

# Abstracts of articles

## AGRICULTURE

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CULTIVAR STUDY AND APRICOT SELECTION IN THE ENVIRONMENT OF MIDDLE VOLGA AREA FOREST-STEPPE

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Keywords: horticulture, selection, variety, cultivar, apricot.

The purpose of research is the creation of apricot fruit varieties able sustainably fructify in the environment of forest-steppe of the Middle Volga Area. Experimental studies were carried out on the Cultivar Collector of Samara Research Institute of Horticulture and Medicinal Plants «Zhiguli Gardens» from 1985 to 2010. Since 2011 up to present the work has been performed in a Samara State Agricultural Academy on the basis of horticultural farm Ltd. «Kutuluk» Bogatovskiy district. The objects of research were different varieties of apricot eco-geographic groups of selected forms of national selection and varieties bred in Samara Research Institute «Zhiguli gardens». The study, selection and transfer of hybrid seedlings to the state variety-testing were performed, under the methodology of selection and program of Cultivar study of fruit, berry and nut crops. As a result of long years of breeding under interkind hybridization in Samara Region 9 apricot varieties have been developed and transmitted to state variety-testing, 4 of which have been included into the State Register of the Russian Federation. In a period of organic resting the varieties are able without significant damage of the wood resist severe winters with a minimum temperatures at  $-39... -40^{\circ}\text{C}$ . Favorable microzones for apricot cultivating have been identified, the yield, diseases resistance and technological qualities of fruit studied. As a result of 16 years of observations the apricot hasn't fructified for 6 years. Because of the flower buds frozen in severe winters there was no yield 3 times, 3 times the harvest perished as a result of freezing of flower buds from frost occurred after long thaws. Variety differences of resistance to moniliosis shock were revealed. Such a resistance out of Samara region fruit the sort of Samara apricots has got. Samara apricots are smaller in size than any southern ones, but the biochemical composition and fruit taste compete to the latter.

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**MINIMIZING SOIL CULTIVATION INFLUENCE FOR FERTILITY STATUS OF HEAVY LOAMY SOILS  
IN SPRING AND WINTER WHEAT SEEDING**

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**Keywords:** microorganisms, micromycetes, bacteria, actinomycetes.

The purpose is to justify the use of minimum and zero tillage in conditions of forest-steppe Zavolzhye region from the position of the biological activity of the soil. One of the factors forming and determining the fertility of the soil, is the activity of microorganisms that inhabit it, the active surface which reaches up to several hundred acres for 1 ha of surface topsoil. Important role in building of soil fertility is the number of major groups of microorganisms, which, being the catalysts of metabolism, objectively reflect the nature of biochemical processes. Another academician S. P. Kostychev (1937) pointed out that without the study of biodynamics the knowledge of the soil, especially from the agronomic point of view, may not be complete. Microorganisms occupy a key position in maintaining biochemical capacity of the soil, so monitoring of soil microflora is essential for the maintenance and reproduction of its fertility. This work is devoted to studying the role of soil microorganisms in the process of maintaining and reproduction of soil fertility in the development of new technologies in agriculture. The article presents data on the effect of basic tillage on the number of different groups of soil microorganisms (micromycetes, bacteria, actinomycetes), Shows the number of soil microorganisms, such as micromycetes (mold fungi) and bacteria are significantly influenced by seasonal changes in temperature and humidity than the soil treatment methods. From which it follows that the reduction of the mechanical load on the soil in the forest-steppe of Zavolzhye a significant impact on the number of major groups of microorganisms has not.

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**WAYS OF INCREASING YIELD AND QUALITY OF SUDAN GRASS AND SUNFLOWER FOR SILAGE AND HAYLAGE  
USAGE**

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Keywords: sudan grass, sunflower, soya, vetch, protein, silage, haylage.

