

**BIOCHEMICAL COMPOSITION OF SEEDS OF
EARLY-MATURING SOYBEAN VARIETIES AND ITS VARIABILITY
DEPENDING ON THE VARIETAL CHARACTERISTICS
AND METEOROLOGICAL CONDITIONS OF
VEGETATION PERIOD**

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***Key words:** soy, Northern ecotype, seed biochemical composition, protein, amino acids, fat, fatty acids, protein and fat collection.*

Soy is one of the most valuable agricultural crops, the protein composition of which includes essential amino acids, similar in composition to animal proteins, and fat in its composition predominates sunflower and olive. Comparative study of biochemical composition of soybean seeds of the Northern ecotype depending on varietal characteristics and meteorological conditions of the growing season. Perennial field experiments (2002-2019) were carried out on the experimental field of the plant growing laboratory of RSAU–MSHA named after K. A. Timiryazev. The objects of study were soybean varieties of the Northern ecotype – Svitlaya, Mageva, and Okskaya. Biochemical analysis of seeds was performed in the laboratory of research of technological properties of agricultural materials FSBSI FSAC VIM. The seeds of Northern ecotype soybean varieties contain 40.6-41.2 % protein and 19.4-19.9 % fat. Protein is characterized by a high content of sum of essential amino acids (63.10-63.98 %), including – histidine (7.2–7.7 %), lysine (7.7–7.8 %), tryptophan (by 4.6–4.9 %), arginine (8.4–8.8%), threonine (more than 4.0 %), phenylalanine (to 3.5 %). It was established that in comparison with traditional (southern) varieties, the seed fat of soybean varieties of the Northern ecotype is characterized by a higher content of palmitic acid (11.0–11.3 %) and significantly lower content of oleic acid (10.0–12.0 %). At the same time, according to the content and ratio of polyunsaturated fatty acids (linoleic and linolenic), it is close to the fat of food grades. Under conditions of excessive moisture, a high content of saturated palmitic fatty acid was observed, and in arid conditions – unsaturated fatty acids – oleic, linoleic and linolenic. Analysis of the quantitative and qualitative components of protein and fat of soybean varieties of Northern ecotype gives grounds to recommend their use not only for feed, technical, but also for food purposes.

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**FORMATION OF GRAIN YIELD AND QUALITY
WINTER WHEAT IN THE MIDDLE VOLGA REGION**

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The research was carried out on the experimental field of FSBEI HE Ulyanovsk SAU in 2017-2019. The purpose of the research was to identify the influence of agroclimatic conditions in the region on the formation of yield and quality of winter wheat grain Saratovskaya 17 against various doses of mineral fertilizers. The experience scheme provided 4 options: 1. Control (without fertilizers); 2. $N_{20}P_{20}K_{20}$; 3. $N_{40}P_{40}K_{40}$; 4. $N_{60}P_{60}K_{60}$. It was found that precipitation during the resumption of vegetation-flowering had a significant impact on the yield of winter wheat grain ($R^2=0,78$). To characterize the humidification of the territory, hydrothermal coefficient was calculated according to G. T. Selyaninov. In 2019, it was 0.21, which characterizes the period as very dry. In 2017 and 2018 weather conditions for winter wheat were more favorable (SCC 0.92 and 0.75-insufficiently moist). An increase in yield was observed at a SCC of 0.92 (2017) in all variants of the experiment. The correlation coefficient between the yield of the studied crop and the SCC indicator was 0.84, which indicates a significant dependence of winter wheat productivity on hydrothermal conditions that develop during the period from the resumption of vegetation to flowering of the crop. It is important to note that the main factor affecting the accumulation of gluten in winter wheat grain Saratovskaya 17 and changes in its elastic-elastic properties are the conditions of mineral nutrition of plants. The coefficient of determination shows that 60% of the gluten quality was determined by the conditions of plant nutrition and did not depend on the prevailing weather conditions.

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ARGUMENTS OF SOIL PROTECTIVE CROP CULTIVATION TECHNOLOGY IN ZONE OF LOW MOISTURE

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Key words: *agriculture, technology, sunflower, spring barley, winter wheat.*

