one hand, an increase of economic activity promotes continuous quantitative and qualitative changes of connections and relationships. No individuals or social groups are able to adapt to such changes, which leads to an increase of social unrest. This may take the form of anti-culture, anti-social behavior, acts of rebellion, revolutionary actions, and so on. On the other hand, in spite of the growth-enhancing economic well-being, benefits of economic growth are all the same elements of regressive development.

According to a fourth approach, the risk can be considered as a form of uncertainty of the result that is associated with a special type of business [5]

It is necessary to emphasize the following risk profile:•

- Entropy (a measure of the probability of a state, which may take various forms, including disequilibrium);•
- hierarchy;
- complexity.

The theory of non-equilibrium (entropy) of economic development makes possible to investigate in detail the pattern of occurrence and increase of risks. Classical theory does not provide such detail. Equilibrium system for risk is a deviation from the original state that for all elements of the system has the same probability equal to the sum of risks and subsystems.

But different elements have different probabilities; the risks appear differently and must be described by a system of quadratic equations.

References

1. John C.Hull. Risk management and financial institutions – John Wiely and Sons, 2012 – 670 p.
2. Roberto Ruozi, Pierpaolo Ferrari Liquidity Risk Management in Banks: Economic and Regulatory Issues - Wiley, 2008 - 59 p.
3. Satyajit Das Risk Management –Wiley, 2005 – 1200 p
4. Erik Banks The Simple Rules of Risk : Revisiting the Art of Financial Risk Management – Wiley, 2003 – 156 p.
5. Jesse Russell Risk Management - M:Book on demand, 2013 -130 p.

COMMUNICATIONS IN BUSINESS

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In 2014 the Peoples' Friendship University of Russia started cooperation with Stella Clar, Founder of Stella Clar Institute, Sweden, specialist in nonverbal communications, international consulter working throughout the world. We are planning to make a set of master-classes on Business communications, where Stella Clar is sharing her experience and secrets of communication and student can interact, ask questions and will be aware of such knowledge to implement in future in International activities.

The competence in business communications is very important for students of Peoples' Friendship University of Russia as it a unique international university annually teaching students from 145-150 countries of the world. It is also the only university in Russia with such multiprofile structure and fundamental education, which enables PFUR alumni to build careers in all the countries of the world including developed countries in various spheres of industry, business, research and public administration.

So the first Master-class took place in the end of 2014 at Agrarian faculty. The students mainly from this faculty were impatiently waiting the beginning, but at the end they did not want to leave.

Stella Clar started with acquaintance and then interviewed the audience on their understanding of Business communications.

In general we understand Communication as a process of transferring information from one entity to another. The term "business communication" is a generic term used to describe any medium through which a business communicates. Such communications may be aimed at a variety of audiences and can occur in a number of formats. Advertisements, websites, e-mails, letters, and press releases are all examples of business communications.

The research show that impression from the person is formed on the basis of the person's appearance, what is heard and what meaning have the words he says. Amazing but 55% of our impression of the person is formed from what we see (appearance, age, sex, mimics, pose), 38% - from what we hear (voice's tone, intonation, diction, etc.) and only 7% really matters the content of the speech.

So, non-verbal communication is really important. Sometimes you see the greeting of two partners and can predict the results of negotiations.

Nonverbal communication in business takes place in many settings: during meetings in conference rooms, in offices, at the hallway, during business travel, at restaurants and so on.

Nonverbal messages go beyond body language, they also include the messages we send with the clothes we wear, the car we drive, the way we do our hair and so forth.

Effective communication by business managers facilitates information sharing between company employees and can substantially contribute to its commercial success. Effective communication is a two way information sharing process which involves one party sending a message that is easily understood by the receiving party.

So communication in its most basic sense is transferring information from sender to receiver. Communication in its most expansive sense is everything and anything (not just information) that gets sent and received. There are lots of reasons why effective communication is important, but they can all be reduced to one ultimate reason: Effective communication is important because it allows people to lead more satisfying lives at work and elsewhere. So we looking forward to continue our cooperation so that more people will get more satisfying lives at work and elsewhere.

PROBLEMS OF THE AGRICULTURAL PRODUCTS REALIZATION SYSTEM IN THE REPUBLIC OF CÔTE D'IVOIRE

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Abstract

The article is dedicated to the analysis of the agricultural products realization system in Republic of Côte D'Ivoire. The Republic has various technics of storage and processing of agricultural products. 55% of gross industrial production the Republic gets from agricultural raw materials and agricultural expenses make 30% of gross agricultural production. This shows effectiveness of usage of agricultural local raw, that helps the country to conquer the world trade disproportions and discrimination. However, the agricultural products realization system in Republic of Côte D'Ivoire still has weaknesses due to low rural infrastructure, lack of bank credits and state financial help.

In the Republic Côte d'Ivoire exists different types of technology of storage and processing of agricultural products. They depend on the type of agricultural products which have to be storaged and processed according to their further appointment. Therefore, despite technologies and ways of their production, quality of the agricultural products for sale depends on transportation, storage and processing. The stages of transportation, storage and processing of agricultural products gives many expenses in food chain. According to national statistics of Côte d'Ivoire more than 55% of gross value of industrial output are received from processing of agricultural raw materials, thus agricultural expenses make about 30% of gross value of production of sector.

It testifies to rather effective use of local agricultural raw materials. Recycling raw materials locally, the country will be able to fight more successfully against disproportions in world trade and discrimination trade policy of the western countries. The agricultural processing sphere consists of three main categories: food industry, textile industry and processing industry.

Food industry includes production of sugar, palm-oil, flour, compound feeds, soft drinks, beer, tobacco products, bread, dairy products, and also the enterprises for purification of rice, processing of coffee, cocoa beans and fish.

Textile industry, with the annual national capacity of 480 thousand tons of processing of cotton which is presented by four enterprises belongs to the second category:

- The Ivorian Company of Textile Development (CIDT) was created in October, 1973. It covers the central and western regions. Its productive power of processing makes 103 th. tons with four units of cotton clearance [1].
- The cotton Company of Côte d'Ivoire (LCCI) covers northeast area and has four factories with an annual power of 201 thousand tons.
- Ivorian Cotton (IC) covers northwest areas. The company includes 2 plants with a power of 118 thousand tons per year.
- SICOSA has the annual power of processing of 60 thousand tons.

To the third category mainly consists of processing facilities of those products that is impossible or is difficult to export without preliminary processing (fresh fish, fruit and others).

When developing the main directions of development of processing industry the authorities have to take into account physical properties, and also quality of these or those types of commodity raw materials, especially if it is production for export. It is preferred to process locally those products that is impossible or is difficult to export without preliminary processing (fresh fish, fruits and others). Besides, an increasing number of the industrial and handicraft enterprises for processing those products that earlier exported in the crude or semi-processed way (cocoa, coffee, and others) has to be created. The level of development of agricultural production of the country is considerably defined by development of industries. At the same time, efficiency of development of agriculture and its specialization depend on conditions and quality of storage, transportation, terms of realization and processing of the made production. As a result of bad storage conditions, transportation, violate of terms of processing and realization, increase losses of agricultural products and quality of production decreases [6].

In four last decades the realization of agricultural products was enabled by coexistence of two sectors: state and private. On February 8, 1962 / under the decree No. 62-37 of the president of the country CAISTAB was created. This structure was merger of cash fund of stabilization of the prices of coffee, cocoa and other cultures. CAISTAB was the private company, but after the decree No. 64-315 of August 17, 1964, CAISTAB became public. It should be noted that one of the main reasons for low efficiency of agriculture is the low level of processing of crops and their production.

Within liberalization process of Côte d'Ivoire's Economics the government took measures for complete liberation of agricultural production sector and transfer of management to five following structures:

- ARCC, founded under the decree No. 2000-751 on October 10, 2000 which became authoritative structure of the state in regulation of trade of cocoa, coffee and confirming economic state actions in trade of cocoa and coffee [2].

- The fund of Regulation and Control of Coffee and Cocoa (FRC) created under the decree No. 2001-668 on October 24, 2001 which plays a role of financial regulation and control of purchase and selling of coffee, cocoa [3].

- The fund of Development and Assistance of Activity of Producers of Coffee and Cocoa (FDPCC) created under the decree No. 2001-512 on August 28, 2001, for financing the producers of coffee, cocoa and their development [4].

- created under the decree No. 2001-465 on July 25, 2001 and updated under the Decree No. 2001-667 on October 24, 2001, Body of Commercial Management of Coffee and Cocoa (BCC) plays a role of management of registration and tracking of shipment. It is the body operating between the producer and exporters, gives indication price together with other structures [5].

- The fund of guarantee for Cooperatives of Coffee and Cocoa (FGCCC) grants the loans and credits to agricultural cooperatives. It was created together by the state and the European Union to purchase agricultural production.

For quality improvement of the purchased agricultural production the advance payments to the peasants selling the crop to the state societies are in practice. It allows them not to hurry with

collecting and selling immature fruits for fastest receiving revenue. Also the introduction by the government the support prices for export production is of great importance.

As a result it is important to note that in the course of creation of organizational system of purchases of agricultural production the main attention was paid not only to a problem of increase volume of its purchases countrywide, but also to stimulate the growth of farmers' and cooperatives' income. However with the difficulties connected with the lack of rural roads, bank credits and state financial aid, the state organizations didn't manage to organize such a system in total territory of the country.

References:

1. MINAGRA «Plan directeur du développement agricol 1992-2015» RCI Abidjan, 2005
2. Décret № 2000-751 du 10 octobre 2000 portant sur la création de la societe d'Etat denommée«ARCC»
3. Décret № 2001-668 du 24 octobre 2001 portant sur la création de la societe d'Etat denommée«FRC»
4. Décret № 2001-512 du 28 Aout 2001 portant sur la création de la societe d'Etat denommée«FDPCC»
5. Ordonnance № 2000-583 du 17 Aout portant sur la création de la societe d'Etat denommée«BCC»
6. Makarova E.P., Makarov P.P. Modern problems of agrarian economy (Modern Problems of Agrarian Economics) [Text]: an educational and methodical complex / E. P. Makarova, P.P. Makarov - M.: RUDN, 2013. – 134 pages.
7. Abramova L.S., Kochneva M.V. Tendentsii na rynke pishchevoy produktsii i vzglyad v budushcheye «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.213-215
8. Dakua Antuanett, Makarova Ye.P. Osnovnye napravleniya innovatsionnoy politiki v sfere selskogo khozyaystva Respubliki Kot D'Ivuar / «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.297-298
9. Dakua Antuanett, Makarova Ye.P. Aktualnaya agrarnaya politika Respubliki Kot D'Ivuar/Upravleniye i ekonomika agrobiznesa: Sbornik trudov / Pod redaktsiyey k.p.n. Yelbayeva Yu.A., k.e.n. Makarovoy Ye.P. – M: Izd-vo RUDN, 2014. – s.131-134

THE MECHANISM OF THE DEVELOPMENT OF SCIENTIFIC CREATIVITY AND INNOVATION ACTIVITY OF YOUTH OF CIS

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Creating a mechanism for the development of scientific creativity and innovation activities of young people in the space of states-member of CIS is a challenge both in research and in practical terms. Countries of CIS are at the beginning of construction of national innovation systems (NIS), so today the discussion of the basic concepts and content of the innovation processes is inevitable.

There is a general understanding that the creation, application and dissemination of knowledge are fundamental to economic growth and welfare of the people. It is also recognized that

a key role here belongs to the creativity of new generations of citizens and that rate should be made on the innovative activity of young people.

In declared thematic area of modern science considerable arsenal of knowledge is gained on the issue of innovation actors (Aglicheva I.V., 2009: Boiko A.N., 2006; Brizhan A.V., 2006; Gabitov A.F., 2007; A. Zverev L., 2009; Sakharov S.K., 2009; Tsvetkov V.D., 2009). Youth is studied as a particular social group involved in innovation activities in the frames of emerging national innovation systems. In this case, the NIS is seen as a conceptual basis for the formation of the knowledge economy with a high level of innovative activity of citizens, and especially young people. By the example of Russia the key problem of the relationship of innovation and investment, which include government support for innovation, training for business innovation, creation of a register of innovative products, combining development institutions in innovative elevator, etc are examined.

During the study, the experience of developing of innovative systems, forming of excellence centers, technology platforms and technology corridors for innovation in the European Union, as well as mechanisms and tools of involving of various social groups in the innovation process are examined. Indicators that are necessary for the analysis and evaluation of the effectiveness of policies in the promotion and support of innovative activity of the youth are identified

"Innovative activity of the youth as a social group", which is a set of forms of its activities focused on promotion of ideas and the creation of innovations, relevant and potentially useful for the society, as well as "scientific and creative potential of youth", which is a set of intellectual abilities, knowledge and skills directed to obtain new values are identified as the central concept of the study.

To verify the results obtained from the theoretical analysis of scientific statistical and sociological sources of sociological study, including the analysis of documentary sources, questionnaires, focus groups, statistical processing and data analysis, computer simulations based on the method of system dynamics were conducted in certain countries-member of CIS,. The study included students of universities of Armenia, Belarus Ukraine, Kazakhstan and Russia, as well as members of two youth forum "Seliger" and "Hyperborea".

2,207 people aged from 14 to 30 years were interviewed, five focus groups and four «Case-study» were conducted in four regions of Russia, and total number of respondents is more than 120 people.

The study showed the attitude of youth layers to the current state of development of modern innovations in the CIS countries, the main trends of the perception of young people, the basic elements of NIS, special needs, motives, and favorable conditions for developing innovative activities of daily living.

During the work within the focus groups and «case-study» understanding of the state of innovation activity and scientific and creative potential is identified and refined, factors of motivation of its innovative behavior in the form of creative self-realization are considered

The understanding of main content of categories of innovation process through the process of personal self-study allows of moving the focus of study of innovations and innovative activities from economic and technical sciences to the science of man. This will contribute to encourage innovative behavior, constructive overcoming of the resistance of people to innovate development of new principles and ways of organizing human life and, especially, young people.

The integration of existing disparate practices of addressing education, training, professionalization, and improvement of social activity of youth within the NIS can allow of forming complex mechanisms of improvement of its innovation activity and scientific creativity.

Generalized analysis of macroeconomic indicators of the States-members of CIS shows apparent unevenness of their development. National innovation systems of the CIS are at different stages of formation. The current practice of forming productive national innovation systems leads to the creation of its individual elements, unrelated with unique architectural design. The cluster approach of NIS is the most effective in this situation.

Among the key factors of the low level of innovative activity of the youth unformed innovative thinking and lack of adequate innovation culture were in the first place.

Model of participation of young people in the activities of innovative (high-tech) cluster, model of networking between high education institutions, research organizations, industry and business within the excellence centers, a model of encouragement and support of youth innovation projects are the main mechanisms of development of innovative activity of young people in relation to the conditions defined by the CIS.

Stimulation of innovative activity, involvement of young people in innovation, prompting them to participate in the creation of independent innovation projects that are an important part of the national innovation systems of CIS countries. The study of the general laws and mechanisms of these processes will optimize the management of innovative activity of young peoples of CIS countries

References

1.Boyko A.N. Experience of innovation cooperation of the EU and the CIS http://www.cis.mmsk.by/main.aspx?uid=1359413594.

2. Reimer V.V., Elbaev Y.A. Cluster model of interaction between the institutions of innovative activity of CIS countries. Innovative processes in agriculture: A Collection of Articles of IV International scientific and practical conference of teachers, young scientists and students of the Faculty of Agriculture People's Friendship University. M: People's Friendship University, April 11-13, 2012.

3. Youth in the Commonwealth of Independent States: A Statistical Portrait. M., CISSTAT, UNFPA. 2014. - 153 p.

PERSPECTIVES OF INNOVATION DEVELOPMENT OF RUSSIAN AGRO-INDUSTRIAL COMPLEX IN MODERN CONDITIONS

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Abstract

The article dwells on the state of innovative development in the agro-industrial complex of Russia. The innovative activity in our country is now in decline and there are several reasons for that, such as the reduction of funds for applied scientific researches and the lack of necessary staff. The solutions for these problems have to be sought to allow Russia to take a solid position in the world agriculture.

World agriculture is moving in the direction of strengthening tech products. We can see this by the example of the developed countries. It allows them to maintain the balance of the domestic food market in supply and demand, it is easy to penetrate the leading world markets, displace and devastate national producers. That is why the Russian Federation just need to put and gradually solve the problem of innovative development of the agricultural sector. Other way can not be, if Russia wants to integrate into the global agriculture on a decent niche.

First, we ourselves need to understand what is innovative development? That contains this concept? We studied the literature domestic and foreign sources have revealed that the innovative development - a constructive and creative dynamics, providing the creation and implementation of innovation.

And what is an innovative product? This is the result of innovation, satisfying the requirements of the following target:

- Is the implementation of intellectual property;
- Corresponds to the required scientific and technical level;
- Produced for the first time, but even if not, compared to other similar products, he must have a high scientific and economic performance;
- Is competitive.

Innovative agro-industrial enterprise is the bearer of an innovative product. So what can we assume the company innovative? In world practice, innovation is considered to be those companies in which 70% of the total production in monetary terms for a tax reporting period is formed by the production of innovative products.

If we extend this criterion to Russian enterprises, it becomes obvious that the Russian agricultural sector is very small number of innovative enterprises.