The objective of the investigation is to improve yield and quality of feed production. The experiment held in 4 replications and one factor scheme. The influence of pulses components for the increasing yield and quality was studied during the experiment. Yield harvesting was done in two times. For the first, yield was collected for haylage. For the second harvest was studied for silage. Mix of sudan grass with sunflower and soya, as well as mix of sudan grass, sunflower and vetch, showed best results in haylage part. The total yield of this mixes was higher than the crop itself. Mix of sudan grass with sunflower and vetch gave 25.5 tons per hectare in average of 4 years of research. At the same period of time, mix of sudan grass with sunflower and soya gave 23.1 tons per hectare. Sudan grass itself showed 19.7 t/ga in average. Very interesting tendency was found during the 4 years of research. While the climatic data was analyzed, we made a conclusion that mix of sudan grass with soya and sunflower is better in dry conditions. It gave yield from 31 t/ga. Mix of sudan grass with sunflower and vetch, gave higher yield in years with favorable conditions. Average yield collected was 24.1 t/ga of haylage.

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#### YIELD CAPACITY AND QUALITY OF SOYBEAN SEEDS WHEN APPLYING SENICCATION AND DESICCATION UNDER THE CONDITIONS OF LEFT-BANK FOREST-STEPPE OF UKRAINE

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Keywords: soy, desiccation, sanicula, yield, quality.

The research purpose was to identify high-quality variety features of formation of yield capacity and quality of soybean seeds when applying seniccation and desiccation in the Left-bank forest-steppe of Ukraine. The research subject is Anna, Romance, Vasilkovskaya varieties of soybean, the elements of technology of cultivation (desiccation and seniccation), yield capacity and quality of seeds. The experiment was carried out according to the two-factor scheme in a 4-times repeat at the Institute of Agriculture of the Northeast of NAAS of Ukraine. The research results showed that the duration of vegetation was influenced both by varietal characteristics and the application of desiccation and seniccation. On average, the smallest period from the growing phase to the full ripeness was stated on the variant with Reglon Super 2.0 l/ga and Basta 2.0 l/ga desiccation (36-37 days). The maximum level of yield capacity on the average in 2007-2009 was obtained from Vasilkovskaya variety – 2.50 t/ga. Annushka variety provided significantly lower yields (2.0 t/ha), as it was proved by the calculated NSR05. In terms of yield capacity Romantika variety took an intermediate position of 2.38 t/ga. On the variants with the application of seniccation and desiccation a positive trend of their influence on the yield capacity of soybean seeds in all studied varieties was stated. So, on average, an increase of yield capacity was stated when applying: seniccation 5.0% solution of ammonium nitrate per 0.38 t/ga; 8.0% solution of urea per 0.45 t/ga; Reglon Super 2.0 l/ga per 0.24 t/ga; Basta 2.0 l/ga 0.3 t/ga as compared to the control. Application of seniccation favored the increase of protein content: urea solution by 0.7%; solution of ammonium nitrate by 0.5% compared to the control. On the variants of desiccation the protein content was at (33.9-34.1%). Oil content of the seed of studied varieties ranged from 20.0 to 24.1%.

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#### THE OILSEED FLAX VARIETIES ENVIRONMENTAL TESTING OF RUSSIAN SELECTION IN KOSTANAI AGRICULTURAL RESEARCH INSTITUTE

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Keywords: flax, grade, height, and plant productivity.

The purpose of researches is isolation and selection of source material of flax and the best typical alive plants unable to further their involvement in the selection process. Linen oilseed is a valuable crops that are widely used in the industry. From it the oil and cheap vegetable protein for animal husbandry are made. Linseed contains up to 48% oil, which is used in the form of food and industrial raw materials for number of industries. Introduction of new varieties of flax, combining high productivity and drought resistance, is the main means of improving this crop yields. In the experiment on ecological strain testing it was studied 10 varieties of oil flax selection by All-Russia Research Institute of Oil Crops and Siberian Experimental Station of All-Russia Research Institute of Oil Crops. Standard is variety of Kustanaiskii yantar. The replication of experience fourfold, the method of comparison. The area of the plot – 40 m<sup>2</sup>. The seeding rate of 7 million seeds/ha. On average for the period 2009-2014 most were maturing varieties of flax Bizon, VNIIMK 620 – 76 days. The tallest are varieties Linol – 62 cm, Severnyi, Sokol – 60 cm. The optimal indexes on the structure of crop noted at sorts Severnyi (number of boxes on one plant – 45, number of seed in box – 9, mass of 1000 seed – 7.4 g) and the Legur (number of boxes on one plant – 54, number of seed in box – 8, mass of 1000 seed – 6.5 g). Highest productivity, higher standard, formed a varieties of oilseed flax Bison (yield – 16.8 c/ga, oil – 39.6%), Rucheek (yield – 14.2 c/ga, oil – 43.1%), Severnyi (yield – 14.0 c/ga, oil – 43.6%).