In the article we show arguments for achieving the research goal- to get economically feasible crop yield growth of sunflower , spring barley and winter wheat in zone of low moisture of Rostov region against common and soil protective technology. The experiment was two-factorial: factor A – crop rotation link, factor B – crop cultivation technology. Soil protective technology with after harvesting and plant residues on soil surface affected moisture collection and conservation in soil at the cost of best preservation of snow cover, decrease of aeration. Soil protective technology allowed to preserve in the field from 84,5 to 95,1 % of plant residues, which increased snow cover for 16,5-28,4%. Significant impact on soil density soil protective technology didn't demonstrate. Compared to common, it helped to increase the number of earthworms in 4,3 times, which is the evidence of environmentally safe soil quality. Influence of soil protective technology on field emergence of studied cultures is established. Survival of cereal crops was higher for 2-5 %, and sunflower was lower for 5,4 %. All the cultures increased crop yield when using soil protective technology. Effect of transition to soil protective technology grew from year to year. Profitability raised in the first year for 11%,

in the second for 13%, in the third for 36%. Spring barley and sunflower showed big response on this technology. Introduction of soil protective technology in average in years of experiments improved profitability for 20 %.

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SILICEOUS ROCKS IN WINTER WHEAT FERTILIZER SYSTEM

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Key words: siliceous rocks, zeolite, winter wheat, yield.

The research was carried out on the experimental field of Ulyanovsk SAU named after P. A. Stolypin on a typical medium-loamy Chernozem with a humus content of 4.6 %, available phosphorus and potassium of 155 and 176 mg / kg, pH_{KCl} 6,7 units. In the experiments winter wheat of Saratovskaya variety 17 was grown using zeolite from the Yushansky deposit in the Ulyanovsk region as a fertilizer and fertilizers based on it enriched with amino acids and urea. The scheme of experiment consisted of 4 variants: 1. Control (without fertilizers); 2. Pure zeolite 500 kg / ha; 3. Zeolite enriched with amino acids, 500 kg / ha; 4. Zeolite enriched with urea (at the rate of 40 kg a. r. per ha), 500 kg / ha. The accounting plot area is 20 m², their placement is randomized, repetition is 4 times. The results of research have shown a positive effect of zeolite and fertilizers based on it on the activity of soil microorganisms, the nutritional regime of the soil, yield and product quality. It was found that when applying to the soil, the activity of soil microflora increases by 9-18 %, the content of mineral forms of nitrogen in the arable layer increases by 0.82-2.17 mg/kg, mobile phosphorus by 5-8 mg/kg, and exchange potassium by 5-6 mg/kg of soil. The latter was accompanied by an increase in yield of winter wheat grain: when applying zeolite in pure form by an

average of 0.46 t/ha (12.1 %), zeolite enriched with amino acids by 1.17 t/ha (30 %), and zeolite enriched with urea by 1.35 t/ha (35 %).

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**INFLUENCE OF MINERAL FERTILIZER DOSES, TERMS AND
PLANTING SCHEMES ON THE YIELD OF SEED AND FOOD
POTATOES OF NEW VARIETIES ZABAVA AND SMOLYANOCHKA**

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Key words: potatoes, variety, tubers, fertilizers, yield, quality.

The article presents data on the study of influence of planting dates, planting schemes and doses of mineral fertilizers on the formation of yield of seed and product fractions of potato varieties of Smolensk selection Zabava and Smolyanochka. The research was carried out on the basis of FSBSI FSC LK (former FSBSI Smolensk GOSHOZ) on sod-podzolic medium loamy soil. Observations of the growth and development of potato plants in the studied varieties showed that the maximum number of stems was observed with the placement scheme of 70x25 cm against the background of mineral fertilizers N60P72K90. For the Zabava variety, the optimal planting time was May, 8, for the Smolyanochka variety-May, 14. In General, the Zabava variety had a higher stem-forming ability. The maximum yield of both varieties was obtained on a mineral ground N60P72K90. The highest yield of tubers of seed fraction was noted at 70x25cm scheme and the planting date of May, 14. The maximum yield of food potatoes in the Zabava variety was obtained when the planting date was May, 8, and in the Smolyanochka variety-May, 14. It was established that the variety Zabava, regardless of planting time, was affected by tubers with scab and foot rot. In the Smolyanochka variety, only scab was observed from diseases.

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ZEOLITE EFFECTIVENESS IN CAPACITY OF CORN FERTILIZER

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Key words: zeolite, mineral fertilizer, corn, yield.