From all the above we can formulate the problem of innovative development: how to strengthen innovation in the agricultural sector of the Russian Federation? This problem is particularly acute arose in connection with the transition to market forms of farming. The urgency of this problem often emphasized the President of the Russian Federation VV Putin in his address to the Federal Assembly of the Russian Federation. Issues on innovation discussed at parliamentary hearings of the State Duma. There was a marked increase in the number of articles, books, textbooks, scientific conferences, and so on. D. On innovation policy in the economy and in particular in the Russian agricultural sector. All of this suggests that the proposed publication to your attention is important.

Analysis of domestic literature allowed to allocate 25 definitions of the word "innovation". We only know that this word in Russian precise analog and accurate interpretation does not, in contrast to the foreign languages. "Innovation" literally means innovation, innovation. Initially, the concept of "innovation" was preceded by the term "new combinations" introduced by Schumpeter in 1911 in "The Theory of Economic Development."

Speaking of innovation, it is important to stop on the concept of "innovation activity". Innovation activity - an activity which is based on the results of scientific research leads to the creation of a fundamentally new product, new service, new knowledge. Mandatory feature of innovation is the output of a competitive product on the market.

In recent years a number of reasons there was some decline in innovation activity agricultural science. Even the existing innovative potential uses within 4-5%. For comparison, this figure exceeds 50% of the United States. Every year, many innovations in agriculture remain unclaimed. Why is this happening? Analysis of scientific support APK showed that the total number of completed received, paid and recommended for implementation of innovations only 2-3% were sold in limited quantities, 4-5% - in one or two farms, but the fate of 60-70% of the development 2-3 years was not aware of any customer, any developer or user of scientific and technical products.

All this is a consequence of the apparent deterioration in the financial condition of the agricultural sector. In recent years there has been a reduction of funds allocated for scientific applied research. Per 1 ha of agricultural land, they fell by more than 2-fold compared with 1990. However, in 18 developed countries over the past three decades, they have increased by 0,96-2,2% of GDP attributable to agriculture, including in the United States on 1,32-2,2%. While these same costs in other foreign countries have been increased as follows (in% of GDP):

- Australia - to 1,5-4,42%;
- South Africa - to 1,39-2,59%;
- Other African countries - to 0,42-0,58%.

It can be concluded that the whole world increases the cost of agricultural research, and in our country they are reduced. How to explain the situation and how to make it work the accumulated scientific and technical potential of AIC?

The weak point in the formation of innovative agribusiness is the study of the demand for innovation. As a rule, the selection of projects is not carried out a deep economic expertise, are not evaluated outcome measures in production. This leads to the fact that, as already noted, many innovations do not become innovative products. The researchers note that in the present conditions of innovative development of agribusiness significantly increases the role of information and advisory services, activities which require improvement and the availability of qualified personnel.

Foreign experience (Japan, China, South Korea, the US, Germany and others.) Argues that a key element of the successful promotion of development in the market is the level of organization of the project cycle management. Abroad for one developer in science accounts for 10 managers who brought this work to the desired level. In Russia, in modern times, unfortunately, the opposite situation is observed.

Further, it should be noted and the following facts:

1. Over the past decade due to various reasons was to reduce the number of people employed in agriculture, more than 2 million. Man. At the same time worsened the qualitative composition of the frame. Given the role of training, we can confidently say that this situation negatively affects the efficiency of the innovative development of agribusiness.

2. After the cancellation of the patent law of the USSR and the entry into force of the Patent Law of the Russian Federation has been a sharp decline in inventive activity: 200 thousand. Inventions in 1989 to about 20 thousand. Annually in subsequent years. At this time the situation is improving.

The Conclusion.

The use of highly adaptive, resource-saving technologies in livestock production through innovation with the wide use of automation and computerization of production, machinery and equipment of a new generation of robotics and electronic technologies, as well as the restoration and improvement of production and technical capacity of livestock complexes and poultry farms, is determined by the direction increase efficiency of production in the Russian agricultural sector.

ROLE OF AGRICULTURE IN ECONOMICS OF REPUBLIC OF BENIN

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Abstract

The Economy of Republic of Benin is highly dependent on agriculture. Agriculture gives job for 70% of population and the population is about 10 million people. Despite of economic and structural reforms carried out by the international organizations (The World Bank and the International Monetary Fund), poverty is still widespread phenomenon in the country. However, the country has competitive benefits such as good climate for agricultural production, good geographic position, developed relations with neighbouring countries that do not have sea ports.

The Republic of Benin is the state in the Western Africa having an exit to Gulf of Guinea with a total area 114,763 thousand sq.km. Borders with Burkina Faso and Niger, in the east in the north – with Nigeria, in the West – with Togo. In Benin, presidential republic, there is political stability, but bad business climate is observed. The negative effect is rendered by excessive bureaucracy. The labor market of Benin is characterized by the low level of mobility. The population in the republic is 10,05 million in 2013 (the 89th country in the world) [1].

In 2008 GDP made 13,035 bln. dollars (the 140th place in the world), GDP per capita of 1608 dollars. However in 2012 by estimates of the GDP World Bank made only 7,557 billion dollars, with the annual growth of 5,4%, inflation in 6,8% [4]. Despite of carried out by the international organizations (The world Bank and the International Monetary Fund) economic and structural reforms, poverty continue to be widespread phenomenon in the country, the country can not achieve the Objectives of the millennium of the UN on hunger elimination.

The economy of the Republic of Benin is poorly developed, based on natural agriculture (corn, tapioca, yam) and on cultivation of cotton. Despite existence of oil and gas, reserves of iron ore, gold, phosphorites, marble and the wood, they aren't exploited. The country practically doesn't gain income from export of natural resources, but re-exports oil products to those countries of the subregion which have no outlet to the sea. Direct foreign investments come to Benin, as a rule, from Europe. Meanwhile their share is small and makes less than 3% of GDP. On the continent direct foreign investments average 4% of GDP. Foreigners invest in port infrastructure, trade and telecommunications.

Foreign trade of Benin has structural deficiency and weak diversification of export. It reflects the low level of industrial and agricultural development. Benin, generally exports cotton to Europe and Asia, re-exports oil products to those countries of the subregion which have no outlet to the sea, and also exports rice, meat, liver and clothes to Nigeria.

Export goods bring to the country 1,1 billion dollars (2008), that is cotton, nuts, palm-oil, seafood. Main buyers: China 15,6%, India 12%, Japan 8,5%. Import in 2008 made 1,8 billion dollars from which on the food, industrial goods, fuel, etc. correspond to China 35,9%, the USA – 13,2%, Thailand – 6,5%. The electric power is generally imported from Ghana. The agriculture share in GDP – 32%, gives means for existence for 70% of the population.

In 2012 the situation with foreign trade in Benin improved. Thanks to increase in export of cotton in 2012 (after falling of production in 2010 because of droughts), deficiency of the account of the current operations decreased from 10% in 2011 to 9,5%. It is expected that deficiency of the account of the current operations in 2014 will grow to 10,6%. Foreign trade will continue to develop thanks to export growth and support of producers of cotton.

Benin is the transit country and plays an important role in subregional trade. Mainly through port Cotonou Benin carries out trade with Nigeria, Niger, Burkina Faso, Mali and Chad. In 2011 51% of the goods unloaded in Cotonou port intended for transit, thus more than a half of them was sent to Niger.

As Benin is the member of the West African economic and currency union and Economic community of the states of the Western Africa, in its limits the blanket external tariff established by the West African economic and currency union works. Introduction of this tariff considerably influences re-export from Benin to Nigeria as trade operations with Nigeria make about a half of all external trade operations of Benin. Therefore the government of Benin needs to undertake measures for strengthening the diversification of production and export base [2-3]. In particular, it is necessary to develop promising agricultural branches: production of rice, maize, pineapples, and also market gardening.

The economy of the Republic of Benin strongly suffered because of decrease in export and decrease in investments as a result of world financial crisis of 2008. Besides, in 2010 there were droughts, respectively poor harvests of export cotton. Also negatively consequences of introduction of the program of verification of import (Import Verification Program) affected. These adverse factors didn't allow to hold to the plan for achievement of the objectives of the millennium of the UN.

The economy of Benin is based on re-export and export of crops, is not diversified. In this regard, the government should strengthen the program for diversification of economy. Diversification of agricultural production and growth of productivity in agriculture will be key factors of development of the country. The main competitive advantages of the country is a

favorable climate for cultivation crops, favorable geographical position, an outlet to the sea and the established relations with the neighboring countries which don't have access to the sea.

1. Site of the World Bank [An electronic resource]. – Mode of access of URL: http://www.worldbank.org (date of the address 30.04.2014)

2. Makarova E.P. Vklad of innovations in development of agriculture.//Theoretical and applied problems of agrarian and industrial complex, No. 1 (10), 2012.

3. Makarova E.P., Makarov P.P. Modern problems of agrarian economy (Modern Problems of Agrarian Economics) [Text]: an educational and methodical complex / E. P. Makarova, P.P. Makarov - M.: RUDN, 2013. – 134 pages.

4. Site of the International Monetary Fund [An electronic resource]. – Mode of access of URL: http://www.imf.org (date of the address 30.04.2014)

NECESSITY OF IMPROVING AGRICULTURAL INNOVATION SYSTEM IN AZERBAIJAN (ON EXAMPLE OF NAKHICHEVAN AUTONOMOUS REPUBLIC)

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Summary

In the paper it was stated that at the present time agricultural infrastructure is critically remaining and needs application of urgent measures for its reconstruction and improvement. For that purpose it is necessary to build processing enterprises meeting innovation principles and international standards and later transfer them into agricultural cooperatives.

Results and discussion. The problem of forming an effective system of scientific and technical support and maintenance of the agricultural sector of the Nakhchivan Autonomous Republic in the conditions of material means of mechanization equipment is a priority. To a large extent on its solution now depend overcoming the crisis of the economy of agriculture, restoring the competitiveness of products and the further socio-economic development of the rural.

The main cause of poverty in the agricultural sector is the lack of equipment and technology. It is well known that working capital can be restored in a short period of time, but gradual developing of fixed assets requires the purchase of new equipment. Way out of the given situation is seen only through leasing, which is supported by the state. They provide agricultural enterprises with equipment from the plant, agricultural enterprise leases in the long term with further repayment of debt on leasing accounts (Salahov, 2010).

In this regard, an important role in alleviating the situation with technical equipment should be given to leasing as an effective tool of scientific and technological modernization of agriculture, and by far one of the most effective tools of investment in means of production. In order to ensure the agrarian sector of modern agricultural technology and other technical means by the President of the Republic of Azerbaijan issued the Decree "On additional measures to expand leasing in agrarian sector" from October 23, 2004.

Based on this decree it was established Open Joint Stock Company "Agroleasing", which contributed to the development of technical support in the agricultural lease. For example, the current state of the village and the potential of production, processing and marketing of agricultural products indicate that in recent years there have been positive trends: the growth of production and consumption of basic foodstuffs, expansion of assortment, improvement of quality of products,

modernization of production, introduction of new technologies et al (Javadov, 2010; Ibragimov, 2013).

As stated in the "State program of socio-economic development of regions for 2014-2018 years" - The strategy of development of the agricultural sector of the country is to develop grain-growing, cotton-growing, fruit growing and viticulture, vegetable growing, tobacco growing, seed and nursery management, breeding and feed production in animal husbandry, agro-processing industry, agromarketing, agroconsulting and economy of mountainous areas of the republic. Therefore, the study of these problems caused by the need to take measures for the effective development of rural areas and the formation of optimum schemes of rural settlement, that allows to state inhabitation and provide an acceptable level of profitability of the rural population.

As a result of increase of the level of scientific maintenance of production in farms of Nakhichevan Autonomous Republic will be ensured higher yields, improved product quality, increased the income of farmers, which will give an impetus to increase the volume of production of agricultural raw materials and food products in the country and improve the survivability of the rural population and, consequently, food security of the country will be ensured more reliably.

For the sustenance of the rural populationthe main aspect is on modern agricultural policy, where the emphasis should be on formation of market conditions of management. Without denying the importance of the market mechanism, attention should be paid to other factors. For example, in Europe, where the market economic conditions exist for a long time, the rapid development of the agricultural sector began after it had been placed on a strong material and technical base. Due to the difficult financial situation for many basic economic structures the way to strength production and the capacity of technical production is to acquire technology for credit funds, ie, given the advantages of leasing is an important investment tool of technical modernization, and this, in turn, will create an opportunity for accelerated agricultural development.

The role of government in addressing this systemic problem must be determined by objective necessity of further development of market mechanisms. First of all, the state should provide:

- Formation of effective competitive environment and maintaining conditions of agricultural and food markets;
- Favorable conditions for access of rural producers to markets of financial, material and technical manpower, innovative resources;
- Sustainable rural development, employment and improved living standards of the rural population.

Total solutions of above mentioned tasks will improve the level of security of the village of objects with social sphere and infrastructure, which will lead to economic growth and, consequently, improve the quality of life in rural areas and will allow, in turn, create an attractive environment for the growth and development of the rural population.

In the early 90s, the gap of economic ties, the reduction of subsidies from the state budget, of course, impact on agriculture. Reducing subsidies led to deterioration of technical equipment of agriculture, sharp reduction in the use of mineral fertilizers, plant protection, prevention and treatment of animals and eventually, along with the incompletion of agrarian reform led to drop in agricultural production, reducing its effectiveness in the early years of independence.

At present, the question remains about the restoration and reconstruction of irrigation and water supply systems in rural areas (application developed by Research Institute of erosion and irrigation drip and micro-sprinkler systems enable best meet the needs of plants in water for irrigation of gardens), which also affect the efficiency of agricultural production . In order to solve this problem, you must attract credit resources of the World Bank and the Asian Development Bank.

In this connection, support for the processing industry in our country by international organizations, will allow the use of new technologies, know-how and marketing methods. In general, it will produce high quality finished products from local raw materials and export it at world prices.

The development of the agricultural sector, rural financial institutions, small and medium enterprises should require the appropriate infrastructure services in rural areas: water supply, roads, sanitation. Currently, rural infrastructure remains critical and requires urgent action on its reconstruction and development. Implementation of these measures will contribute to poverty reduction in rural areas.

Consequently, the material basis of social protection in various countries of their economic potential. It is necessary to emphasize that without a comprehensive program of social guarantees the conditions for sustainable economic growth, scientific and technological development can not be created. This raises the question of the relevance of the establishment in Nakhchivan AR a complex of macroeconomic conditions needed to ensure financial self-defense of all segments of the population. Posing this question raises the issue of social security at a qualitatively new level, allowing to distinguish measures relating to all members of society, and actions addressed to specific social groups.

It is also important to note that in the Nakhchivan Autonomous Republic for the further development of the agricultural sector needs to develop agricultural cooperation, and this, in turn, will have a clear vision of cooperative development for improving internal and external competitiveness of agriculture and the withdrawal of local agricultural products on the world market. It is necessary to begin the construction of innovative processing enterprises meeting international standards with further transfer to agricultural cooperatives.

AGRICULTURE OF IVORY COST: THE RESULTS OF 2014

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Abstract

The year 2014 has been very beneficial for the dimension in the field of agriculture, unlike other years, especially the areas of cocoa and cashew nuts which Ivory Coast is the first and the second world producer. The results are improving due to the chandes in agrarian state policies. There were foreign and local investments. Ivory Coast has greatly expanded the beans grinding capacity in recent years. A way for the world's largest cocoa producer to keep part of the added value, Ivorian producers earning 6% of the value of a chocolate bar.

Results and discussion. Despite attempts by the government to diversify the economy, it is still largely dependent on agriculture and related activities. Ivory Coast is among the world's largest producers and exporters of coffee, cocoa beans, and palm oil. Consequently, the economy is highly sensitive to fluctuations in international prices for these products and to weather conditions.

According to the Ministry's report this year's record harvests have been reported in the areas of cocoa and cashew nuts in Ivory Coast. Results that show, according to the Ivorian authorities, the direct impact of their policies.

According to the Ivorian authorities, farmers' incomes from coffee and cocoa rose by 7.5% between 2010 and 2013, from 1200 to about 1300 billion CFA francs. Already in late June 1.57 million tonnes of cocoa produced that exceeded the 2010-2011 time high (1.51 million tonnes).

The country has also equaled this year's best crops of cotton, with 400 000 tonnes, double that of five years ago, although it remains a minor player in the world. Coffee also progressing but more slowly (100-120 000 tonnes). Harvesting of the late 1990s were four times higher. Ivory Coast

was then in the third place worldwide. Meanwhile, the decade of political and military crisis in the country have greatly weakened the economy, including agriculture.

The Ivorian authorities see these results as the direct impact of their policy, aimed at "modernizing" national agriculture, to "make it more competitive" giving "more revenue" to its farmers. A new emphasis in Côte d'Ivoire, where the agricultural sector accounts for 22% of GDP, over 50% of export earnings, and above two thirds of sources of employment and income for population (World Bank).

In the field of cocoa, in addition to favorable weather, distributing seeds of variety "Mercedes", double or triple performance compared to the Ivorian aging orchards, according to Coffee and Cocoa Council. The forecast for the cocoa sector in 2014-2015 is given as favorable.