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#### THE IMPURITY AND STRUCTURE OF WHEAT IN DEPENDENCE FROM PREDECESSORS

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**Keywords:** wheat, predecessor, rape, debris, structure, yield.

The purpose of research is to develop methods of increasing and stabilization of wheat production, providing improved phytosanitary condition of crops and crop structure in the conditions of Northern Kazakhstan. Experimental studies were conducted in Kostanai Scientific Research Institute of Agriculture (Republic of Kazakhstan). In the experiment evaluated wheat predecessors in field crop rotations with different structure and set of crops (legumes, oilseeds). On average for the period 2009-2014 less clogged were the first crops of wheat after a couple more clogged – wheat crops for peas and oilseed rape. When sowing the first crop of wheat after the pair number of annual weeds during the growing season has increased by an average of 3.3 times, perennial – 1.5 times. In the case of wheat after pea content of annual weeds has increased 1.4 times, the amount of perennial weeds on average remained at the same level. When sowing wheat after oilseed rape on the period of harvesting the number of annual weeds on average increased by 1.6 times, the amount of perennial weeds decreased by 2.0 times. Thus, the level of infestation of crops the main grain of spring wheat culture in the beginning of the growing season was determined by how effective weed control in crops of previous crops, and at the end of the growing season, before the harvest, and still protect the system in the year of sowing. In terms of the productivity of the average for 2009-2014, research has proved better option sowing wheat crop after the first couple. When plant density of 195 pcs./m<sup>2</sup> was formed 294 productive stems, ie, productive tillering was 1.5, with the number of grains per ear – 24.7 pc. and mass of 1000 seeds – 32.3 g. Good crop structure indicators wheat variations showed after peas and oilseed rape. Productive tillering in these cases was 1.4, the mass of 1000 seeds after the pea – 31.9 g, after oilseed rape – 32.0 g.

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# TECHNOLOGY, MEANS OF MECHANIZATION AND POWER EQUIPMENT IN AGRICULTURE

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## IMPROVEMENT OF DETAILS CONNECTION ASSEMBLY TECHNOLOGY WITH INTERFERENCE

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**Keywords:** technology, assembly, joint, preload, elastic, link.

The purpose of the study is to increase the strength of the collected compounds and to expand the technological accuracy of the method of Assembly with an interference fit. Fixed press-fit connection with interference are widely used in machine building, when the transfer of substantial axial forces are required, torques or combined loads from their joint action. Resistance to mutual misalignment of the parts in these compounds is created and supported by the forces of elastic deformation on the mating surface of the covered part (shaft) and stretching on the mating surfaces of the covering parts (holes) is proportional to the magnitude of the preload in the connection. In such compounds, the diameter of the shaft before Assembly is always larger than the diameter of the hole. In the article the analysis of the known different ways of joining parts with interference fit, including hydraulic presses. The second problem is solved due to the fact that the connection details with tightness is carried out by pressing the press stroke from one detail to another, and the breakdown of the compounds obtained by the relative longitudinal movement of parts, in which the breakdown is carried out periodically in the process of pushing through the transfer of force from the press stroke to pressed items to the elastic connection. The force on the press stroke is created by a hydraulic cylinder with large displacement, a resilient connection between the slider and pressed item performs in the cylinder, the fluid pressure and volume which can be adjusted by changing the stiffness and capacity of the drive RAM, as well as the magnitude of its longitudinal movement during the disruption. The scheme of Assembly of the connection de-hoist with tension. Original technical solution for press fit connection parts extends the technological possibilities of the equipment, increases the strength of the collected compounds and can be used in machine building, particularly in mechanical Assembly processes and, in particular, in the repair and production of agricultural machinery.