Studies of effectiveness of zeolite in cultivation technology of corn in capacity of fertilizer were carried out on the base of field station of Ulyanovsk SAU in 2016-2018. Experimental design including 8 variants : 1. Control (without fertilizers); 2. Zeolite of Yushan field of Ulyanovsk region 500 kg/ha; 3. Zeolite 2000 kg/ha; 4. $N_{60}P_{60}K_{60}$ (NPK); 5. Zeolite 500 kg/ha + NPK; 6. Zeolite 2000 kg/ha + NPK; 7. Zeolite 500 kg/ha + N_{60} (carbamide); 8. Zeolite 2000 kg/ha + N_{60} . Area of registration plot is 60 m², their position is random, and replication is quadruple. Soil of field station is leached middle loams chernozem. It was established that zeolite is a boon to soil characteristics: physical, biological, chemical. Herewith plowing layer got effective structure for the given culture with density 1,10-1,13 g/cm³, activity of soil microflora increased and soil feeding schedule improved. Consequently corn kernels yield boosted: its raise when applying zeolite in pure form was 0,93 t/ha (dose 500 kg/ha) and 1,36 t/ha (dose 2000 kg/ha), against NPK respectively 2,43 and 2,7 t/ha. Corn kernels yield with co-use of zeolite 500 kg/ha together with nitrogen fertilizers predominate on 0,27 t/ha variant with mineral fertilizer $N_{60}P_{60}K_{60}$.

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EVALUATION OF ITMI LINES OF SPRING SOFT WHEAT
FOR RESISTANCE TO STINKING SMUT

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Key words: soft spring wheat, stinking smut, resistance, disease, pathogen.

The aim of the study is to search for new sources of resistance to stinking smut among the ITMI population lines. The article presents analysis of data on the study of reaction of spring soft wheat, which is resistant to stinking smut, to the introduction of pathogen. The experimental part of the work was carried out in 2016-2018 on an infectious background of a phyto-stage in the conditions of the forest-steppe of the Middle Volga region (Samara ARI-branch of SamRC RAS, Bezenchuk country). 77 lines of ITMI mapping population were used as objects, as well as a population of *Tilletia caries* pathogen collected from zoned and susceptible varieties. In the experiment, healthy seeds (control) and seeds infected with pathogen were sown. For inoculation of wheat seeds with this pathogen, the A. I. Borggardt-Anpilogov method was used. Cleaning was carried out manually, by cutting plants from the plot in the phase of full ripeness. Accounting for damage to samples of stinking smut was carried out in the phase of milk-wax stage of the grain, carefully viewing and counting all the spikes on the plot. A five-grade scale created by V. I. Krivchenko was used for classing the samples resistance to stinking smut. Weather conditions in the years of research were different, but developed mainly favorable for creating an infectious background, as well as for the growth of spring wheat plants. 4 lines had immunity (ITMI-40, 75, 90, 91). Practical stability was observed on 5 lines (damage from 4.3 to 10.0%). 8 lines were poorly susceptible (the maximum lesion was 21.0%). With an average susceptibility, 21 lines were isolated, the remaining lines were mostly affected by more than 50%. Selected samples can serve as a valuable source material for use in immunological breeding programs.

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RESULTS OF EVALUATION OF COLLECTION SAMPLES OF WINTER SOFT WHEAT FOR BREEDING IN THE MIDDLE VOLGA REGION

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Key words: winter wheat, variety, yield, plant height, collection nursery.

The main task of selection programs in modern conditions of constantly changing climate is to obtain varieties that are resistant to abiotic and biotic factors, combining high potential of productivity and grain quality in the genotype. At the initial stage of the selection process, the use of varietal samples of various ecological and geographical origin remains relevant in order to create the source

material. The research aim is to identify genetic sources of economically valuable traits for winter wheat breeding in the Middle Volga region. From 2016 to 2019, samples of national and foreign selection were screened. During the study of the collection material, contrasting meteorological conditions were observed. The most positive conditions for the assessment of varieties for winter hardiness and productivity were formed in 2017, and less favorable – in 2019. For all the years of research on winter hardiness and productivity, local varieties were distinguished: Povolzhskaya 86, Povolzhskaya Niva, Erythrospermum 3627, Erythrospermum 3730 (Povolzhsky NIIS). In 2016, the varieties of Don breeding center – Marathon and Severo-Donskaya-were distinguished. In 2017 the varieties showed high results showed Krasnodar research Institute of agriculture (Doka, Dmitry Viza, Zimtra), Samara ARI (Svetoch), ARI of the South-East (Kalach 60), Ukraine (Tsusperich, Manzhetiya). In 2018, the best studied indicators were varieties Moskovskaya 39 (ARI CRNZ) and varieties Zimnitsa, Yunona, Kristall (Krasnodar ARI), as well as the variety Kalach 60 selection niish South-East. In unfavorable 2019, the studied varieties included Doka (Krasnodar research Institute), Pearl of the Volga region and Victoria 95 (research Institute of the South-East). These samples were included in the laboratory's cross-breeding scheme.

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INHERITANCE OF THE "MASS OF 1000 GRAINS" PROPERTIES OF SPRING SOFT WHEAT IN DIALLEL CROSSES

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Key words: spring soft wheat, 1000 grain weight, diallel analysis.