The authorities thus ensuring a relatively inexpensive purchase price paid to cocoa, coffee, cotton and cashew to better distribute farm incomes. Consequently, with more "visibility on prices", farmers are expanding their arable land and improve orchard maintenance, causing a systematic growth in production.

The Ivory Coast processing capacities are growing for several years. The results of the 2013-2014 season will explain both the increase in production and that of the country's transformation means. According to the Ministry of Agriculture, there were 2000 billion CFA francs (about 3 billion USD) of foreign investment in the sector by 2015, half should be outstanding at the end of the year.

Thus, thanks to investment, both foreign and local, in the cocoa processing industry, Côte d'Ivoire currently has a grinding capacity of 670,000 tons, and so leads in the world before the world's leading cocoa grinding such as the Netherlands, Germany and the United States.

For exporters, transform cocoa mass - or weight - rather than shipping the raw beans avoids waste and represents a weight gain on ships. All have gradually built crushing plants on Ivorian soil: the Swiss Barry Callebaut (190 000 tonnes), the American Cargill (120,000), the French Cemoi (100,000), the Ivorians Choco Ivoire and Saf.

With the new plant in Singapore Olam (70 000 tonnes), based in San Pedro, Ivory Coast, with its 520,000 annual tons of crushed beans therefore resembles the Dutch capacity (530,000 tonnes). In total, $ 750 million have been or will be allocated by Afreximbank to the development of the first transformation of the West African soil.

From the beginning of 2015, the Ivory Coast, which is already the world's largest cocoa producer, will be the first global transformer beans, announces the International Cocoa Organization (ICCO).

Leading producer of cocoa - 1,741,000 tonnes in the 2013-2014 season - Côte d'Ivoire, with 520,000 tonnes of cocoa processed this year, also close behind the head of the first rank in terms of primary processing of "'brown gold "(grinding and manufacturing cocoa butter). So far, it is the Netherlands, which occupied the first place. Amsterdam is indeed the first cocoa port in the world, the Flemish city still has the largest processing plant in the world.

Côte d'Ivoire has a lot to develop the beans grinding capacity in recent years. A way for the world's largest cocoa producer to keep part of the added value, Ivorian producers earning 6% of the value of a chocolate bar.

References

1. Plan strategique de developpement de l'elevage, de la peche et de l'aquaculture en Cote d'Ivoire (PSDEPA 2014-2020) http://www.waapp-ppaao.org/iram/classified/ Plan_strat._2014_2020.pdf

2. http://economie.jeuneafrique.com

3. Centre du commerce international (ITC). Classification des MNT pour les enquêtes. janvier 2012

4. Conseil du Café-Cacao. Mécanisme de commercialisation du café et du cacao. [URL: http://www.conseilcafecacao.ci, date of visit 02.04.2015]

5. Ministère de l'agriculture (Côte d'Ivoire). Stratégie nationale révisée de développement de la filière riz en Côte d'Ivoire (SNDR) 2012 – 2020. Janvier 2012.

6. Centre du commerce international (ITC). Market analysis tools. [URL: http://www.intracen.org/marketanalysis, date of visit 02.04.2015]

7. Makarova E.P., Makarov P.P. Modern Problems of Agrarian Economics. Moscow RUDN, 2013. - 134 p.

ASSESSMENT OF THE STATE OF THE BELARUSIAN MARKET OF ORGANIC PRODUCTS AND ITS DEVELOPMENT PROSPECTS

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In economic theory, the market is the economic relations associated with the exchange of goods and services, that form demand, supply and price. In our study, we are talking about market organic agricultural products, which is part of the food market.

In Belarus, organic farming is in its infancy, agricultural producers working on organic methods appear, and three farms have already received certificates of the European pattern. The one structure that carries out commercial production of organic products, is "Nadejda -Plus", that is a unit for the production of goods and services of "Nadejda - 21", whose main task is to supply children who are in rehabilitation in the children's republican wellness center "Nadejda" with environmentally friendly food. Project, implemented by the center is a pilot project and it demonstrates the ability to conduct ecological agriculture. Land area of the branch of "Nadejda-Plus" is about 40 hectares. The one Miadzieł region is declared as a zone of organic farming: it is tasked to provide resort zone of Naroch region with natural food. Scientific and Production Center for Agriculture and Scientific and and Production Center for mechanization of Belarus are centers of scientific support of organic farming in the country.

. In Belarus there are the necessary prerequisites of the ecological land development. The country has a significant potential of arable land per capita, and the volume of mineral fertilizers per hectare of arable land is lower than in Western European countries. The land area of Belarus is 20.8 million ha, including 8820000 ha of agricultural lands, that is 0.93 hectares per capita, including 0.616 ha of arable land. Comparative evaluation of the level of provision of farmland per capita in Belarus in comparison with other countries is presented in table

The special features of the Belarusian agriculture include: high-intensity agriculture; predominant presence of large agricultural enterprises equipped with heavy machinery and applying high doses of mineral fertilizers and pesticides; acute shortage of high-quality organic fertilizer; use of fresh manure, sewage sludge; the presence of large livestock complexes, storage and application of livestock effluents and chicken manure.

Scientists believe that there are certain obstacles to the development of organic farming in Belarus: the size of investments required for its formation; underdeveloped market of organic products; practice of fixing prices for agricultural products. The last factor indicates unprofitable bio-organizations.

The lack of a legal framework is one of limiting factors of development of organic agriculture market. Today, there are few farmers who is ready to confirm its environmental friendliness. It is explained with the lack of a national certifying body that would have assessed the producer and gave special markings. Belarusian farms can be certified by two companies from

Ukraine and Latvia. They adhere to EU standards in their work. In other words, organic products with this certificate will be recognized in the EU. The manufacturer can mark it accordingly and sell at higher prices

Table 1

Provision of farmland per capita in the world

Country	Provision of one inhabitant, ha	
	farmland	arable land
Belarus	0,93	0,616
France	0,48	0,30
Germany	0,21	0,14
Italy	0,23	0,13
Poland	0,42	0,33
Russia	1,52	0,86
Spain	0,65	0,29
Sweden	0,34	0,29
Ukraine	0,89	0,71
USA	1,33	0,55

In 2014, in Belarus only ten ferms were certified or are being certified. . Generally it is farms occupied with cultivation of berries and vegetables on an area of several hectares. It is explaned with the highest weight of the product in total agricultural production of farms in the country.

The statistical analysis shows that the production of vegetables in farms in 2012 compared with 1991 increased 525 times, potatoes - 43 times, and their contribution to the total yield of these crops are 13% and 4%, respectively. The share of production of farmers is only 1.3% of the total. Farmers specialize in profitable directions, which include fruit, potatoes, vegetables. This is largely due to the participation in the program of the Ministry of Agriculture. It consists of 40 households, and 7 households are included in sheep program, and 4 are included in breeding program. The structure of the specialization of production is as follows: 61% of farms are occupied in plant production, 15% - in animal husbandry, 24% - mixed farming.

One of the limiting factors of farming development is the lack of funding support for primary improvement of farms, weak interest in crop insurance, the problem of product sales, difficult loans. In general, over the last two years the state budget has allocated 221.3 billion rubles for support of farms. On average, only $ 104-115 of support is per hectare in the country, in Brest region where the farming is most developed this number is $205, and in Mogilev region - 28%.

The growth of "green" farming is restrained by low public awareness of the benefits of these foods, and, as a consequence of, low desire to acquire them at a higher price. This is confirmed by the results of marketing research of consumer preferences of the population throughout Belarus Center of System Business Technologies «SATIO» by request of "Eco House" (one of the most active national public organizations in the promotion and development of organic agriculture in Belarus). According to the survey, 95% of respondents would like to purchase organic products. The choice of 89.4% of them is caused by the criterion of the usefulness of these products for health. But only half of the respondents (55.8%) are ready to pay for organic food more than usual.

Thus, the farmer and population, the main producers and consumers, should begin the development of organic farming.

At the enterprise level, imperfection use of eco-labeling should be noted. It demonstrates again the need of the formation of the legal framework in the country. In the Republic of Belarus the sign of eco-labeling "Natural product" is adopted. This labeling of food products has been introduced by State Standard scince June 1, 2008 and is regulated by the TAP 126-2008. Research and Production Center for Food is occupied with issues of food production with this label. There

are more than two hundred certificates for the right to food labeling under the sign "Natural product". The most common food used this sign is dairy products, bottled water, bread, canned baby food, chocolate, salt and others.

The requirements for products, which are marked by the sign "Natural product", differ significantly from the requirements for the product in Europe and the CIS. Assessment of the quality of products is carried out at much lower range of indicators when conferment of foreign eco-labels takes place. For example, the quality of animal products in Belarus is estimated at 40 indicators, while in Europe - at 138. The sign of the "Natural product" is conferned only to products made from natural ingredients without the use of genetic engineering and artificial food additives.

Belarusian legislation provides all products containing GMOs (genetically modified organisms) whith the mandatory label. Nonthreshold marking system is adopted instead of international practice, where GMO content of 0.9% is permitted. For the organization of GMO control in Belarus 15 accredited testing laboratories are created.

Based on a review of the Belarusian market of organic products, priorities for its development should include: developing their own standards based on established ones of European countries, training and establishment of a system of certification and inspection control in the field of organic farming. This step is important in the direction of the development of exports. Considering the differences in the applicable quality requirements, a single certificate to assess its quality should be introduced.

PROSPECTS OF THE CRIMEAN WINEMAKING PRODUCTS IN RUSSIA

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Wineries of Republic of Crimea were in a situation where they need to quickly and efficiently integrate into the economic and legal space of the Russian Federation, not reducing production or sales volumes.

Viticulture and winemaking in the Crimea are important strategic sectors of agriculture and industry, which provide the content of the budget of the Federal District, as well as have a direct impact on the development of the tourist industry.

The aim is to study the place and prospects of development of viticulture and wine production of Republic of Crimea in the Russian Federation.

Employees of the institute "Magarach" conducted research on the development of the Programme of viticulture and winemaking of Crimea, in particular, the following sources of investment in the industry are choosen:

- Means of 1.5% collect from the sale of wine products;
- Private and corporate investment of banks and various stakeholders;
- the sale of shares in the All-Ukrainian and foreign markets;
- the auctions and fairs of ready-made winemaking products of Crimea. (Ivanchenko, Zotov, 2012)

In the existing methods of forecasting of the development of wineries do not include changes in the environmental conditions to which they were subjected at the present stage.

Viticulture and winemaking in the Republic of Crimea are an important sector of the economy that is caused by natural and climatic conditions of the Crimean peninsula. In the context of their integration into the economic and legal field of Russia we believe that it is important to

determine the place which their products will take. This requires a comparison of the volume of production of grapes and wine production in the Republic of Crimea with the corresponding figures of the Russian Federation.

The first step is to compare the gross amounts of the grape production in the Russian Federation and the Republic of Crimea, as it is a source of raw materials for the production of wine. (table 1).

Table 1

Comparative characteristics of the gross production of grapes in the Russian Federation and the Republic of Crimea in 2008-2013.

Indicator	Year					
	2008	2009	2010	2011	2012	2013
Gross production of grapes in the Russian Federation, thousands tons	267,88	298,72	324,29	412,38	266,79	439,10
Gross production of grapes in the Republic of Crimea, thousands tons.	116,94	125,25	111,86	125,38	93,98	95,24
The ratio of gross production of grapes in Republic of Crimeria and Russian Federation, %	43,7	42,0	34,5	30,5	35,3	21,7

Source: calculated by the author based on the data of Rosstat and the statistics of Republic of Crimea.

Based on the data in Table 1 it can be concluded that the viticulture of the Republic of Crimea is at quite high level. Therefore, companies that produce grapes, can take sufficient niche in the market of the Russian Federation. It should take into account the prospects of the development of viticulture of Crimea on the basis of the establishment of new plants equipped with drip irrigation systems that will significantly increase the gross production of grapes. Based on trend analysi of data the following relationship, which describes the ratio between the gross production in the Republic of Crimea and the Russian Federation was obtained (the coefficient of determination R2 = 0,99):

$$y = - 0{,}7604x^4 + 10{,}21x^3 - 46{,}335x^2 + 77{,}923x + 2{,}55 \quad (1)$$

On the basis of this dependence, we can expect an increase of the proportion of grape production in the Republic of Crimea in the case of the establishment of new plants and equipment vineyards with drip irrigation systems.

For further characterization it is necessary to identify the relationship between the volume of production of wine in the Republic of Crimea and the Russian Federation (Table. 2).

Table 2

Comparative characteristics of the production of wine in the Russian Federation and the Republic of Crimea in 2008-2013.

Indicartor	Year					
	2008	2009	2010	2011	2012	2013
Production of wine in Russian Federation, million decalitres	81,0	82,3	88,1	81,7	74,5	58
Production of wine in the Republic of Crimea, million decalitres	8,4	9,2	8,6	6,9	6,1	6,5
The ratio of wine production in the Republic of Crimea and Russian Federation, %	10,4	11,2	9,8	8,5	8,2	11,2

Source: calculated by the author based on the data of Rosstat and the statistics of Republic of Crimea.

According to the data in Tables 1 and 2, we can conclude that the wine industry of the Russian Federation operates on the import raw materials, and in some cases use as raw material not only wine but also other additives. It is confirmed by the ratio between the volume of production of wine of Republic of Crimea and the Russian Federation that is in the range of 8-11%, and by the ratio between the amount of the gross production of grapes that is 30-44%.

On the basis of the trend data in Table 2 the relationship, which describes the ratio between the volume of production of wine in the Republic of Crimea and the Russian Federation was obtained (the coefficient of determination R2 = 0,9963):

$$y = 0{,}2796x^3 - 2{,}6611x^2 + 6{,}7593x + 6{,}0333 \quad (2)$$

On the basis of this dependence, we can expect an increase of the share of wine production in the Republic of Crimea.

To improve the efficiency of the wineries of Republic of Crimea and enhance their competitiveness in the Russian market it is necessary to solve the following problem:

- the licensing of wineries;
- increase the financial support of enterprises
- bringing wine production enterprises of the Republic of Crimea in accordance with Russian standards of quality;
- solution of the problem of transportation of production in other regions of the Russian Federation;
- Reorientation of procurement of raw materials, packaging materials on the russian market.

Solution of these issues will allow wineries of Crimea to significantly improve the efficiency of their work and bring to the Russian and foreign markets high-quality competitive products.

Crimean viticulture and wine production have great prospects in Russia, but modernization of wine production capacity, and the improvement of farming production of grapes are necessary.

References:

1. Statistical Yearbook. 2011: The Stat.sb. / Rosstat. - M., 2011. - 795 p.
2. Statistical Yearbook. 2012: The Stat.sb. / Rosstat. - M., 2012. - 786 p
3. Statistical Yearbook. 2013: The Stat.sb. / Rosstat. - M., 2013. - 717 p.
4. Statistical Yearbook. 2014: The Stat.sb. / Rosstat. - M., 2014. - 795 p.
5. Ivanchenko VI, Zotov AN Prospects for the development of the wine complex of Crimea until 2025 [electronic resource] - Mode of access: http://magarach-nivw.com/biblioteka/kniga-1.html

THE ROLE OF AGRICULTURE IN THE ECONOMY OF THE CENTRAL FEDERAL DISTRICT

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Central Federal District was established in 2000 in accordance with the Decree of the President of the Russian Federation on May 13, 2000 №849 «About the Plenipotentiary of the President of the Russian Federation in the Federal District." [1] It is geographically the financial center of the country. It consists of 18 regions. Center is the city of Moscow. According to Rosstat, January 1, 2014, the county area was 650.2 thousand sq. km.

Agriculture takes an important place in the economy. Central Black Earth economic region that is part of the Central Federal District is one of the leading agricultural areas

The volume of agricultural production in 2014 in the Central Federal District is up to 1,056,922 milion rubles, and in relation to 2013 it grew by 4.4%

Leader of the production is Belgorod region. In 2014 the volume of production is up to 187121milion rub.Ivanovo region takes the bottom. Its annual output is up to 14,151 milion. rub, 96.1% to the last year and 0.3% to the total. Moscow does not specialize in the agricultural production. Its annual production in 2014 is up to 8,327 milion rub., 89.9% to the last year and 0.2% to the total.

The production of cereals such as wheat, rye, barley, buckwheat, oats, legumes dominate in crop production. Potatoes, sugar beets, sunflowers, vegetables, flax and forage crops are grown.

In 2014, the main crop areas were in the agricultural organizations of various organizational and legal forms (over 77%). The share of farms is up to 16%. The rest is in households. If we compare the figures with the figures of 2013 year, we note a decrease of 81.2 thousand ha.

From ancient times to the present day the grain is the staple food of man. Gross production of grain in all categories of farms in the county in 2014 was 259,972.2 thousand quintals. The share of production in 2014 in farms, including individual entrepreneurs, is 18.5% in total production.

Voronezh, Kursk, Belgorod, Orel and Tambov region are the leaders in the cultivation of crops of the district. For example, in 2014: 44726.9 thousand quintals of grain were produced in the Voronezh region (113.8% to 2013), where 25.0% is a share of production in farms. In Moscow, Kostroma, Yaroslavl and Tver regions the volume of grain production is low.

An important role in the area livestock plays. Pigs, meat and dairy cattle, poultry, sheep, fish and honey production are dominated.

The number of cattle in farms of all categories of the Central Federal District at the end of 2014 is up to 2833.6 thousand heads. In percents relation to the corresponding period of 2013 there is 100.0. The share of livestock in households in the general population was 44.6%.