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**Keywords:** diesel, mineral, mixed, biomineral, vegetable, fuel, mixer.

The research is devoted to possibility of mineral diesel fuel with mixed biodiesel fuel partial replacement, which contains the vegetable oil as a biological component (such as: rapeseed, camelina, radish, mustard, colza, soybean, etc.). Constructive versions of bi-fuel supply system and mixers for diesel engines adaptation for their operation by biodiesel fuel are offered. The advantages of the developed bi-fuel systems and mixers are: universality in relation to different types of diesel engines; polyfuelness; availability of components; competitiveness; possibility of production in the plant conditions, no requirement of big capital investments, the small term of payback. The application of the offered system by the diesel-powered machinery provides the necessary percentage ratio of mixed fuel components depending on the load-speed mode without its essential constructive changes. The using of the mixed biodiesel fuel containing for example 50% of mineral fuel and 50% of camelina oil allows to save 50% of petroleum diesel fuel, to reduce smoke of the exhaust gases by 17-20%, to reduce the content of carbon oxide by 35-40% in comparison with the work of the diesel engine on mineral diesel fuel, by insignificant decreasing of the effective power (no more than 6%) and by some increasing of specific fuel consumption of mixed fuel (to 14%).

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#### ANALYTICAL ASPECTS OF GRAVITY MIXING DRUM DEVICES

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**Keywords:** mixing, drum mixers, mixer, frequency, blade.

The research objective is improving the mixing quality of the material and determination of structurally-kinematic parameters drum paddle mixer by means of numerical methods. The basis of modern society is the use of variety mixtures and composite materials on their basis. The preparation of the initial mixtures is carried out as directly by mixers, and in some cases by various devices, including extruders and screw presses. Among such devices drum mixers, dryers, mixers, etc are widely distributed. Their feature is the low intensity of mixing, as well as the ability for a relatively short period of time possible to achieve the uniformity of the mixture. Then the quality of the mixture practically does not change. Attempted use of commercially available cement- mixers of periodic action in order to prepare such a mixture as a feed, showed that their existing structures are subject to further improvement because of the impossibility of achieving zootechnical requirements for the preparation of feed on the basis of the purchase and BPD of their own forage. This requires additional theoretical research. The process of the blade drum interaction with the material operating with periodic mixing is shown. The obtained analytical expressions allow to determine the conditions of mixing of the material by major constructive and kinematic parameters of the lobed mixer drum on the basis of numerical methods.

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### DIESEL MIXED FUEL: PROBLEMS AND INNOVATIVE INVENTIONS

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**Keywords:** diesel, mixed fuel, dual-fuel, system, powered, mixer, ultrasound.

The goal of the research is constructive adaptation of automotive diesel engines working by diesel mixed fuel. A perspective kind of an alternative motor fuel is biodiesel blend produced with mixing of vegetable oil and conventional diesel fuel in different percentages. The present diesel-powered machinery is not adapted to work on such kind of fuel because of the different properties of biodiesel and diesel fuels. Applying of the invented devices (such as dual-fuel supply system, the mixer-filter and ultrasonic fuel mixer) allows to adapt automotive diesel engines for work on biodiesel blend. The dual-fuel supply system performs engine start, warm-up and stop modes on mineral diesel fuel, and its work on biodiesel blend on other modes. The original design of the fuel mixer-filter provides effective mixing of components and filtration from contaminants. Due to the high frequency vibrations the ultrasonic mixer provides the obtaining of homogeneous fuel composition and molecular splitting of higher fatty acids contained in vegetable oil.

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#### STAND FOR RUNNING AND TESTING OF LOW POWER MOBILE FARM MACHINERY ENGINES

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**Keywords:** stand, engine, running, testing, small, power.