Weight of 1000 grains - one of the component characteristics of yield is included in the group of main characteristics that are used for wheat breeding. In addition, the weight of the grain along with its performance is a sign of grain quality, largely determining its milling properties. The aim of the research is to determine the inheritance of a trait in the system of diallel crosses. The research was performed on the experimental field of the Samara research Institute in 2016-2018. The following varieties from the Ekada program were studied: Arhat, Estivum 1079, Estivum 1311, Omskaya 36, Ekada 148, Ekada 113, and Ekada 204. The varieties selected for the study were characterized by stable yield and significant differences in the studied feature-the mass of 1000 grains. Sowing was carried out manually on single-row plots 1 meter long with rows of 20 centimeters of 20 grains, randomized blocks in three-fold repetition. Phenological observations were noted for the phases of development: tillering, earing and maturation. The results were analyzed using the B. I. Hayman method. As a result, the following genetic and statistical effects were revealed: 1) the functioning of epistatic interactions based on the genetic systems of Arhat and Ekada148 varieties; 2) directed dominance, dominant genes increase feature values ; 3) dominant and

recessive alleles are distributed asymmetrically across varieties, with the predominance of dominant alleles in the population as a whole; 4) interaction in locuses between alleles occurs with the demonstration of super-dominant effects; 5) the additive component was significant in all environments, which implies good heritability of the trait; 6) varieties Estivum 1079 and Ekada 204 carry the maximum number of dominant alleles in all environments and are donors of dominant alleles that increase the trait.

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LONGITUDINAL DYNAMICS OF DEVELOPMENT OF PEA DISEASES IN TRANS-URALS

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Key words: *pea, root rot, fusariose, ascochytois, rust, weather conditions.*

In the article data on distribution dynamics and pea disease development in Transurals is given. The researches established that in region conditions the following diseases of fungus ethiology are most common: fusariosis (form of appearance, root rot and wilt-agents are fungi of Fusarium species, dark spotty ascochytois – agent is – A. pinodes L.K. Jones and rust – agent is Uromyces pisi (Pers.) de Bary. Correlation dependence is established between disease development on pea and weather conditions is established. So, middle straight correlation dependence between development of root rot and HTI growthseason is registered – $r=0,53\pm 0,38$, inverse tight correlation relationship between development of fusariosis and HTI, development of fusariosis and rainfall during growth season – correlation factor was consequently $-0,98\pm 0,08$ and $-0,98\pm 0,07$. Development of ascochytois and rust to a great extent depended on rainfalls in May-August- correlation coefficient was from $0,76\pm 0,29$ to $0,83\pm 0,25$. Discovered characteristics of structure formation of pathogen complex and development of infectious diseases, allow to develop differentiated approach to the ways of phytosanitary control of pea agrophytocenosis.

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INFLUENCE OF DURATION OF INTER-SPAWNING PERIOD ON THE QUALITATIVE AND QUANTITATIVE PARAMETERS OF CAVIAR

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Key words: *aquaculture, African sharptooth catfish, caviar, inter-spawning period, reproductive hormones, oocytes.*

The work is devoted to the study of qualitative and quantitative characteristics of African sharptooth catfish caviar produced at different periods of the inter-spawning interval, obtained artificially under the influence of reproductive hormones. In industrial aquaculture, the African catfish does not reproduce naturally, so the problem of obtaining high-quality caviar suitable for artificial insemination is relevant. To carry out the reproductive process in fish in industrial aquaculture, it is necessary to choose the right sex hormone and its dose. Sex hormones affect the duration of the inter-spawning interval and the quality of eggs obtained for fertilization and for food purposes. The pituitary gland of the African sharptooth catfish and surfagon were used as gamatogenesis stimulators. The study aim was to empirically select the optimal duration of inter-spawning interval and type of hormonal stimulator that provides caviar maturation in the conditions of industrial aquaculture. The results of research have shown that the use of fresh or acetonated catfish as a pituitary hormone stimulator is more effective than the use of synthetic hormone preparation surfagon. Stimulation of acetonated pituitary gland by injection reduces the inter-spawning interval to three months, and the use of surfagon extends inter-spawning interval to four months. The reduction of inter-spawning interval plays an important role in the realization of technology for the production of African sharptooth catfish caviar for food

purposes. Using a shorter inter-spawning interval, even against hormonal stimulants, does not allow you to get high-quality eggs that meet the requirements.