In the Central Federal District, Voronezh, Bryansk, Moscow and Belgorod region have the largest number of cattle.

In the Voronezh region at the end of 2014 the number of cattle was 450.0 thousand heads (105.0% by the end of 2013), 31.6% is the share of livestock in households. In the Bryansk region there are 407.7 thousand heads (122.6% by the end of 2013), the share of livestock in households is 5.9%. In the Moscow region there are 225.0 thousand heads (96.3% by the end of 2013), 5.6% is the share of livestock in households. At the end of 2014 in the Belgorod region the number of cattle population was 220.1 thous heads (97.1% at the end of 2013), 22.0% is the share of livestock in households.

The number of pigs in farms of all categories at the end of 2014 is up to 8669.1 thousand heads. In the percentage ratio by 2013 of the period there is 105.3. The share of livestock in households is 4,1%.

Belgorod region is significantly separated from the rest by the number of pigs in organizations of all categories of the Central Federal District. In the region at the end of 2014, there were 3,678.2 thousand pigs, in percentage ratio at the end of 2013 there are 105.7. The share of livestock in households according to Rosstat, is 0.0%.

It should be noted that there are 11.0 thousand heads of pigs in the Ivanovo region at the end of 2014, (94.9% by the end of 2013). Approximately 50% of livestock was in households of the district.

Production of major livestock products in all categories of farms of the Central District is following. In 2014 the production of livestock and poultry was 4136.2 thousand tons. In the percentage ratio by 2013 of the period there were 104.3. The share of production in households in 2014, was 10.6% of the total output.

The largest number of livestock and poultry was produced in the Belgorod region (1531.1 thousand. tons). In percentage it was 101.9% of livestock of 2013. However, the production of livestock and poultry in the share of production in households in 2014 is low, the share is 1.8%.

Kursk, Tambov and Voronezh regions are behind the Belgorod region. In 2014 in the Kursk region 386.3 thousand tons (135.3% to the previous year) were produced. In the Tambov region there are 341.6 thousand tons (129% to 2013), where 14.8% is the share of farms. In Voronezh region, the volume of production of livestock and poultry was 324.0 thousand tons (87.1% in 2013).

Milk production in the Central Federal District in 2014 is up to 5390.2 thousand tons. In the percentage ratio by 2013 of the period there are 98.1. The share of production in households, in total production is up to 26.6%.

Among the regions of the district Voronezh region produced the highest number of tons of milk (788.0 thousand. tons). The share of milk production in the households of the Voronezh region is 40.5%. Then, after the Voronezh region in terms of volume of output is Moscow region, which produced 635.4 thousand tons of milk.The share of milk production in the households of the Moscow region, was 7.5%. Belgorod region produced 543.5 thousand tons of milk. The share of milk production in the households of the Belgorod region was 25.4%.

In 2014, the largest share of milk production in households of Central Federal District was in the Tambov region, which was - 63.5% of the total output of all farms.

References:

Decree of the President of the Russian Federation on May 13, 2000 №849 «About the Plenipotentiary of the President of the Russian Federation in the Federal District" [electronic resource] -Mode access: http://www.rg.ru/2000/05/14/okruga- dok-site-dok.html] (Date treatment 04/02/2015)

National accounts. [Electronic resource] - Mode of access: http://www.gks.ru/ (Date Treatment 04/02/2015)

The sown area of the Russian Federation in 2014. [Electronic resource] - Mode of access: http://www.gks.ru/ (Date Treatment 04/02/2015)

Gross production and crop yields in the Russian Federation in 2014. Part 1 [electronic resource] - Mode of access: http://www.gks.ru/ (02/04/2015 Date circulation)

Gross production and crop yields in the Russian Federation in 2014. Part 2 [electronic resource] - Mode of access: http://www.gks.ru/ (02/04/2015 Date circulation)

Livestock production and the number of cattle in all categories of farms in January-December 2014 [electronic resource] - Mode of access: http://www.gks.ru/ (Date Treatment 04/02/2015)

CHALLENGES FOR FOOD SECURITY

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The food security in the world is a multidimensional problem, one of the aspects is providing population with sufficient and good nutrition. In spite of the fact that the number of starving gradually decreases, still according to the World food Programme there are about 842 million undernourished – about 11,5% of the population of Earth. Still there are countries in which undernourished people record from a third to a half of the population. In general in the world annually due hunger die more people, than from such diseases as AIDS, tuberculosis and malaria taken together.

The food security in the world is a multidimensional problem, one of such aspects is providing the population with sufficient and good nutrition. Nowadays for global assessment of

food insecure, the indicator characterizing quantity and a share of the people suffering from malnutrition is mainly used.

The number of starving gradually decreases, but still there are about 842 million or about 11,5% of the global population suffer from hunger, according to the World food programme [3]. Most of the undernourished people live in Asia: China, India, Indonesia, Pakistan, Mongolia. Furthermore in the African countries live the most starving people, that counts from a third to a half of population. In total for hunger more people annually die, than from such diseases as AIDS, tuberculosis and malaria together.

In this work we consider the reasons why the mankind is threatened by food crisis nowadays, at innovative century of globalization.

At-first, growth of the population on the planet in general is observed.

Table 1

Growth of the population of the planet since the 16th century

Years	Population
1500	427 mln
1800	978 mln
1900	1650 mln
1950	2465 mln
1975	4066 mln
2000	6057 mln
2025 (forecast)	7470 - 8650 mln

Along with growth of the population there is also increase in food production nevertheless it is not enough.

Despite production opportunities of producing bigger quantity of food in the developed countries, the world is still faced with the question of feeding mankind. The analysis shows that one third of food isn't used! So, according to data of the Food and agricultural organization (FAO), annually 1,3 billion tons of the food are produced in vane [1]. The economic loss reaches $750 billion. Also producers with inefficient production models, and sellers (for example, in the USA 20% of milk spoil on counters), and consumers who buy too much food, – especially in the developed countries are to be blamed. It is possible to fight against it as follows: to make production “green” (including passing to reprocessing), to optimize logistics and to behave more responsibly, meaning to plan shopping and to distribute extra food instead of throwing.

Table 2

Growth of the population and production of the food over the countries (World Bank)

Regions	Population growth, %	Growth of crop production, %	Growth of livestock production, %
The countries with the high income	6	13	10
Countries of Latin America and Caribbean Region	19	31	32
East and Central-east Asia	14	56	98
Southern Asia	21	26	36
Middle East and North Africa	25	34	37
Subsaharian zone	30	25	14

The situation with Ebola epidemic can also become one of the key reasons of emergence of food crisis. The UN established that in many regions of the countries affected by fever people are

compelled to reduce quantity of the consumed food and to pass to cheaper products [1]. So far the World food programme of the UN provided with products about 500-700 thousand people in the countries, the most injured by Ebola. Eventually in the organization hope to provide food to 1,3 million people.

Besides, many agricultural lands are abandoned that affects food situation, for example in Sierra Leone, Guinea and Liberia, and this also influent on neighboring countries as in the region commercial relations were interrupted.

The hunger situation is also complicated due to food price growth. By estimates of the International Monetary Fund [2], for the last three years the world food prices grew by 60%, they more than doubled. The analysis shows that the prices in the second half of the 20th century grew by 75% [5]: in 2006 – by 7%, in 2007 – by 27%, in 2008 – by 24%, in 2009 decreased by 27%, in 2010 increased by 14%, and the food price growth is proceeded.

In many cases it is more favorably to buy food from another countries than to produce domestically. Due to globalization it is very common in the open world where borders are washed away, can hardly be different, but many countries need to think of food security in order not to get into food crisis because of sudden climatic changes and geopolitical crises.

Thus, Russia faced political sanctions. National economy wasn't ready to import substitution. Experts note that falling of import is connected not only with embargo introduction, but also with devaluation of ruble which sharply increased competitiveness of the domestic food and at the same time limited possibilities of import, but, despite that, experts don't expect the essential growth of domestic production. Moreover, growth of agricultural production in 2014 is estimated at 3,4% according to the Ministry of Agriculture of the Russian Federation, and in 2013 – at the level of 6,2% [4].

Possible ways of development – to implement tax benefits and subsidies for agricultural producers, to advance new technologies in production more rapidly, to agriculture more lands. Thereby it is possible not only to secure the country, but also to reduce load of transport knots.

Thus, it is possible to make a conclusion that the food security is a condition of reliable security of the vital interests and core bases of existence of the person, society and country from internal and external threats; in which there is possibilities of providing with own production the main types of food to all population of the country; with condition of physical and economic availability of food in such quantity and quality which is necessary for preservation and maintenance of life and capacity of the person; with full or maximum independence of the state from external sources of food.

References

1. Food and Agricultural Organization, 2014 [URL: http://www.fao.org/zhc/ru] (date of visit 01.02.2015)
2. International Monetary Fund, 2014 [URL: http://www.imf.org] (date of visit 01.02.2015)
3. World Food Programme, 2014 [URL: http://www.wfp.org/hunger/who-are] (date of visit 01.02.2015)
4. Ministry of Agriculture of Russian Federation [URL: http://www.mcx.ru] (date of visit 01.02.2015)
5. Makarova E.P., Makarov P.P. Modern Problems of Agrarian Economics. Moscow RUDN, 2013. - 134 p.

CONTROL MECHANISM COMPETITIVENESS OF THE AGRO-INDUSTRIAL ENTERPRISES

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Abstract. The paper presents the main results of the research in the field of competitiveness of the agro-industrial enterprises. The proposed approach is based on the well-known balanced indicators, but involves the use of a larger component - the "intellectual capital" of the company. Estimation procedure of intellectual capital and the competitiveness of the agro-industrial enterprises are given. The main results of the implementation of the proposed approach in economic practice of "Kama-Ustyinsky Cereal Company" are given.

At present, the urgency of increasing of the competitiveness of the agro-industrial complex is due to a number of external and internal factors. Among them the ambiguity of the impact of accession to the WTO, the introduction of various sanctions against Russia, lack of government support and regulation, lack of qualified personnel, low efficiency, high degree of depreciation of fixed assets and so on should be included in the first place.

According to the current research, in particular the research of Russian Research Institute of organization of production, labor and management in agriculture [1] and the Russian Institute of Agrarian Problems and Informatics. A.A.Nikonova [2], the main agri-food risks are administrative and economic risks. Therefore, to reduce them it is necessary to develop an effective system of management of competitiveness of the agro-industrial enterprises.

The proposed approach is based on the application of the system of balanced indicators (SBI) developed by R.S.Kaplan and D.P. Norton [3]. However, in contrast to the known SBI, it involves the use of a larger component - the "intellectual capital of the organization." Using expert method, a set of indicators of economic activity of agro-enterprises were selected those that determine competitiveness. 52 respondents were interviewed with questionnaires. Processing of the results was carried out through the use of ball method. Experts' opinions were processed using statistical methods and found consistent with a probability of 0.95.

As a result, according to the basic units of the strategic map, the following indicators are obtained. Finance: product profitability, profit growth. Clients: ratio of price compared with the prices of goods and services offered by competitors. Internal business processes: the loss of agricultural raw materials during storage and transportation, return on sales, implementation of sales plan, rate of return of innovation, growth in the number of innovations, accounts receivable, accounts payable, pursuant to MDD and BCF. Intellectual capital: an integrated assessment of sustainable development of intellectual capital, which includes components such as the value of the intellectual potential and intellectual property, losses from accidents and failures caused by personnel, staff turnover.

The cost of the intellectual potential is proposed to determine according to the formula:

$$C_{ип} = (C_{ма}+C_{ис})*k_в*k_{ст}, \quad (1)$$

where $C_{ма}$ – value of tangible assets, rubles; $C_{ис}$ – the value of intellectual property, rub.; $k_в$ – factor reflecting the probability of occurrence of an intellectual product, which will increase the value of assets; $k_{ст}$ – coefficient taking into account the possibility of increasing the value of assets due to the emergence of a new intellectual product

To determine the coefficient $k_в$ it is proposed to use a formula combining the probabilities of events $P(B_1)$, $P(B_2)$, $P(B_3)$:

$$k_в = P(B) = P(B_1 \cup B_2 \cup B_3) = P(B_1)+P(B_2)+P(B_3) - (P(B_1)P(B_2)+ +P(B_1)P(B_3)+P(B_2)P(B_3)+P(B_1)P(B_2)P(B_3)), \quad (2)$$

where $P(B_1)$ – the probability that, employees in the required areas of expertise are competent, have the experience and skills; $P(B_2)$ – the probability that employees have the required personal qualities and loyal organization; $P(B_3)$ – the probability corporate culture of the organization, management, logistics, technology, etc will contribute to the development of intellectual potential.

The probability of formation of events B_1, B_2, B_3 is influenced by the development of their components C_1, C_2, C_3. They are independent from each other and are defined by the formula of probability of independent events:

$$P(B_n)=\prod_{i=1}^{l} P(C_i)=P(C_1)\times P(C_2)\times \ldots \times P(C_l), \quad (3)$$

We propose to estimate their probability according to the classical definition of probability:

$$P(C_i)=\frac{q_i}{Q_i}, \quad (4)$$

где q_i – number of outcomes favorable to the emergence of events C_i; Q_i – the total number of outcomes.

Coefficient $k_{ст}$ is proposed to determine as:

$$k_{\text{ст}}=\frac{S_{\text{НИОКР}}}{S_O}, \quad (5)$$

where $S_{ниокр}$ –R & D costs in the agricultural sector of the region; S_o – fixed assets of agribusiness of the region. For the agro-industrial complex of Tatarstan the value of 0.04136 was obtained.

As a result, assessment of the development of intellectual capital is based on a large number of indicators, the use of which does not allow them interprete correctly. Based on the methodological approach developed by N.N.Pogostinskaya and Yu.A.Pogostinsky [4] mechanism of convertion of a large number of indicators into a single integrated indicator of the degree of development of intellectual capital was proposed. For that, this formula is used:

$$Y=\frac{\sum_{i=1}^{n}\sum_{j=1}^{n} b_{\text{ij}}}{\sum_{i=1}^{n}\sum_{j=1}^{n}\left(e_{\text{ij}}\right.\left(}, \quad (6)$$

where Y – evaluation of sustainable development of intellectual capital; n – number of indicators in the standard; i,j – number of indicators in the standard; b_{ij} – element of the matrix of matches of standard with the specification matrix of actual and planned growth ratio indicators; e_{ij} – element of standard.

As a productive indicator of system of management the integral value rating of competitiveness is proposed. It can be determined as the following:

$$R=\sum_{i=1}^{n} P_i\times j_i, \quad (7)$$

where R - rating of the competitiveness of the agro-industrial enterprises; P_i - the value of the i - th index rating; j_i - the weight of the i-th index rating, n – number of indicators. To determine the weighting, valuation of fulfillment is performed. Values are taken modulo.

Implementation of the proposed system in the economic practice of "Kama-Ustyinsky cereal receiving enterprise" required the development of the forms and rules of reporting for performance monitoring and management decisions. Over the 2007-2013 periods the level of competitiveness of enterprises increased from 0.000051 to 0.985. These results were obtained through targeted measures for the development of intellectual potential and enhance competitiveness. The proposed system identified the most promising areas. The total economic effect on the results of the 2007-2013 period is up to 1,710 thousand rubles.

References:

Adukov, R.H. Management of Agriculture of Russia in the WTO: opportunities for regulation of budget support: monograph / A.D. Adukov, A.N. Adukova, A.N. Piers, R.A. Yusuf. - M: "NIPKTS Voskhod-A", 2013. – 200 p.

National economy: food security in the context of integration and globalization: Monograph. /E.N.Krilatikh, prof. V.Z.Mazloev. - M .: INFRA-M, 2015. - 240 p.

Kaplan, RS Strategy maps. Transformation of intangible assets into tangible outcomes / R.S.Kaplan, D.P.Norton. - M .: JSC "Olympus-Business", 2005. – 210 p.

Pogostinskaya, N.N. System analysis of the financial statements: a tutorial / N.N.Pogostinskaya, Yu.A.Pogostinsky. - M .: Economics, 2002. - p.59.

PROJECT FINANCING OPPORTUNITIES IN NIGERIA REAL ESTATE SECTOR

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Abstract

Nigeria economy is currently rated the biggest in Africa and its high growth rate of an average of 6% makes it to be a good investment destination. There are lots of investment opportunities in the Nigeria real estate sector especially in commercial real estate, and industrial real estate. Infrastructure deficiency and other developmental needs have overwhelmed the government, thus leading to invitation for partnership from the private sector as it can be seen in the project financing of the extension of the terminal in the local Airport wing in Lagos. Project financing is ideal in a business environment where adequate future cash flow can be predicted and this is true for the Nigeria business environment.

Key words: Nigeria, Project-Financing, Economy, Construction, Real-estate, Development.

Results and discussion. There are lots of infrastructures on ground in Nigeria and the economy is dynamic with lots of activities in different sectors supported by the availability of all the necessary institutions like the financial and communication structures, but a lot of improvement is still expected. Government must ensure that the institutions work efficiently. Nigeria is in dire need of infrastructural development, as the government struggles to maintain the few available public facilities. Nigeria with a population of over 170 million people has only 4 international airport which are far below international standard even when compared with similar facilities in other countries in the region. The roads networks are inadequate causing traffic problems and associated menace in major cities like Lagos, Abuja and Port-harcourt. Major cities in the country have short fall of residential apartments, the largest city Lagos has a population of about 20 million and it's rated as having the most expensive apartment real estate after Angola in Africa.