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ACTIVITY LINK OF NUCLEOLAR ORGANIZERS WITH PROLIFERATION LEVEL AND PROTEIN BIOSYNTHESIS (SURVEY)

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Key words: *argyrophylic structures, blood, chromosomes, lymphocytes, nucleolar organizers (NOR), nucleus.*

Study of individual cell morphemes in animals has fundamental and applied meaning. The principle issue of modern biology is mechanistic study of functioning and cooperation of nucleus cell structures. Real interest is in- depth study of nucleus cell structure, connected with proliferative and synthetic cell activity in animals. Parts of chromosomes contain specialized structures- so called nucleolar organizers (NOR). Number of these subunits polymorphous and depends on complex of factors. Principle facto , influencing the number of NOR, is a specific accessory and individual features of the body. In NOR zone genes of 2 classes of rRNA: 18S and 28S, which are in ribosomes, taking part in their functioning. NOR

perform functions in cells, take part in protein secretion. The aim of this survey is the analysis of NOR polymorphism in domestic and farm animals and identifying economic traits with polymorphism and NOR structure. According to NOR we can implicitly estimate activity of synthesis of ribosomal RNA and distinguish cell-doubling capacity and state of cell differentiation. Metaphase NOR are used as indicator of physiological and productive body state. Cytogenic assays, aimed to study intraspecific animal variety, are carried out on the basis of localization in NOR cells.

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**MONITORING OF EPIZOOTIC STATE ACCORDING TO
HELMINTHOSES IN MARAL BREEDING FARMING AND
DETERMINATION OF MERADOK PREPARATION EFFECTIVENESS
ON MARAL YOUNG STOCK**

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Key words: velvet antler industry, antiparasitic medication, marals, helminths, invasion diseases, extence effectiveness, intense effectiveness .

Velvet antler industry is a livestock section, that is characterized by specificity, connected with specialty of biological rhythms of marals, not specific for other animal species. At the same time given animal type isn't fully domesticated. It limits the specialists in work with marals. Also antiparasitic preparations, introduced in the markets, do not pass clinical testing on marals, and consequently serve purely as guidelines of effectiveness towards parasitic disease agents of marals. But as parasitic diseases of marals have vast distribution area, so safe, effective prophylaxis and their control is impossible without introduction of new anthelmintic chemicals, recommended for maral breeding field. Experiment on study of antiparasitic action of Meradok preparation was carried out on spontaneously infested marals (young cattle, n=40) in maral breeding farmings of Altai district, Altai Territory. Preparation was injected under the skin, in middle-third of neck, at a dose recommended by the producer for cattle. Analysis of epizootic state of farming in Altai district, Altai Territory on parasitic diseases over a period of 2016-2019 showed that during the research period parasitic diseases were registered: gastro- intestinal strongylatosis, elaphostrongylosis, dicroceliasis, trichuriasis, capillariasis, monieziasis and eimeriosis. On the results of efficiency calculations Meradok preparation 100% effect was observed on capillariasis. At ZKS extenseeffectiveness (EI)was 75% with intenseeffectiveness (ИИ) – 87%, at

eimeriosis EE – 33,3%, with IE – 16,7%, at elaphostrongylosis EE – 10% with IE – 49,7%. Towards agent trichuriasis preparation wasn't effective (null effect).

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20. Instructions for use of the medicinal product «Meradok» LLC «NITA-FARM»

**BIOPROFILE OF MICROORGANISMS ISOLATED FROM URINE
OF CATS WITH DISEASES OF URINARY SYSTEM**

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Key words: microorganisms, biological properties, pathology, urinary tract
The research aim: to study the bioprofiles of microorganisms isolated from the urine of cats in the pathology of the urinary system (cystitis and urolithiasis). 46 strains of different types of bacteria were isolated from the urine of 34 sick animals by bacteriological method and identified using the biochemical test systems “Lachema” (“Erba Lachema s.r.o.”, European Union). The photometric method was used to determine the anti-lysozyme and anti-hemoglobin activity, the adhesion index, and the ability to form biofilms in isolates. It was established that microorganisms isolated from urolithiasis in cats were more often isolated in associations than microorganisms isolated from cystitis, among which monocultures prevailed. Biological properties of isolated microorganisms were studied, bioprofiles were identified characterizing the strains. It is shown that cultures of *S. aureus*, *E. coli*, *S. epidermidis* from urine with urolithiasis had significantly higher values of anti-hemoglobin activity; in *E. coli* – antilysozyme activity, in *S. aureus* – increased adhesion, in *S. epidermidis* – the ability to form biofilms than in urine strains with cystitis. *P. aeruginosa* strains isolated from urine with cystitis were characterized by a high level of adhesion compared to cultures of this species isolated from urine with urolithiasis. The results obtained can be used for differentiation of strains that can cause studied pathologies, as well as for selection of adequate therapy under the control of studied biological properties of microorganisms.

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DEVELOPMENT OF PHAGOINDICATION METHOD FOR PSEUDOMONAS SYRINGAE BACTERIA IN SANITARY CONTROL OBJECTS

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Key words: *Pseudomonas syringae*, indication, phage titer increase reaction, parameters, polyphage biopreparation, soil, river water, cucumber seeds

The article presents the results of research on the development of parameters for practical application of phage biopreparation Pseudomonas syringae in order to indicate the data of phytopathogenic bacteria in sanitary control objects. The introduction of the article describes pathogens of Pseudomonas syringae and plants that they affect, which proves research actuality aimed at developing speed-up methods of indication and identification of bacteria-pathogens, which will allow specialists to develop measures to combat above-mentioned phytopathogens in a short time. It was established that cultivation of the "bacteriophage-test material" system at a temperature of 28 ± 1 °C during 3.5 hours allows detecting Pseudomonas syringae bacteria in soil samples, river water, and cucumber seeds by the RSF method at a concentration of 10^3 MK/ml., increase in the exposure time does not improve the quality of the reaction. The bacteriophages Ps. s-7 UlGAU and Ps. s-27 UlGAU in monoculture were used in experiments at a concentration of 10^3 BFU/ml. When testing a polyphage biological product in RSF, including all the above-mentioned bacteriophages, it was found that the results obtained in the studies of the river water sample were similar to the experimental data on cucumber seed sample. Concentration of detected Pseudomonas syringae bacteria was 10^3 m.k./ml. It was experimentally established that reducing the initial titer of polyphage biopreparation to a concentration of 10^2 BFU / ml allowed for the indication of Pseudomonas syringae bacteria in a soil sample at a concentration of 10^3 mk/g.

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**SELECTIVE- GENETIC PARAMETERS AND EVALUATION OF
PHENOTYPIC VARIATION ACCORDING TO THE RANGE OF
ENVIRONMENTAL AND GENETIC FACTORS OF ECONOMIC TRAITS
OF AYSIRE BREED COWS**

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Key words: coefficient of reproductive ability, breeding power index, correlation factor, regression, analysis, dispersion analysis, Ayshire breed, power of influence

Actuality of research data is in contribution rate of growth of genetic progress according to main economic traits in Ayshire populations at the cost of conducting correlative- regression analysis and study of influence factors, as a preparatory phase in development of selection index for selection of animal units into selected groups. Study sample of cow heifers (n=12821), which are offsprings of 232 servicing bulls from 13 farms, is modified to normal distribution with the help of R-studio program (on control of events, emergence, removal of empty and impossible values). Calculation and analysis of selective- genetic parameters of economic traits are conducted, and also impact assessment of genetic and paratypic factors on realization of economic traits of local cattle population of Ayshire breed in Leningrad region for the period from 2014 to 2018. Animal milk production was 6848 kg with fat mass percentage and protein 4,07 and 3,29 %. We established lowering of MOP duration and reproductivity coefficient and fertility index (RC and FI). Multiregressional model was formed including into formula percentage of fat, protein, live weight and service period. It was established that with fat increase

for 1 % milk yield will decrease by 15,3 kg, but with increase of protein on the same value- for 107,8 kg of milk. The most accurate influence on studied economic traits had father factor (14,97 – 41,58% ***). Consequently, with the aim to achieve positive result in population development of Ayshire cattle it is necessary to use bulls, having high genetic potential of milk yield and reproductive qualities.

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**INFLUENCE OF THE LEVEL MILK PRODUCTIVITY OF MOTHER
COWS ON THE GROWTH AND DEVELOPMENT OF HOLSTEIN
HEIFERS**

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Key words: cow, lactation, milk yield, milk, heifers, live weight, gain.