Amnesty International opined that 70% of Lagosians live in slums, this is consistent with Dunn Loren Merrifield research in 2012 which shows that 42 percent of Nigerians do not live in 'proper housing', necessitating extra 4 million apartments. Current housing shortfall in Nigeria is estimated at 17 million, the Population Reference Bureau, project Nigeria's population to be 240 million by 2025 and about 440 million by 2050 which will make the country to be the world's third largest population. The cost of financing the shortfall of housing in Nigeria is estimated to be about $5.48bn an amount that is above Nigeria's budget of 4.690 tillion naira in 2014 and 4.357 trillion naira in 2015. The Ratio of home loan to Gross Domestic Product was 0.6 percent in 2011 which is a far cry from 31 percent record in South Africa and 50 percent in Europe (Chris K., & Yinka I.,

2014), this is an evidence that individual efforts to provide houses have been grossly inadequate . Apart from apartment houses, there is also a large demand for public buildings like hotels, shopping malls, restaurant etc.

Why it's possible to keep 5 appointments in a day during working hours in Europe, hardly can a businessman execute two business appointments in a day in Lagos or 3 in a day in Abuja. The government realized her short coming in providing enough infrastructures and has thus embraced the concept of project financing which is relatively new to public project execution in Nigeria. The application of project financing has however been limited to infrastructure and public building projects in Nigeria. This method of financing which incorporate the private sector in the execution of government sponsored projects, can however be extended into the provision of all forms of real estate facilities in the country.

Project finance is defined as the extension of credit to finance an economic unit where the future cash flows of that unit serve as collateral for the loan (Christopher L.C, & Forrester J.P, 2010). Project financing is usually for a long time concession period, typically 15 – 25 years through debt and equity. Percentage of debt could be up to 70% – 90% of project capital cost (Yescombe E.R, 2014).Some of the characteristic of project financing model is that (i) the project which is usual executed through a legal entity (company) is economically self contained, (ii) it's usually used for a new project and the only business it executes is the project (iii) The two sources of finance are: equity and debts. Some level of success has been recorded in some contracts awarded based on Project financing concept in Nigeria, like the construction of a new terminal for the Local Airport in Lagos-Muritala Mohammed Airport 2 (MMA2) and Victoria Island Lekki express road. However some has been one of total failure like the award of the reconstruction of Lagos –Ibadan express road to Bio-Courtney Limited, the contract was canceled after about ten years of delay before commencement of work.

This research work seek to answer the following questions: Where are the opportunities for real estate project finance projects in Nigeria? How conducive is the Nigeria business environment for project financing? To what extent is the success of project financing in Nigeria? The research is executed by analyzing the Nigerian business environment, reviewing the infrastructure development in Nigeria, revealing opportunities for development, and also an assessment of ongoing project finance projects in Nigeria in the real estate sector.

The research was carried out using a qualitative method, and the research design is interview and the use of focus group meetings. A semi-structured interview questions was constructed which I applied in getting responses from seasoned professionals in the Nigeria construction industry. The use of focus group improved the validity of some of the assertion made by the interviewee as individual opinions were well argued out. Collected data were analyzed qualitatively.

A lot of new construction work is on going in Nigeria especially in the new capital city of Abuja. Most of the commercial real estate construction work are being pioneered by real estate firms, developers (Engineering firms) who build and sell to local real estate investors. Most of the construction work of the government is in the building of residential buildings for civil servants and the improvements of infrastructures like the expansion of roads. There are however a few construction work by the Nigerian government that are of commercial importance.

The building of high rise residential apartments (10 floors and above) is the best approach to solve real estate problems in cities like Lagos and Abuja that is fast developing into mega cities. Such buildings will allow concentration of people in a small area, reduce traffic problem, enhance security and make it easy for people to move around for their daily activities. The limitation for the construction of this type of building in Nigeria are among other things: Lack of capital as such a building structure is capital intensive, uninterrupted supply of electricity to power mechanical fittings like lift and other electrical components of a building, and technical know how. Foreign firms can however come into Nigeria to make some differences and also provide opportunities for local firms to learn on how to embark on real estate development of commercial importance. The purpose of the real estate development can either be for investment or consumption, as real estate

transactions can be with the expectation of attaining an investment return or use and it could also be a combination of the two (Makarova E.P, 2013). The onus is now on the private sector to rise up to the real estate deficit in Nigeria.

While foreign investors can be called upon to come with their capital and expertise to make such constructions based on their experience abroad, it's the responsibility of the government to provide uninterrupted electricity and well maintained road network to make accessibilities of these structures easy. Current effort to ensure this must be sped up. As the town and regional planning obviously do not have provisions for these types of buildings, government is expected to take a leadership role to make available sites for such construction. This may involve the demolition of some sub-standard buildings in some locations in the cities.

A mega commercial real estate project in Nigeria is the Abuja Trade Centre, a 37 storey building valued at $1bn currently been built on 6.102 hectares. Construction is still on going along constitution road, Central Business District. The foreign investor is First Intercontinental Limited, which is a subsidiary of Churchgate investment limited, a WTC license has been obtained from the United States World Trade Centre to replicate the project in Nigeria. The Eko Atlantic or Eko Atlantic city is another important prominent real estate investment initiative, that is currently going on in Lagos Nigeria. It's a series of commercial building being constructed on reclaimed land on Lagos Bar beach (10km.sq). The waterfront plots cost $2000 sq.m while inner city costs $1000sq.m. The city is being developed to be home for 250,000 people and work place for another 150,000 people. The implementation of these projects is a validation of the fact that Nigeria is a fertile ground for foreign real estate investment. Project financing initiatives can help facilitate more development of complex projects like this that can be initiated by the federal or state Government with the private sector committing the needed capital as a project financed project. The project company (private sector investor) can exploit the property for the tenure of the concession period after which the ownership can be transferred to the Government. In a case of multiple residential apartment building, after the expiration of the concession period the government can sell individual units of the apartments, mortgage or privatize the properties to citizens in their respective localities.

The concept of project financing provide a unique opportunity for operators in the private sector to get fund from the bank to construct properties that will in turn serve as collateral and the refund of the loan will also be expected from the future cash flows of the project. There are lots of opportunities for local and foreign investors to invest in real estate development in Nigeria using the concept of project financing. Nigeria is in need of more Airports, office buildings, shopping malls, hotels, warehouse, multiple apartment buildings etc. Nigeria's financial institutions are looking out for a good business plan to play its own role in the of project financing model.

References

1.Christopher, L.C & Forrester J.P (2010). Structured Financing Techniques in Oil and Gas Project Finance. Oxford University Press Inc. New York.

2. Chris Kay & Yinka Ibukun (2014). Nigeria Housing Shortages Raising With Slum Demolition: Mortgages.

3. Yescombe E.R, (2014). Principle of Project Finance. Elsevier Inc. San Dieo USA.

4. Makarova, E.P (2013). Basis of Management of the Real Estate. Peoples Friendship University of Russia, Moscow Russia.

5. https://www.nsepro.com

6. https://www.nairaland.com

7. https://www.zonenigeria.blogpot.ru

8. https://www.propertydealzone.com

AGRICULTURAL PRODUCTION IN VENEZUELA

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Venezuela in the last 30 years is characterized by noticeable economic growth, and, since the end of the 80th years - the beginnings of the 90th years starts playing an active role in political life of Latin America. On the level of economic development and economic potential (data of 2005) Venezuela takes the 3rd place in Latin America (after Brazil and Argentina).

The Bolivarian Republic of Venezuela is located in the northern hemisphere, in the north of South America, has an outlet to the sea – is washed by the Caribbean Sea and the Atlantic Ocean, borders on Guyana, Brazil and Colombia. Venezuela has membership in such international organizations as the UN, the Organization of American States (OAS), the Organization of Petroleum Exporting Countries (OPEC), MERCOSUR, the Latin American association of integration, the Andean pact.

GDP of Venezuela in 2009 – 344 billion dollars (35th place in the world). GDP per capita – 12,8 thousand dollars. The population of the country of 28 868 486 people (5th place in the world) in 2014 (Census Bureau, 2014), an annual gain makes 1,5%, average life expectancy – 70,84 years for men, 77,17 years for women; urban population – 93% (in 2008). Unemployment – 7,9% (in 2009). The population share below the poverty line – 37,9% (at the end of 2005). Growth of consumer prices in 2010 – 29,8%.

The economy of Venezuela is based on oil production which yields 80% of export revenues, more than 50% of revenues of the state budget and about 30% of GDP.

The territory of the country makes 916 445 sq.km (the 32nd place in the world), has a significant amount of lands, suitable for agriculture, however only the small part them is in production.

Agriculture gives 45% of agricultural products value.

The main export cultures of Venezuela are coffee and cocoa. Corn, rice and beans are grown up only for internal consumption.

The last decade the economic policy of Venezuela was directed on strengthening the state control of economy, development of the industry, agrofood system, decrease of dependence on import, especially from oil import. Nevertheless, economy of Venezuela will continue to be based on oil production that gives 80% of export revenues, more than 50% of the state income in the state budget and about 30% of GDP.

Foreign trade plays huge role in life of Venezuela. On costs, import makes 1/6, and export of 1/3 GDP. In export 90% make oil and oil products, 4% – iron ore, the rest – coffee and cocoa, bananas, sugar, asbestos, gold, skins, rice, vegetables, wood and cattle. In import cars and different types of the equipment prevail.

The agriculture makes about 5% of GDP (see tab. 1). In agriculture 13% of labor is occupied and, anyway, about a quarter of the territory of the country is used. Such cultures as corn, sorghum, sugar cane, rice, bananas, vegetables, coffee are grown up. Beef, pork, milk, eggs are made. Fishery is developed. The main exported foodstuff: rice, grain, fish, tropical fruit, coffee, beef and pork.

Table 1

Structure of economy of Venezuela, %, 1970-2012 (FAO, 2013)

Year	Agriculture	Industry	Construction	Trade	Transport	Services
1970	6,1	40,7	11,2	9,5	3,6	29,0
1980	4,6	42,8	15,0	6,8	3,2	27,7
1990	5,9	51,5	5,8	10,7	3,2	23,0
2000	4,1	40,4	8,1	9,5	6,9	31,0
2010	5,7	42,4	8,5	15,5	5,7	22,1
2012	5,7	37,9	9,7	16,4	6,2	24,1

The food security of the country is estimated rather low – about 2/3 needs for the food are imported. In 2005 only the USA exported to Venezuela of agricultural products for 347 million dollars.

Table 2

Number of animals in Venezuela, 2011

ANIMAL	NUMBER, HEADS
Cattle	12678340
Pigs	2787338
Goats	1057056
Sheep	600988
Buffalo	225790
Poultry	96565156
TOTAL	113914668

Resource:http://www.avn.info.ve/contenido/277-millones-hectáreas-para-sembrar-alimentos-registró-vii-censo-agrícola
http://censo.mat.gob.ve/

The crop and animal production of Venezuela are shown in tables 2-3.

Table 3

Crop production, 2011

Crops	Area, ha
Cereals (rice, sorghum, maize)	61.120
fruits	48.224
Horticulture (onions, pepper, tomatoes)	11.298
Tubers (batata, potato y yucca)	27.622
Legumes	11.371
Technical crops (cotton, sunflower, palm y soya)	2.549
Tropical crops (cacao, sugar cane, coffee).	81830
TOTAL	244014

Resource: http://www.avn.info.ve/contenido/277-millones-hectáreas-para-sembrar-alimentos-registró-vii-censo-agrícola

Venezuela has natural and mineral resources, the big area for production of agricultural products that is base for development of effective agriculture. Nevertheless, there is a need of input of new methods of the organization, planning, management, and introduction of new technologies for production of agricultural goods.

The Government of Venezuela developed the program of development of agriculture for development of agriculture, one of which measures is granting the credits to the citizens of Venezuela interested in development of production of food. The government expects that demands of agricultural and livestock producers will be more directed on innovative projects of development of agrarian production. Also the Government of Venezuela actively expands partner programs with the developed countries of the whole world for improvement of agro-industrial sector.

References

Census Bureau of U.S. Department of Commerce [URL: http://www.census.gov/population/international/data/countryrank/rank.php, date of visit 20.03.2014]

Official website of Food and Agricultural organization [URL: http://www.fao.org, date of visit 20.03.2014]

Official website of MERCOSUR [URL: http://www.mercosur.int, date of visit 20.03.2014]

Makarova E.P., Makarov P.P. Modern Problems of Agrarian Economics. Moscow RUDN, 2013. - 134 p.

27,7 millones de hectáreas para sembrar alimentos registró VII Censo Agrícola [URL: http://www.avn.info.ve/contenido/277-millones-hectáreas-para-sembrar-alimentos-registró-vii-censo-agrícola, date of visit 20.03.2014]

Makarova Ye.P., F.Molina Selskoye khozyaystvo v narodnom khozyaystve Venesuely / «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.317-319

Molina F.Roa, Makarova Ye. P. Selskoye khozyaystvo Bolivarianskoy Respubliki Venesuela/Upravleniye i ekonomika agrobiznesa: Sbornik trudov / Pod redaktsiyey k.p.n. Yelbayeva Yu.A., k.e.n. Makarovoy Ye.P. – M: Izd-vo RUDN, 2014. – s.134-139

MODERN TRENDS IN LIVESTOCK PRODUCTION IN THE RUSSIAN FEDERATION

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In general, current trends of agricultural development in the Russian Federation correspond to changes on a global level. Recently , the Russian agricultural market has been a gradual recovery of the sector after a significant decline in production, which began with the collapse of the USSR. However, it should be noted that the industry recovery trend was broken in 2012, during which there was a decline in agricultural production due to adverse weather conditions, as well as uncertainty has arisen in connection with Russia's entry into the WTO.

During 2013 imports of agricultural products, raw materials and food increased by 3.7%, but 12.4% decrease in import of meat and meat products. Also there was a decrease of 5.7% of imports of poultry meat (excluding data on trade with Belarus and Kazakhstan), the supply of broilers from the USA decreased by 2.5%.

The main segments of the livestock in Russia are poultry, pig and cattle ranching. Distribution of production between products of these segments is shown in Figure .1

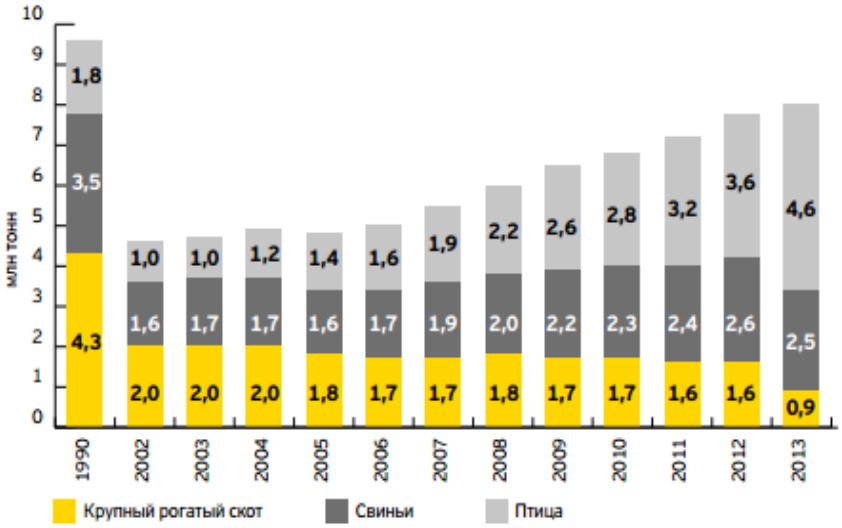

Figure 1 - Production of major livestock products (carcass weight).

Despite the steady growth of the Russian livestock, which is observed since 2002 due to the segments of poultry and pork, the overall level of production has not reached the 1990 yet. The essential factor in the development of animal husbandry in the period since 2002 is the state support of meat industry, including such forms of import regulation as tariff and non-tariff measures, many of which have been revised with Russia's entry into the WTO.

Prior to Russia's accession to the WTO, pork production was one of the most profitable segments: EBITDA margin of the major players in the market exceeds 40%. The growth of imports, which began as a result of significant weakening of disincentives, led to a decline in pork prices in the Russian market. By May 2013 meat fell by 40%. Lower prices for pork in the Russian market was partly the result of the simultaneous introduction of new production capacity of large pig farms in the 300-400 tones with the absence of growth in demand from refiners. However, in summer, the restoration of the market and the price of pork began to grow. By the end of 2013, the value of live pigs for slaughter returned to he last year level. The current recovery in prices contributed to a number of reasons, among them - to impose restrictions on the import of Russian meat containing ractopamine, as well as African swine fever, which led to the reduction of livestock on farms and smallholdings. In general, in the end of 2013 the profitability of pig farming on comparison with the beginning of the year has increased.

Segment of poultry production continues to show steady growth, 13% in quantitative terms in 2011 and 2012. The consumption of poultry meat also increased. In 2012 its share of the total consumption of meat accounted for more than 40%. In the first half of 2013, the consumption of this type of meat was 13.2 kg per capita (for example - the consumption in the same period last year was 12.5 kg). The main factor for the growth of popularity of poultry meat is a more affordable price compared to pork and beef.

In 2011-2013 decline in beef production continued. While in 1990 the share of beef in total meat consumption accounted for 43%, by 2012 this index decreased to 25%.

According to Rosstat, 62% of the beef production accounted for by private households. Industrial production of beef is a little over 32% and the ratio is not changed over the past years. At the same time in other segments of the livestock share of industrial production has been growing steadily. Low share of industrial production in the segment of beef production does not allow it to be competitive on a par with imports.

Until now beef production in Russia as a whole remains a byproduct from the production of milk.

In view of these developments on the market livestock analysts

consider forecasts of further development of the industry. Thus, according to BMI pork production in Russia in the next five years will grow an average of 3%. In the 2016/2017 agricultural year it will be 2.4 million tones (meat yield). Poultry production will grow most rapidly - by 64.5% over the same period to the level of 2011/2012, in the context of sustainable domestic demand and government support for the organization of exports (up to 4.6 million tones of meat per year in 2016/2017). The most pessimistic outlook for the segment of beef production - reducing the amount of meat produced by 9.8% compared to 2011/2012.

Slow the growth of the market will contribute to the fact that the average meat consumption per capita in the Russian Federation approached the recommended rate - 75 kg / year. According to the Ministry of Agriculture, in 2012, the consumption of meat and meat products per capita has increased as compared to 2011 and amounted to 74.1 kg.

The prices of most agricultural commodities are highly volatile. This is associated with the traditional seasonality of their markets, as well as other fundamental factors, including the following:

- Production volumes are influenced by weather conditions, pests, diseases of plants and animals;
- Low elasticity of prices for the products leads to the fact that in order to achieve market equilibrium after a sharp decline offers there is a significant price correction;
- Changes in the volume of production requires a significant amount

time - accordingly, there is a time lag between changes in prices and changes in demand.

In addition, the price is influenced by market trends and external factors, such as the expansion of economic borders and the prioritization of the State.

COMPREHENSIVE ANALYSIS OF INNOVATIVE INVESTMENT PROJECTS

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In most cases, only aggregated financial indicators such as NPV, IRR, PBP are used in practical analysis of innovative investment projects.

In some cases, a number of technological and economic indicators that allow us to study some aspects of the project are used.

According to the author in addition to these aspects of the project other units such as market analysis, legal analysis, environmental analysis.must be treated.

In the absence of expertise in the project team relevant professionals in these areas should be involved. In small companies, especially in the initial stages, where there is no financial ability to attract specialists, employees often take some responsibilities for several jobs and combine several positions such as CFO, accountants and marketers.

But even when the experts from outside are involved a clear analysis algorithm should be, at least for a competent job of formulating the structure and questions for experts and specialists.

In Russia, at the moment there is no comprehensive analysis algorithms of such projects and the author engaged in the design analysis for the past 15 years, developed such algorithms, published in a series of scientific papers and is now planning to publish a monograph reference book for entrepreneurs.

Some aspects of this analysis, the author presents in this article in block form in the table below.

The name of the block	**short description**	**Indicators and criteria**	**Conclusions output data for the model**
1. The initial selection of projects in accordance with established criteria.	Consideration of the various projects on predefined criteria.	1. The amount of the project; 2. Branch of the project; 3. The value of equity.	Allows you to filter out the projects at the initial stage of consideration.
2. Marketing analysis.	Analysis of market products, market analysis, analysis of competitors, customers, potential market segments, etc.	1. Volume of the market; 2. Market share; 3. The dynamics of the market; 4. Provision of product sale 5. The dynamics of growth / decline in demand; 6. The emergence of new competitors; 7. Opportunity to enter new markets.	Prediction of marketing costs, the forecast of changes in commodity prices, demand, market share, market size, etc.
3. Production analysis.	Identification of strengths and weaknesses of the production process, the determination of the volume of production, analysis of the production environment.	1. Availability of raw materials; 2. The proximity of consumers; 3. Skilled workers; 4. Network engineering; 5. Upgrade costs.	Forecast of production and required labor, the definition of production capacity and space.
4. Analysis of Resources.	Analysis of all types of resources required for implementation, the definition of types and sizes of resources for the project.	1. Employee Motivation. 2. Interchangeability of labour force 3. the right location. 4. The provision of infrastructure. 4. Availability of the required quality and affordable raw materials.	Agreement with all participants of the project types and sizes of resources, costs of producing, finding suppliers of raw materials.
5. Legal analysis.	Analysis of the legislative framework of the project, the study of practice on contentious issues in the implementation of the project. Verification of intellectual property and other titles, etc.	1. Regulatory Compliance; 2. Presence of contracts and project documentation;3. The number and size of the possible negative consequences of non-compliance with contracts.	The definition of the necessary documentation and contracts with all parties of the transaction, the analysis of the consequences for non-compliance.

6. Financial analysis.	Analysis of financial and economic activity of the enterprise, the definition and calculation of key indicators and criteria for defining the possible investment	1. Ensure the financial sustainability of the enterprise. 2. Providing of liquidity of enterprises; 3. Return on sales (assets); 4. Calculation of complex investment indicators (NPV, IRR, PBP, DPBP).	Definition of the basic parameters of the project, the coordination of all project participants (if necessary - completion of the project).
7. Risk analysis and analysis of economic security.	Analysis of all possible risks and negative consequences for the whole project at all stages of its implementation.	1. Marketing risks; 2. Production risks; 3. Industry risks, etc.	Identification of possible risks and measures for their prevention and elimination, determination of the amount for such events.
8. Innovative analysis.	Conducting an innovative analysis of the project, determination of the degree of innovativeness of the project, the calculation of indicators characterizing it innovation of the enterprise.	1. Degree of innovation of the project; 2. The effectiveness of various aspects of the implementation of the project; 3. The effectiveness of innovation; 4. The effectiveness of innovation application	Calculation of innovative projects, matching efficiency in the use of innovation goals and objectives of the project as a whole.
9. environmental analysis.	Realization of an environmental analysis, search of all available information about ecological status of the project area, the analysis of the impact of the project on the environment of the region	1. Emissions; 2. The use of modern technologies; 3. State of the environment after the project; 4. The costs of measures to improve the environment; 5. Compliance with the project environmental regulations.	Calculation of the effect of the results of the project on the environment, an analysis of the impact of preventive measures on the environment, the feasibility of their implementation.
10. State and social efficiency of the project.	Analysis of the consistency of the results of the project priority areas of the state innovation policy, the importance of the project for the region and for the country as a whole.	1. national importance; 2. budget efficiency; 3. The social significance; 4. Compliance with national interests.	The calculation of the main indicators of national importance of the project, coordination of the project stages with the state authorities.
11. Industry Analysis.	Analysis of industry-specific features of the project.	A selection of major industry factors, multiples.	Comparison with the industry, the company counterparts.

PRIORITY DEVELOPMENT OF AGRICULTURAL PRODUCTION AS A NECESSARY CONDITION FOR THE DEVELOPMENT OF THE RUSSIAN ECONOMY

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Priority development of agriculture and the agro-industrial complex is one of the most important problems for Russia. This issue is most acutely manifested in an unprecedented pressure and the introduction of political and economic sanctions against the Russian Federation by the United States of America and the European Union.

Supply of cheap agricultural products from Europe to Russia sharply decreased as a result of retaliatory Russian sanctions. This led to a sharp rise of food prices.

In this regard the development and implementation of the state program from 2015 to 2020 for the development of agriculture and regulation of markets, aimed at maximum import substitution becomes a high priority for the Russian government.

Obviously that the country which is not providing its population with food essentials, risks being not only in economic, but also in political dependence.

Due to the nature of agricultural production, it has high riskiness directly dependent on climatic conditions. In Russia, almost 2/3 of the territory belongs to the zone of risk farming, which creates serious obstacles to the efficient operation of rural producers.

If we talk about the advantages of the Russian agricultural sector, compared to most countries, they include a good resource security. Russia has vast land resources, deposits of various minerals, energy sources, despite the riskiness, quite acceptable for agricultural production and climatic conditions and also sufficient human resources.

Nevertheless, the Russian manufacturers do not have equal competitive conditions with European manufacturers. Products manufactured in the EU, very seriously subsidized by the state. We can not talk about any increase in the competitiveness of Russian producers with the current level of bank interest rates on loans constituting from 18 to 22% in Russia and from 0.5 to 2.2% in Europe. In order to provide the necessary level of profitability, the Russian government should provide all kinds of support to rural producers, as well as clear and transparent tax policy.

Understandable and acceptable rules of the game for the business will be able to provide the inflow of investment in agriculture, despite the long payback period in this field. First of all, it should be a reduction in lending rates, which are the main incentive for the development of production.

Due to the constant rise of prices for fuel and lubricants, electricity and other logistical resources consumed by agriculture, the cost of agricultural products is also growing. As a result, the purchase prices often do not cover production costs.

At present, Russia remains a country with commodity-dependent economy. All the efforts of the government and business should be directed to the creation of the country's agricultural economy. Developed agro-industrial complex determines not only the socio-economic situation in the society, the level of food security of the state, but also the condition of the full potential of the economy. Agricultural products covered public demand for consumer goods by almost 75%. About half of the consumption of the average Russian family accounts for food. Under sustainable condition of the economy, a farmer employs seven or eight workers in other industries with wages much higher than in agriculture. Therefore, developing agricultural production, we will provide employment not only in this sector, but also create more workplaces and ensure sustainable development of engineering, chemical industries, construction and other industries.

Infrastructure development and production in rural areas, will lead to the consumers with decent wages. An increase of effective demand will lead to attract small and medium businesses in rural areas, which is the basis of the economy in the whole world.

Along with the increasing of number of large-scale agricultural production, which the experience of creation and operation Russia has since Soviet times, special attention should be paid to farm support, without which the agricultural sector will not be able to overcome the protracted crisis.

Thus, the transformation of the agricultural sector should be based on evidence-based and balanced innovation policy, including the maximum use of natural and climatic, soil conditions, and other resources. Also this policy should include the introduction of scientific and technological achievements and advanced production experience, improvement of economic relations.

"RUSAGRO" IS A LEADING RUSSIAN AGRICULTURAL HOLDING: THE MAIN ACTIVITIES AND PROSPECTS

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Introduction. The world experience of the development shows the economic feasibility of the reasonable cooperation and agroindustrial integration in the industry. The integration allows companies to avoid the competition by converting of the external competition in the market to the internal mutually beneficial cooperation based on the training of partners and sharing of resources and markets. Presently a form of integrated agricultural formations is a group of companies created on the principles of the holding. Holding company (Holding) is a public company that includes the "Management Company" having the controlling shareholder and/or the shares of subsidiaries and the affiliated companies. Agricultural holding is the integrated company that includes a whole range of the industrial, financial, administrative units engaged in the production, processing and marketing of agricultural products. The practice shows that such companies quickly adapt to market conditions, have long-term interests and the ability of attract investment.

Currently, 25 agricultural holdings work in the Moscow market. One of the leading Russian agricultural holding is RusAgro. On the food market the RusAgro group holds a leading position in Russia and is one of the largest importers and processors of raw sugar, the largest producer of lump sugar, the second largest sugar producer, the largest producer of fat products, the fourth largest producer of pork. The majority of enterprises of RusAgro are in Tambov and Belgorod regions. There are six sugar factories and sixteen pig farms. Oil Extraction Plant and fat factory is located in Samara and Sverdlovsk regions. The total agricultural area is 462,900 hectares. The major competitors of the Company in the sugar business are the agricultural holdings "Razguliay", "Promideks" and "Syukden."

The Aim: To evaluate the activity of the RusAgro on the Russian market in 2014 based on an analysis of revenues and to analyze the prospects for further development of the Company.

Analytic base: the Annual Report of RusAgro of 2013, materials of online resources: AGROXXI, site of RusAgro and others.

The Results: Analysis of the data indicates that 2014 have been record one for the RusAgro in terms of production and profits. The revenue from sales increased by 57% and reached 65.7 billion rubles and the RusAgro becoming the leader on the Russian market among the agricultural holdings.

Analyzing the success of the Company in 2014, the analysts believe that this is due to the high price of pork in last year and grown demand for cane sugar in Russia. Because of the national currency's fall in the second part of the year the prices in roubles for pork were proportionally increased to the prices for imported counterparts. For example, according to the data RusAgro in 2014 the average price of pork increased by 49% and became 96.9 thousand rubles per ton. The sales of pork increased by 60% in 2014 and reached 167.8 thousand. Tons. Commissioning pig complex "Tambov bacon" played an important role in increasing sales of pork. In 2012 - 2013 in response to the dynamics of the market, the Company invested this direction of activity. As a result, in 2014 the revenue of RusAgro from sales of pork has increased by almost 2.5 times (140%), reaching 17.81 billion rubles and accounted for 27% of total revenue in 2014 (Figure 1).

The main competitors of RusAgro in the meat business are the companies of "Cherkizovo" and "Miratorg". Last year, their earnings were also very high due to the favorable situation in the Russian market, but somewhat lower than RusAgro. The net profit from the sale of pork was 16.4 billion rubles in the "Miratorg" and 13.3 billion rubles in the "Cherkizovo".

It should be noted that in the present conditions, the development of the Russia agro-industrial complex is a strategic task related to the need to ensure of Food Security of the state (Makarova, 2013). According to the State Agriculture Development Programme for 2014 - 2020 years, the financing of this sector of economy will be increased by almost 2 times (Savelyeva, 2015). In response to the high competition from other agricultural holdings, the Company also continues to develop. Currently, the Russian government has approved the project of RusAgro on the construction of the swine complex in the Far East of Russia. Company plans to invest the construction of seven swine farms in the region with total production capacity of 79 thousand tons of pork per year. The project also provides the construction of animal feed production complex with capacity of 240 thousand tons per year, the grain elevator with 120 thousand tons, the slaughter hall with capacity of 125 heads per hour, the salvaging department and motor company. The start of the project is scheduled for 2015, with the designed capacity in 2018. To implement of the project RusAgro already has 26 thousand hectares of land in ownership and in lease in the Ussuri and Mikhailovsky regions of Primorsky Krai.

At the same time, the company's success is based not only on the production development strategy and good market conditions, but successful marketing policy. After the 1998 crisis RusAgro became the first company that started to advertise their goods, in particular sugar. So, Sugar Trading Company that belongs to RusAgro, by using the advertising agency Depot WPF Brand & Identity, launched the first Russian sugar brand - "Chaykofsky." Brand launch costed the company $ 50,000. This sum included the creation of a brand, contract with the advertising agency, as well as the 330 stickers that were placed in the Moscow metro. The figure 1 shows that in 2014 the company's sales in the sugar division increased by more than 32% (in absolute terms - 22.48 billion rubles) that amounted to more than a third (34%) of the total revenue of the group.

The RusAgro Group also intends to become the most expensive Russian agricultural holding and to reach capitalization of $ 2.125 billion. March 28, 2015 before the IPO on the London Stock Exchange, the Cyprus Ros Agro being the head company of the RusAgro, defined the price range for GDR of $ 14.5 - 18.25 per share. The organizers of the offering were defined Alfa Capital Markets (Alfa Bank), Credit Suisse and "Renaissance Capital". Pricing is planned for April 8. RusAgro intends to use the money obtained from shares placement for the modernization and expansion of the production capacity, the financing of transactions for the integrated growth and general corporate purposes.

Conclusions: The successes of RusAgro in 2014 show that the agricultural holding is one of the most successful Russian companies focused on the expansion of its production and on the use in their work the latest achievements of science, technology, the management and marketing. These data allow us to predict the growth of economic value of the company in future. In 2014, the revenue from sales increased by 57% and reached 65.7 billion rubles. To date the RusAgro becomes the leader on the Russian market among the agricultural holdings. The success of the Company was

formed through the production development strategy, the good market conditions as well as the successful marketing policy.

References:

1. Makarova E.P. Innovation and Food Security / «Innovacionnye processy v APK»: Sbornik statej V Mezhdunarodnoj nauchno-prakticheskoj konferencii prepodavatelej, molodyh uchenyh, aspirantov i studentov. Moskva, 17-19 aprelja 2013 g.-M.:RUDN, 2013.
2. Savelyeva I.E., Shamkaeva E.I., Makarova E.P., Sudnik E.V. Comparative evaluation of the state concepts of the AGRICULTURAL DEVELOPMENT // // Sovremennye problemy nauki i obrazovanija - 2015.-№6. (prilozhenie "Jekonomicheskie nauki"). - C. 4.
3. Web-site of Rusagrogroup. URL:www.rusagrogroup.ru/en/ (date of visit 01.03.2015)
4. Web-site of Journal AgroXXI. URL:www.agroxxi.ru (date of visit 01.03.2015)
5. Makarova Ye. P., Makarov P.P. How Subprogram “Technical and Technological Modernization, Innovative Development” will help Russian Agriculture /Upravleniye i ekonomika agrobiznesa: Sbornik trudov / Pod redaktsiyey k.p.n. Yelbayeva Yu.A., k.e.n. Makarovoy Ye.P. – M: Izd-vo RUDN, 2014. –c.165-168

THE BASIS OF SHARES VALUATION

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Valuation of shares, as an independent direction appeared in the second half of XIX and early XX centuries. However, as an independent scientific discipline emerged in the 60-ies of XX century when existing theoretical approaches were summarized. Evaluation is seen as an independent scientific discipline, which has its own conceptual apparatus, principles and methods since that time. On the other hand, valuation is an independent activity aimed at generating income.