The experiment is carried out on 3 groups of cows (1 - with productivity up to 7500 kg, 2 – from 7500 to 9000 kg and the 3rd group-9000 and above kg of milk for the previous lactation). Milk yield for 305 days of lactation of cows of group 3 averaged 9068 kg ($P \leq 0,01$), group 2-8682 ($P \leq 0,05$) and group 1 – 7940 kg of milk. Milk fat production in cows of group 3 - 369 kg ($P \leq 0,05$), group 2-351 and group 1 – 326 kg. The yield of milk protein from cows of group 3 is 285 kg ($P \leq 0,01$), group 2-270 ($P \leq 0,05$) and group 1-248 kg. A comparative analysis of the growth and development of heifers with mothers with different levels of productivity was carried out. At the 2nd month of growing, the weight of heifers of the 3rd group is 76 kg ($P \leq 0,10$), the 2nd - 72 kg ($P \leq 0,10$). The average daily growth of group 3 heifers at 6 months was 1244 g ($P \leq 0,10$), group 2 - 1127 and group 1-617 g. Group 3 Heifers at 9 months weighed 301,2 kg ($P \leq 0,05$), group 2 – 299,3 kg ($P \leq 0,05$). Heifers of group 3 at 12 months reached 380,6 kg ($P \leq 0,05$), group 2–378,5 ($P \leq 0,05$) and group 1 – 353,7 kg. The growth of experimental heifers of group 2 was 887,6 g ($P \leq 0,05$), group 3–829,6 and group 1 – 710 g per day. Monitoring of growth and development of heifers continues.

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COMPARATIVE ANALYSIS OF DIFFERENT SOW FAMILIES ACCORDING TO REPRODUCTIVE QUALITIES

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Key words: *selection, hybrids, genotype, pigs, sows, family, reproductive quality.*

Scientific-economical experiment was carried out on evaluation of sow reproductive qualities of different families obtained and grown in LLC «Kigbayevsky bacon» of Sarapul district of Udmurt Republic and sows, bought in LLC «Otrada gen» of Lipetsk region. Analyzing reproduction of breeding stock of home selection, according to the first farrow it can be said that the most multiple lambing is observed in sows of Otrada family (new selection) – 15,72 heads. Out of home selection sows families Osobaya (13,33 heads), Reklama (12,3 heads) can be noticed. The worst multiple lambing was noticed at sow of Luchesa and Lily families. The largest nests were observed in sows of Beatrice family (96,5 kg), Luchesa – 88,75 kg. Productive analysis of the second farrow sows established that high multiple lambing was in sows of families Beatrice – 14,49 heads, Luchesa – 13,08 heads, Ovatsii – 13,58 heads. Sows' multiple lambing of new selection was 17,48 heads. Comparative analysis of reproductive qualities of large white sows of home selection in LLC «Otrada gen» showed that sows of LLC «Otrada Gen» selection are characterized by higher multiple lambing and number of young pig weaning, 17,48 and 13,16 heads, respectively, but they cave on sows of LLC «Kigbayevsky bacon» in livability of young pigs weaning on 15,5 %, weight of one young pig to weaning for 2,48 kg.

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PRESERVATION OF GENETIC POTENTIAL OF STAVROPOL SHEEP BREED FOR POVOLZHYE DREY STEPPE ZONE

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Key words: *breed, productivity, sheep, mating, genotype*

In conditions of Povolzhye steppe zone development of productive qualities of Stavropol breed sheep was conducted by meat merino sheep. Experimental research was carried out in ZAO «Novaya Zhizn» in Novouzensky district of Saratov region, located in semi desert zone, bordering upon South-West Kazakhstan. The research aim was the increase and maintenance of genetic potential of Stavropol breed sheep of Povolzhye population. Working procedure is based on guidelines of the All-Union Academy of Agricultural sciences, All Union research institute of sheep and goat breeding. The study materials were Stavropol pure breed sheep and 1/8 –thoroughbred cross breed with Australian meat merino herd mates. As the result of stepped breeding of local Stavropol ewe with half bred by Australian meat merino ram- breeder of Stavropol breed animals of 1/2 ,1/4, 1/8 –blood were obtained, which then one- shear tugged by breeding «inter se». It is proved that in applying such selective method 1/8-blood by Australian meat merino sheep were characterized with higher body weight, better wool quality in contrast to Stavropol pure –breed herd mates. So, in 1/8-blood by Australian meat merino of hybrid ewe during breeding «inter se» live body at birth was higher

than at pure breed herdmates for 5,56 %, during ablactation –at the age of 4 months - for 6,38 % (difference isn't accurate). According to sharing of wool in grease, superiority of ewe of hybrid origin over pure breed was 5,6 % ($P \geq 0,99$), but in terms of washed fiber it increases to 8,3 % ($P \geq 0,999$). So, in dry steppe zone of Povolzhye new improved, according to its productive qualities, genotype of Stavropol breed sheep is created with retention of genetic resource that is essential economic factor for the modern maintenance of fine-wool sheep breeding field.

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LINK BETWEEN OUTLINE EVALUATION AND BLOOD RELATIONSHIP COUNSINLY BREED, FROMING ANIMAL GENOTYPE

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Key words: *Ayshire breed, exterior characteristics, exterior indices, classification assessment, correlation, power of influence, blood relationship.*

When developing Ayshire breed herds, we used breeding population of related breed: FAY – Finnish Ayshire, SRB – Swedish red, NRF – Norwegian red, CANAY – Canada red, ORDM – Danish red, the research on influence of their blood relation on exterior characteristics of cows is actual. Studied livestock (n=855) has the following blood parts: $56,5 \pm 0,55$; $12,9 \pm 0,31$; $10,7 \pm 0,16$; $17,8 \pm 0,60$; $0,7 \pm 0,08$ % consequently. Classes according to blood part, %: 0,0; 0,1 - 12,5; 12,5 - 24,9; 25,0 - 37,4; 37,5 - 49,9; 50,0 - 62,4; 62,5 - 74,9; 75,0 - 87,4; more than 87,5. Blood relationship according to CAN have a positive impact on udder evaluation ($+0,130^{xxx}$), general view ($+0,155^{xxx}$), final ($+0,164^{xxx}$) and identification mark UDC ($+0,119^{xxx}$), but negative blood relationship according to FAY on general view ($-0,138^{xxx}$), according to SRB and NRF breed – on udder evaluation ($-0,163^{xxx}$; $-0,111^{xxx}$) and final ($-0,133^{xxx}$; $-0,100^{xx}$). Difference between force coefficient influence of blood relationship on exterior features according to FAY and CAN ranges from 7,9 to 18,7 units, and on UDC and FLC s equal to 6,6 and 3,5 units. Joint effect of blood relationship according to FAY and CAN is lower on lineal feature, and on exterior indices it increases. For improvement of individual exterior features account must be taken of blood relationship element at proband according to particular related breed of Ayshire group of diary cattle, focusing on blood element on FAY and CAN and their combinations.

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ENGINEERING AND MANUFACTURING EVALUATION OF RAM HOGS GROWTH OF KARACHAI BREED OF DIFFERENT BIRTH MONTHS

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Key words: *ram hogs, Karachai breed, birth month, body weight, liveweight gain, feed stuff expenses.*

Meat sheep breeding got a big popularity in recent years, which one of the main ways is production of high quality mutton with least possible working and

physical resources. One of the reserves of expansion of output is the use of different processing methods, such as production and sale of lamb meat in birth year with account for lamb birth period. The research aim is to study growth characteristics and feed efficiency by liveweight gain of ram hog of Karachai breed, born in different months- February, March and April. Research for the study of growth characteristics and feed efficiency by liveweight gain on ram hogs of Karchai breed was carried out in conditions of submontane zone of the Kabardino-Balkaria Republic. The research object is ram hogs of Karachai breed. During the research analytical, common zoocultural and biometric techniques were used. Lambing ewes in February – March period gave the edge on offsprings in live weight parameters, daily live weight gain and feed efficiency by products. By the end of their superiority over ram-hogs of April birth month was according to liveweight 3,2-4,7 kg ($P>0,999$), and according to average daily growth for all the production cycle – 12-17 g ($P>0,999$). Production of lamb meat from ram hogs of February- March birth period was less expensive which had for 0,61-0,77 EFU and 61-79 g of digestible protein lower, was less expensive. Lambing ewes in February and March provides the obtainment of more constitutional strong offsprings, which predominate herdmates of April birth according to growth parameters and feed efficiency.

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EXCHANGE OF MATTER AND ENERGY IN FATTENING STORE PIGS DURING FEEDING PROBIOTIC-SUPPLEMENTED FEED MIX

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Key words: *store pigs, feed mix, productivity, digestibility, balance, In the article the research results on feeding fattening store pigs using in its composition 300 and 350g/t of probiotic additive during daily feeding 2, 23 kg of feed mix in average per experiment. The research object fattening store pigs of large white with middle body weight 38,6 -39,0 kg and probiotic additive «Provagen». Store*

pigs for experiment were selected from sows, which were fed for 30 days before farrow by probiotic additive at the same doze in composition of feed mix. Absolute liveweight gain for reference period was 60,4 in control group, in the second experiment group 61,5 and in the third 62,0 kg. Daily average was respectively 525, 535 and 539 g. Coefficients for digestibility of nutritious matters of feed mix with probiotic additive were higher, especially in the third experimental group- crude fat and crude fiber for 4,1 and 49,8 %. Daily average balance of nitrogen, calcium and phosphorus were positive. Nitrogen of store pigs was held in the second experimental group for 10,9 and in the third for 21,2 % more in comparison to the control group. Morphological and biochemical blood indicators were within physiological normal state. Feeding probiotic additive as part of feed mix for fattening store pigs allowed to find out more effective doze of probiotic additive introduction in feed mix during integrated research for – 350g/t.

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