There are various definitions of valuation of the shares. For example, experts of independent valuation company "ABC-Active Business Consulting" understand under the valuation of shares "the study of the share of the company, which accounts for the reporting stake." [1] According to experts of the Center consultation and valuation, the valuation of shares is one of the species business valuations. Experts of the company "Real-Audit-Consulting" under valuation of shares understand their market value estimates for different purposes.

As an activity, shares valuation as business valuation, valuation of intangible assets, valuation of machinery and equipment has its own legal framework. Documents regulating the valuation can be divided into three major groups[2]:

- international legal documents;
- national legal documents;
- sectorial legal documents.

International legal documents are presented by the International Valuation Standards and developed and adopted by the International Property Valuation Standards Committee in 1985. However, the first four standards come into force only 24 March 1994. During this period, the main provisions of the coordination were carried out between the 40 participating countries of the International Property Valuation Standards Committee. They reveal such things as land and property, real estate, cost, they determine the principles of the most efficient use and they consider other important provisions. The concept of market value in use at the international level is introduced in International Valuation Standards 1. It is defined as "the calculated value - the amount for which the property shall pass from hand to hand as at the date of valuation between a willing

buyer and a willing seller in an arm's-length transaction after adequate marketing. It is assumed that each of the parties act competently, prudently and without compulsion". The document gives the individual elements of this definition. Also in the international standards 1 there is relationship of valuation with the accounting standards. There are requirements on the drafting of the valuation report.[3]

In the International Valuation Standards 2, we introduce other types of value, such as: use value, investment value, the value of a going concern, a safety value, the taxable value, the residual value of its other types

This document sets out the duties of the appraiser in determining the non-market value. For example, the appraiser must: identify the assessed value, determine the rights associated with it, determine the goals and principles of valuation identify all the circumstances and limitations that make it difficult to valuate, and others. As in the International Valuation Standards 1, in the International Valuation Standards 2 requirements for the valuation report are formulated.

The third standard provides guidance of use of its results for valuators in the financial statements. It describes the basic elements that the appraiser must disclose as a result of the evaluation. The main elements requiring disclosure include: valuation base, form of ownership, legal documents used by the appraiser in the implementation of valuation procedures, assumptions and limitations. The duties of the appraiser and the requirements for the valuation report are disclosed.

Standard number four sets differences in the valuation of loan security valuation for financial reporting purposes. This need for evaluation may occur when it is required to determine the value of property valuation for the credit institution. And as the object of valuation are the loans, mortgages or debt obligations

The main legal documents governing the valuation at the national level, on the territory of the Russian Federation are: the Civil Code, the Arbitration Procedure Code, the Tax Code of the Russian Federation, federal laws "On the Securities Market", "On appraisal activities in the Russian Federation" "On Joint Stock Companies" and "On Insolvency (Bankruptcy)" corresponding to the Government Resolution of Russian Federation. Valuation of securities is regulated by special regulations: Ministry of Finance, the Ministry of Taxation, the Central Bank of the Russian Federation, the Ministry of business support and insolvency (bankruptcy), the legislative and executive bodies, as well as state standards of the Russian Federation and international standards of valuation activity,

Among the key documents governing the valuation at the sectorial level documents developed by industry associations of undertakings are included. For valuation activities such organizations are: RSA - Russian Society of Appraisers and SRAA - Self-Regulatory Association of Appraisers. SRAA on the Russian valuation market is represented by two organizations: the self-regulating association of appraisers "Community of appraisers" and organization uniting on a voluntary basis of evaluators.

The system of appraisers' certification and appraisal firms' certification based on the legislation of the Russian Federation are developed. Currently, the system of normative documents of the RSA acts "Regulations on the skill levels of full members and RSA Certification Commission, approved by the decision of the Conference of RSA establishes the basic conditions under which it is possible to assign each of these skill levels, the procedure of attestation commission of RSA, the basic requirements for the valuation reports are showed.

Legal documents that we have considered define the principles of shares valuation. It should be noted that they are common to other types of valuation, for example, business valuation, and valuation of intangible assets. The basic principles, which the valuator must adhere to, are: independence in the valuation, professionalism that is to use all the knowledge and skills in the valuation, objectivity, that is, the absence of self-interest in the valuation and others.

However, the valuation would not be possible if the valuation is not seen as a separate branch of science, whose main task is just to develop new approaches and methods and principles

of valuation of equity securities, in particular, identifying the main factors that influence this or that kind of value.

Considering the shares valuation as a scientific discipline, we cannot ignore the basic theories and laws that are used in the implementation of the valuation procedure. The main theories that underpin the shares valuation are: the theory of the net present value, valuation model of long-term assets, the theory of capital market efficiency, reflexivity theory, fair play theory, the theory of asymmetric information, the theory of investment risk and other theories. Fundamental and technical analyses are also conceptual approaches to evaluation.

In our opinion, the laws used in the implementation of this type of activity can also be paid attention. Among the basic laws adopted in the calculation, the most important are the following: the law of demand, which reflects changes in demand for the shares, depending on changes in the price; the law of supply, which reflects the change offers, the law of marginal utility, according to which, the marginal utility of each subsequent issued and purchased securities decreased, the law of factors of production, reflecting the struggle between issuers of investment and investors.

During the study, the researchers identified factors with the greatest impact on the share price. A set of these factors varies and depends on the type of value that the appraiser defines. The evaluation process can be defined one of the following values of the enterprise: nominal, emission, discounted account, balance sheet, the exchange rate, the average auction, inflation, stock market, collateral, conversion, and other basic values.

In general, all factors which influence the value can be combined in several major groups:

- internal and external;
- macroeconomic and microeconomic;
- improbable, probable and random..

Thus the same factor according, such classification, can fall into the first and second and even a third group. Factors that affect the stock market cannot form a group of external factors. Among the main ones are: inflation, economic crisis, change of the vector of economic development and others. Unlike external, internal factors associated with the development of the stock market, have an impact on this development. The key ones are competition and market conditions. Macroeconomic factors have an impact not only on the processes related to the assessment, but also on the economic life of society. The main ones are: government policies and actions of some of its institutions. Microeconomic factors are closely related to the stock market or its participants. They cannot influence the processes taking place in other areas of the economy, but have a strong influence on the Issuer, brokers, investment companies, working with a particular security. Depending on the probability to influence all factors can be classified as stochastic factors, the impact of which is expected by main participants of the stock market, it is unlikely - factors which may attack and casual - factors, the occurrence of which is not expected by the market. The latter describes the riskiness of investments in this or that action and characterizes the overall investment risks related to security. Among these factors are: the probability of changing the political system in the country, the instability of social or economic status, the emergence of new legal documents, a change in accounting and interest rates, incorrect assessment of the main qualities of the shares, and other insider

References:

1. David M. Bishop, Frank Ch. Evans Valuation for M&A: Building Value in Private Companies. – Moscow, Alpine Publisher, 2015- 336 p.

2. Asvat Damodaran Investment Valuation: Tools and Techniques for Determining the Value of any Asset – Moscow, Alpine Publisher, 2014 – 1316 p.

3. Jesse Russell Datar–Mathews method for real option valuation – Moscow: Book on demand, 2013 – 100 p.

ASSESSMENT OF THE RISKINESS OF GRAIN PRODUCTION IN THE VOLGA FEDERAL DISTRICT

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Introduction. Modern economic science has not developed a unified approach to such multifaceted concept as a risk. Each author, within the scope of scientific interests understands something of their own. According to Mammon N.V. and Lihnovichu Y.Y. existing approaches to the concept of risk can be divided into two large groups. [6] The first group is based on the subjective awareness of the risk. Its supporters are Abchuk V.A., Algin A.P. Belokrylova O.S., Granaturov V.M., Zozulyuk A. Lapusta M.G., Malashihina N.N., Polovinkin P. Sharshukova L.G. ., Shahs V.V. According to their opinion the risk is either "the possibility of deviation from the expected results of a decision" or "decision, action, behavior, attitudes in the face of uncertainty." [6] Kudryavtsev A.A., Porphyria B.N., Chernova G.V. are proponents of the second group. At the heart of this group there is an objective understanding of risk. According to them, the risk is "the possibility of adverse events of loss."[6]

In our study, we rely on the first group of approaches and views the risk as the possibility of deviation from the specified performance. Thus, the purpose of the study was to evaluate the riskiness of production of grain crops in the Volga Federal District.

Research methods. We used statistical data on the gross production of cereals in the Volga Federal District in 1995-2013 years.

Assessment of the riskiness held in two phases. At the first stage we built diagram of dissipation of gross production of grain

At the second stage, the estimation of variability of series is carried out. It was realized by calculating both relative and absolute figures:

- standard deviation, which is the square root of the variance [1]:

$$D = \sqrt{\sum (x_i - \bar{x})^2}$$

D – standard deviation;

x_i feature value;

$\bar{x}$ the average characteristic value (mathematical expectation);

n - the number of observations.

Among relative we used:

coefficient of variation that is[4]:

$$V_d = \frac{D}{\bar{x}}$$, where

V_d – coefficient of variation;

D – standard deviation;

$\bar{x}$ – the average value of the characteristic

The results of the study. Figure 1 shows a histogram of dispersion for crops in the Volga Federal District.

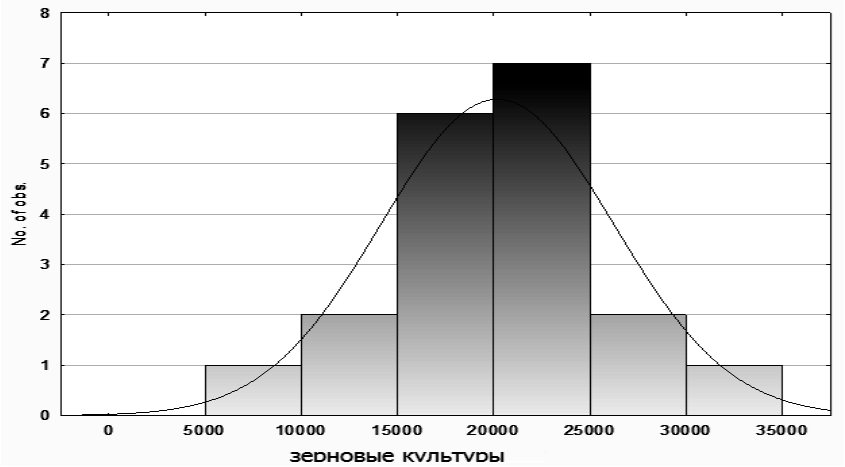

Figure 1 Histogram of dispersion of grain production in the Volga Federal District
Source: Rosstat

After analyzing this graph, we can draw the following conclusion. 13 of the 19 observations of the scattering of grains are in the range of 15 to 25 thousant tons, that means the probability of getting a crop in this interval is 68%.

As a result of our calculations, we obtained the following figures. (Table 1).

Table 1

Indicators of variation of grain production of the Volga Federal District

Region	average value	standard deviation	coefficient of variation,%
Volga Federal District	20189,58	6035,284	30%
Republic of Bashkortostan	3077,458	1072,426	35%
Mari El Republic	268,3684	105,9066	39%
The Republic of Mordovia	783,1158	251,7026	32%
Republic of Tatarstan	3928,663	1381,5	35%
Udmurtian Republic	618,3053	174,7667	28%
Chuvash Republic	480,1684	171,575	36%
Perm Region	511,5947	150,4014	29%
Kirov region	734,5	256,5244	35%
Nizhny Novgorod region	1047,558	255,4725	24%
Orenburg region	2458,605	986,223	40%
Penza region	1027,847	314,6719	31%
Samara Region	1435,8	506,7758	35%
Saratov region	2921,326	1124,073	38%
Ulyanovsk region	896,3053	315,4751	35%

Source: calculated by the author

The table shows that the highest coefficient of variation has cereal production in the Orenburg region. Therefore it is in the Orenburg region cereal production is more risky. The smallest value stated in Udmurdskoy republic.

Thus, as a result of the research the possibility of applying statistical methods express - evaluation of the riskiness of crop production on materials of the Volga Federal District is shown.

References:

1. Bochenina M.V. Burova N.V Eliseeva I.I. Mikhailov B.A. Statistics. - M.: Yurayt, 2012 - 496 p.
2. Golubev S.V. Yusupov G.L. Management of production risk of agriculture organization based on model of optimization of production.// Bulletin of the Ulyanovsk State Agricultural Academy №3, 2011 - S.121-124
3. Gulyaeva T.I, Tryastsina N.Y., Sidorenko O.V. Yakovleva N.A. Evaluation of the stability and efficiency of crop production in the Oryol region. - Journal of Oryol State Agrarian University, 2009.vol.21 №6. -S.14-19.
4. Ivchenko Y.S. Statistics - M .: RIOR, Infra-M, 2011 - 384 p.
5. Koshechkin Y. Barabanova S.N. Risk management in agriculture - as a factor of growth and sustainability of agricultural production. - 2009. №14 - P. 313 - 314.
6. Mamon N.V., Lihnovich Y.Y. Theoretical approaches to the definition of the concept of "risk" - Collection of scientific works of Russian Universities "Problems of Economics, Finance and Production Management» №26, 2009 - P. 140-145.

THEORETICAL APPROACHES TO THE CONCEPT OF INVESTMENT ATTRACTIVENESS OF THE AREA

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Introduction. Ratings of investment attractiveness of companies and territories are more and more often published in economic journals. However, there is no single approach to the concept of investment attractiveness. The aim of this work is to systematize the main approaches to such multi-faceted concept.

Results of the study. The study of the investment attractiveness began in the 60-ies of XX century with a study of Harvard School of Economics. All currently existing approaches, in our view, can be divided into two large groups. The first group is studying the investment attractiveness at the macro level, ie at the level of territory, country and group of countries of the world. The second - at the micro level, ie at the level of the individual enterprise or group of enterprises.

Works of Babushkin B., Gus'kova T. Ivanova, E. Krylova, Savenkova V.,.Savchuk V. Sevryugina Yu., Tryasnitsakaya N., Schibrischa K are devoted to study of investment attractiveness at the micro level.

So, Babushkin B. believes that the investment attractiveness is a state of organization, in which a potential owner of capital (investors, creditors, lessor, etc.) has a desire to go to certain risks. [1] According to E. Krylov investment attractiveness is an economic category, "characterized by an effective use of the property of company, its solvency, financial stability, the ability of the enterprise to self-development on the basis of increasing the return on capital, technical and economic level of production, product quality and competitiveness." [2] Ivanov thinks that the investment attractiveness of the company is a combination of economic and financial indicators of the company, determining the possibility of obtaining the maximum profit from capital investments with minimal risk. [3] Putiatina L. believes that investment attractiveness is the economic category, characterized by efficient use of assets of the enterprise, its solvency, financial stability, the ability to innovative development based on increasing the profitability of capital, technical and economic level of production, quality and competitiveness of products [4]. Savenkov E. identifies investment

attractiveness to innovative entrepreneurship. [5] Sevryugin Yu believes that the investment attractiveness is a "system of quantitative and qualitative factors, characterizing the effective company demand for investment. [6] In the same group we include researchers who consider the investment attractiveness of the individual activities of the company or its projects. Works of Aseev H., Ashikhmin A., Goncharenko S., Dezhnev D., Larionov A., Lukyanov A., Tairova T., Khrapova I are devoted to study of investment attractiveness of individual projects. Thus, under this approach, there is no consensus in the definition of such concepts as investment attractiveness.

Works of Belikh L.,Volodin E., Goncharov K., Ermakov G, Eroshina A., Nosirev A, Pronin A., Saporov B., Tretyakov A., Khokhlov A., Saffron A. are devoted to study of review of investment attractiveness at the macro level.

Belikh L. interpretes the investment attractiveness as "a ratio of the level of risk and rate of return." [7]

Vologdin E. believes that the investment attractiveness is "... a set of natural and geographical, socio-economic, political and other factors shaping investor presentation on the feasibility and efficiency of investment in facilities located in this region."[8] Goncharov identifies the investment attractiveness with the investment climate and understands it as "existing in the area conditions and opportunities for doing business." [9]

Pronin A. believes that "the investment attractiveness of the region is a system or a combination of a variety of objective evidence, resources, opportunities, causing the potential effective demand for investment in the country, region, sector" [10]

Tretyakov examines the investment attractiveness through "….a combination of various objective signs, facilities, causing the potential in aggregate effective demand for investment in the region." [11] As we have seen, there is no uni unique view of the concept among the adherents of this approach.

With the popularity of a systematic approach to the study of economic systems in the study of the concept of investment attractiveness a third level of study was formed - a study of investment attractiveness at the meso level, at the level of unifying the territory and businesses. Works of Valinurov L., O. Kazakov O., Mashkin V., Mozgoev A.. Roizman I., are devoted to this approach .[12]

For example, Valinurova L., A. Kazakov believe that the investment attractiveness is a "different set of objective evidence, properties, assets, capabilities of the system, causing the potential effective demand for investment." [12] Mashkin V. believes that the investment attractiveness is the presence of certain conditions, which determine the choice of the investor object for investment. Roizman I. believes that the investment attractiveness is a collection of various objective characteristics, properties, facilities, causing potential effective demand for investment in fixed assets.

We believe that the study of investment attractiveness should be carried out at the meso level, as the level of the unifying factors and micro and macro levels, and which can be more fully define the concept, under which we, as Mashkin V., understand some of the conditions that need to be taken into account. We also believe that the inclusion of any individual factors is insufficient. Comprehensive analysis of all factors affecting the investment attractiveness is necessary. But what are these elements?

Availability of three levels of study and a quantity of interpretations makes difficult to determine the main factors of investment attractiveness. Their number depends not only on the level of the study, but also on the scope of the investment object.

Modern economics divides all environmental factors into two large groups: the direct impact factors and factors of indirect effects. The first group is formed by: suppliers and contractors, customers, competitors, as well as legislation. However, Kuvshinov M sets them in a separate group of factors. We think that is not quite right. The second group includes: economic factors, political factors, socio-cultural factors, scientific and technical progress and international factors. We will not

dwell on the description of each individual factor, as their description can be found in any textbook on economics enterprise. There are various factors that have an influence at the level of the territory.

In the paper of Kohno P. and Kohno A. all factors are grouped into two major groups: the factors that characterize the investment climate and factors that characterize investment potential. The factors influencing the investment potential Kohno include environmental, consumer, industrial, criminal, legislative, resource-based, social, financial, economic, political, labor, infrastructure. Management, capital, labor, the ability to make a profit form the investment climate.

Reference:

1. Endovitsky D.A, Babushkin V.A Investment attractiveness of the organization .//Audit and financial analysis №2, 2005 - P. 225-230

2. Analysis of financial condition and investment potential: tutoral for students studying in the field: "Finance and Credit", "Accounting, analysis and audit", "World Economy", "Tax" / E.I Krylov, V.M Vlasov, M.G Egorova, I.V Zhuravkova. - M .: Finance and Statistics, 2003. – 191p.

3. V.A Ivanov, K.G Avakian Comparative analysis of methods of evaluation of investment attractiveness of the company / V.A Ivanov, K.G Avakian // Bulletin of Udmurt University. - 2010.- Vol.3. - P. 22-28.

4. Putiatina, L.M Evaluation of investment attractiveness of the company based on its economic potential [Text] / L.M Putiatina, M.Y Vanchugov // Ownership and Market. - 2005. - №6. - P. 21.

5. Savenkova, E.V. Economic methods of priority development of the investment business / E.V Savenkova. - M., 2004. - 113 p.

6. Sevryugin Y. Evaluation of investment attractiveness of the industrial enterprise .// Abstract of the thesis for the degree of Ph.D. -Izhevsk, 2004 – 27 p.

7. Belikh L.P. Financial analysis in the evaluation of investment attractiveness of enterprises. // Accounting №10, 1999 – P. 43-47

8. Volodin V.M Chernov L.A Efficiencyof management of defense enterprises under cyclic economy // Proceedings of the high educational institutions. Volga region. Social sciences. 2012. № 3.

9. Goncharov, A. Investment attractiveness as a factor in the development of rural areas // A.N. Goncharov // "FES Finance. The Economy. Strategy. "- 2012. - № 4. – P. 9-13

10. Pronin AS Management of the process of attracting investments in the region // A.S Pronin, - M .: RAGS, 2000 - P.45-48

11. Tretyakov, A.G Management of investment activity in the region: Author. Candidate of Science / A.G Tretyakov. - M .: RAGS, 2006. - 18 p.

12. Investing: a textbook for high schools / L.S Valinurova, O.B Kazakov. - M .: Wolters Kluwer, 2010. - 448 p.

13. Roizman, J. Dynamics of investment attractiveness and competitiveness of Russian regions investment in the medium term / I. Roizman, T. Bondoreva // Investments in Russia. - 2008. - №9. - P. 3-14

14. Kuvshinov M.S. Algorithms for the evaluation of the investment image of the organization / M.S. Kuvshinov // Vestnik SUSU -2007-№5-P. 60-68

INNOVATIONS IN CHINESE AGRICULTURE

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Agriculture is a vital industry in China, that gives employing to over 300 million farmers. Although the country posses only 10 percent of arable land worldwide, it produces food for 20 percent of the world's population. China ranks first in worldwide farm output, primarily producing rice, wheat, potatoes, tomato, sorghum, peanuts, tea, millet, barley, cotton, oilseed, pork, and fish. Such high records were due to innovations in agricultural science and technology which have become an essential driver to promote the development of agriculture and rural economy.

Over the six decades substantial results have been achieved in the development of China's agricultural science and technology that is summered up as following major aspects (Zhang):

1 The cultivation and application of high-quality breeds have substantially enhanced the supply capacity of major agricultural products such as grain.

2 The innovation, demonstration, extension and application of high-yield, quality, highly effective cultivation technologies and environmentally friendly technologies have enhanced the agricultural productivity and capacity for sustainable development.

3 The constant breakthroughs made in major animal and plant disease prevention and control technologies have greatly enhanced the capacity to cope with biological disasters as well as the level of disease prevention and control.

4 The rapid development of agricultural machinery and agricultural product processing technologies has enhanced the labor productivity and increased the added-value of agricultural products.

5 The development of modern agricultural high technology has improved the competitiveness of the modern agricultural industry.

6 The agricultural basic theory and measures have continued to make breakthroughs and enhanced the capacity and aftereffects of agricultural scientific and technological development.

7 The agricultural scientific and technological system and its conditional equipment have been continuously improved, laying a foundation and condition for agricultural science and technology.

The further development should be made in the situation when as a developing nation, China has relatively low sanitary and phytosanitary (SPS) standards for its agricultural goods. Excessive pesticide residues, low food hygiene, unsafe additives, contamination with heavy metals and other contaminants, and misuse of veterinary drugs have all led to trade restrictions with developed nations such as Japan, the United States, and the European Union [2]. These problems have also led to public outcry, such as in the melamine-tainted dog food scare and the carcinogenic-tainted seafood import restriction, leading to measures such as the "China-free" label.

Agriculture in China has transformed in the last few years, and will continue to modernize at rapid speed. It has to. In little more than a generation, the country has become a model for a world increasingly concerned with feeding 9 billion people by 2050. This transformation is based on long-term planning, consistent policies to encourage food production, and a willingness to embrace scientific advances.

The most recent innovation in Chinese agriculture is a push into organic agriculture. This rapid embrace of organic farming simultaneously serves multiple purposes, including food safety, health benefits, export opportunities, and, by providing price premiums for the produce of rural communities, the adoption of organics can help stem the migration of rural workers to the cities. In the mid-1990s China became a net importer of grain, since its unsustainable practises of groundwater mining has effectively removed considerable land from productive agricultural use.

The resources for increasing agricultural production are limited, especially bringing new lands into production. So they should be used with high efficiency. The higher yields must come through innovations within new varieties, better technologies, more efficient agricultural systems and so on. Competitive pressure and capital investment into innovation would be key success for foster agricultural production growth.

References

1. Zhang Lubiao. Innovations in Agricultural Science and Technology and Rural Development in China http://www.iprcc.org/userfiles/file/Zhang%20Lubiao-EN.pdf

2. Fengxia Dong and Helen H. Jensen Choices Article – Challenges for China's Agricultural Exports: Compliance with Sanitary and Phytosanitary Measures. Choices Magazine. 1st Quarter 2007, Vol. 22(1). Retrieved on 2012-02-14.

3. Makarova E.P., Makarov P.P. Modern Problems of Agrarian Economics. Moscow RUDN, 2013. - 134 p.

4. Makarova Ye. P., Makarov P.P. How Subprogram "Technical and Technological Modernization, Innovative Development" will help Russian Agriculture /Upravleniye i ekonomika agrobiznesa: Sbornik trudov / Pod redaktsiyey k.p.n. Yelbayeva Yu.A., k.e.n. Makarovoy Ye.P. – M: Izd-vo RUDN, 2014. –c.165-168

5. Abramova L.S., Kochneva M.V. Tendentsii na rynke pishchevoy produktsii i vzglyad v budushcheye «Innovatsionnye protsessy v APK»: Sbornik statey VI Mezhdunarodnoy nauchno-prakticheskoy konferentsii prepodavateley, molodykh uchenykh, aspirantov i studentov. Moskva, 16-18 aprelya 2014 g. -M.:RUDN, 2014. - s.213-215

NEW OPPORTUNITIES OF CHINA-RUSSIAN COOPERATION BASED ON THE "ONE BELT AND ONE ROAD" PROJECT

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Project background

In September 2013, President Xi Jinping first put forward the concept of building the economic zone of the Silk Road which is officially called "One Belt and One Road" Project - a huge economic cooperation zone stretching from China to Europe. It's not just a concept, fund of "Silk Road"-start-up capital to more than 40 billion dollars will be intended to stimulate trade and economic relations of various countries in Central and South Asia, such as the construction of highways, railways and airports. Ultimately, in the implementation of this project will involve 60% of the world's population. Guest what a big cake it will be and what it will bring between China and Russian- extremely important two parties of this project.

Current international situation of Russian and China

As you known, the economics of Russian has deteriorated as a result of the Ukrainian crisis and confrontation with the West since 2014, although the government increased public spending to support exports and industrial production in the final quarter of 2014, falling down oil price interacted with capital flight and lack of access to fund led to near 75 percent depreciation of the ruble against the U.S. dollar in 2014 despite repeated interest rate hikes and interventions in the currency markets by Russian Central Bank. At the first of 2015,the World Bank even forecasts it's

GDP growth for 2015 will reduce from -0.7 percent to -2.9 percent. How to change the worse economic situation really confused brain trust of Moscow.

For china, maybe not as good as it looks to, Washington tends to build a new trade organization which called Trans-Pacific Partnership in view of building new rule across Asian-Pacific area without China. Inner China, excess capacity and real estate bubble is a very dangerous signal in terms of lesson of Japan in the early nineties of last century. How to digest excess capacity and reduce the over-reliance of oil and gas resources urgently worried Beijing. Will China still hold a rising GDP at least 7% in 2015?

Project purpose and progress

If successful, it is possible that this is a business association of the countries of Central and South Asia may enter into competition with Atlantic business group in North America and Europe. Obviously, this is an opportune moment for China, declaring its influence in Asia. As a new trade and financial sources independent of the Western system, continuously nominating Beijing projects can meet approving attitude on the part of many developing countries.

In the east, "Economic Belt Silk Road" that are sent from China to Europe through Central Asia - in the city of Lianyungang, Jiangsu Province, has created logistical base of cooperation with Kazakhstan, within this framework of cooperation the railroad, established container transportation. In February, a movement of freight trains on the road linking China to Kazakhstan.

Kazakhstan became a transportation hub connecting the countries of Central and Eastern Asia. Following Kazakhstan next target should be the European Union, the largest trading partner of China. If it is possible to expand the logistics flow, leading to Europe through Kazakhstan or through a network of railways in Russia, it means that China will be able, in addition to sea routes of delivery, where the strong influence of the United States, open new paths for themselves logistics that, from the standpoint of national economic security is also very useful.

This concept also implies the fact that by the infrastructure construction of Chinese enterprises will be encouraged to go to the local foreign markets. Besides, Asian Infrastructure Investment Bank launched by Beijing seeking to push RMB international will really be a great blow to Washington.

What will changed in China-Russian cooperation

Mixed, containing both chances and challenges, is the prospect of participation in China-Russian cooperation.

Natural chance, already in use is through a Russian transit function of Chinese goods to Europe. In her weekly rail pass two or three staff from China. If necessary, Russia can turn your site into a modern transcontinental highway transport corridor powerful: to modernize its material resources and logistics. Intensive use of the upgraded highway can give Russia, in addition to growth in direct transit revenues, also an impetus to the development of surrounding areas.

For China, this corridor is the only land route to Europe. Alternative routes through Central Asia and the Middle East have not yet been laid as a whole. To turn it into a full-line, multi-billion dollar investments are required, as well as solutions to complex political and customs problems associated with crossing many borders.

China is ready to connect to the routing through Russia reliable route with high bandwidth.

The parties have agreed to explore a number of projects for the construction of high-speed sections of the transport corridor between Europe and Asia, and primarily on cooperation in the construction of the road from Moscow to Kazan, which has already signed a memorandum on cooperation in the field of high-speed rail. Thus, Russia, as the Chinese press, it is "one of the main participants" Economic Belt Silk Road. According to specialists of China, the cost of construction of the highway Moscow-Beijing could reach 350 billion dollars. But the travel time will be reduced from six to two days.

Russia has simply no alternatives to incorporation into the new Silk Road. The two “Soviet brothers” will definitely grow side by side.

SEED BUSINESS IN THE CONTEXT OF THE WTO

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Trade in seeds is a special kind of highly profitable agricultural business, gaining global transnational character. Over the past 40 years the international seed trade has grown 10 times and reached $ 10 billion, which is controlled by the 15 largest companies (Malko 2013). The rate of growth of trade turnover amounts at up to 25% on an annualized basis, which allows us to seed as the most dynamic sector of the world economy.

According to the Ministry of Agriculture of Russia domestic market of seeds is estimated at $ 4 billion, And import content of individual cultures reached 50% - 80% (vegetables), that suggests a certain food addiction.

Astrakhan region as one of the leading manufacturers of melons in the country is also experiencing similar problems, which negatively affect the final performance. With the high import dependence, the proportion of substandard sowing seeds for major crops reaches 30%, which realize its potential yield only 15-30% (Strategy, 2010).

Therefore, the State program of agricultural development and regulation of agricultural products, raw materials and food for 2013 - 2020 years has identified the need to provide quality seeds of major crops at least 75 percent of the market needs of the country, that will facilitate the development of domestic breeding. However, so far regional seed systems that improve the efficiency of the organization of this sub-sector crop are not formed.

The aim of the study was to identify the need for reserves of growth in horticulture through the development of more effective organizational, economic and management decisions in the field of seed.

Research tasks:

- Provide the conditions for the replacement of the existing seed by improved seeds due to the organization of seed production;
- Import substitution of seeds through the development of seed systems;
- to generate economic conditions for increasing the volume of seed production to meet the growing needs of the economy and the population in high-quality agricultural raw materials and products;
- create the conditions for the formation of a regional seed market.

Object of study is the regional seed production system.

Methods of research are a comparative analysis; abstract logic.

The results of research.

In the sequence of the implementation of the tasks we propose to use a systematic approach to solve the problem of seed production and inprove the transition from a purely technological relations to the adoption of modern more efficient organizational, economic and managerial decisions. In particular, we propose transition from single centers of elite seed "scientific core" to the creation of complex systems of breeding and seed as interrelated elements, combined with specialized agricultural producers, government and business structures at the regional level.

In addition to the "scientific core" system includes (Petrov, Golovin, Efremov, 2014):

- "Experimental farm" created by "scientific core" in order to develop technological methods and agricultural technologies to adapt crops to zonal soil and climatic conditions;
- "Basic services", engaged in the production of seed reproduction with expert support of "scientific core";
- "Demonstration sites", formed under the auspices of "scientific core" to promote scientific achievements.

The proposed grading helps draw the most enterprising individuals, owners of farms, agricultural cooperatives and other legal entities interested in establishing or developing regional seed business.

Basic services, carrying out the production of reproductive material, obtain the high-quality seed at a lower cost. On the other hand, the transparency of the process and the presentation of the actual results of work on demonstration plots, as well as the possibility of participation of potential buyers for any operation, significantly increase the competitive advantage of these seeds as marketable products.

Agricultural producers can also act as systemic seed producers (quality reproductive seed) and participate in the formation of the Insurance and Transitory founds of seeds that will contribute to the preservation, promotion and development of the most valuable Russian (regional) brands.

The subsequent development of similar systems can evolve towards the creation of a regional agro-industrial open (trade) business incubator.

Conclusion

1. Formed regional seed systems will represent completed agro-industrial (trade) regional centers, which will help to strengthen the horizontal and vertical cooperation and integration in the crop production. Ensuring of its self-development will be achieved with expansion of scientific research both in the depth of their realization (selection), and economic activities of farmers in the horizontal (seed), through their involvement in the formation and saturation of the domestic commodity markets whith seed material.

2. The proposed approach responds to the economic interests of all participants of the system, creates conditions for the transfer of breeding and seed production to innovative development, forming modern high-tech systems of creation of new varieties and hybrids with necessary economic and biological indicators of quality and economic parameters for the producers. Significantly the level of farming and skilled labor rise.

3. Comprehensive economic efficiency indicators are defined with: the increase of production of quality domestic seed, rise of yield and cultivation of vegetable crops, reducing of production costs under "seeds and planting material" and increasing of profitability by introducing new methods and technologies for cultivation of vegetable crops. According to expert estimates the cumulative effect will be at least 10% of the gross production of vegetables in the Astrakhan region.

References:

1. Malko A.M. The world market of seeds and Russia's place in it / A.M. Malko // Potatoes and vegetables, 2013. - №4. - P. 2 - 4.

2. Petrov N.Y Innovative system of seed production as a factor of development of vegetable production in southern Russia / N.Y Petrov, A.V Golovin, E.N. Ephraim // Izvestya of Nizhnevolzhsky agrouniversity complex: science and high education, 2014. - № 4 (36). - P. 75-80.

3. The development strategy of breeding and seed crops in the Russian Federation for the period until 2020 (draft). - M., 2010. – 33 p.

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