The purpose of research is to improve the quality of production and repair internal low-power mobile farm combustion engines. To achieve this goal it was suggested to carry out running and testing the engines of small tools and equipment in specialized economical braking stands. The design of such stand, consisting of internal combustion engine, connected crank shaft with asynchronous electric machine with wound rotor, connected to the three-phase network, and matrix converter frequency included in the three-phase electrical network and consisting of nine bidirectional transistor switches, which receive signals space-vector control with automatic control system connected with the test equipment on the basis of a personal computer on which the signals from the sensors mounted on the internal combustion engine is also coming. This stand design for running and testing of internal combustion engines of mobile low power farm machinery is technically easy to manufacture and cost-effective to use. In addition, the design feature of the proposed technical solution is characterized by high energy efficiency and reliability, small dimensions and weight parameters, and wide range of speed control asynchronous machine with wound rotor.

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**Keywords:** mobile, electric, rechargeable, battery, capacity, resistance.

The purpose of research is increase the efficiency of mobile service units. To achieve these goals were analyzed methods for determining the performance of batteries included in the mobile agricultural machinery. The advantages and disadvantages of methods and devices determine the battery capacity. A variant bitmap control voltages of cells a source of electrical energy, consisting of a number of series-connected batteries. A method for monitoring the battery half voltage is characterized by simplicity of realization but is not sufficient to determine the battery performance. A method and device resistance battery Isolation control, allows you to automatically carry out resistance checks as the batteries during operation or during routine maintenance. The set of the considered solutions will automate the process of service batteries, thus ensuring the production of a guaranteed life of batteries and reduce the time of routine maintenance.

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# VETERINARY MEDICINE AND ZOOTECHNICS

UDK 619.636.0.82

## METROLEK-O MEDICINE USE FOR THE CORRECTION OF DAIRY COWS REPRODUCTIVE FUNCTION

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**Keywords:** endometritis, exudate, reproduction, uterus, rectal, examination.

The purpose of research is to increase the efficiency of cows reproductive function correction by medicine Metroleg-O. It was conducted the research clinical gynecologic examination of 4 to 8 day cows after calving. The diagnosis of cows acute postpartum endometritis was established on the basis of clinical exams. From the number of cows, patients with acute endometritis was formed three groups by the principle of analogues (1 experimental, 2 experimental, 3 experimental) of 10 animals each. Studied groups of cows were injected interuterus with the help of syringe with catheter by the drug Metrolek-O with an interval of 48 h until recovery. For experimental group 1 was administered the drug at a dose of 40 ml; 2 of the experimental group in a dose of 50 ml; 3 of the experimental group in a dose of 60 ml. Therapeutic efficacy of the drug Metrolek-O for the treatment of acute postpartum endometritis of cows was determined according to the following criteria: duration of the course of postnatal period, recovery period, frequency of drug use, percent recovery. As a result of the conducted research it was established that the prima version of the drug Metrolek-O in the dose of 50 ml at a multiplicity of the introduction of 4.5 times with an interval of 48 h is more effective than dose administration of 40 and 60 ml. Decrease in therapeutic efficacy of Metrolek-O in the dose of 60 ml is the result of add effects of the drug as an allergen.

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## DYNAMICS OF PROTEIN METABOLISM AND ACTIVITY OF AMINOTRANSFERASES OF DOGS BY ADDING DIHYDROQUERCETIN

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Keywords: Dihydroquercetin, blood, dog, erythrocytes, leukocytes.

The purpose of research is to increase protective and adaptive reactions, the service and the working potential of an organism of dogs through the use of DHQ. The article presents the results of an experiment to the effect of DHQ on the dynamics of hematological parameters of dogs blood. Dihydroquercetin – an active antioxidant, a natural scavenger of oxygen free radicals, hepatoprotective, has anti-inflammatory action due to limitations of the formalin edema and histamine, and inhibits the formation of serous fluid, pain killers, immunocorrective properties. Due to the high complexing properties it displays the body of heavy metals, including radionuclides, it helps to restore the tone of blood vessels, normalization of the lipid spectrum of the blood and slows the development of atherosclerotic plaques. Investigations were carried out in Dogs State Service Ministry of I A of Russia zonal center in Samara Region by clinically healthy of dog breed German Shepherd, age 2-4 years with an average body weight of 30 kg on the background conditions and feeding, adopted by the enterprise. Dogs experimental group received Dihydroquercetin to 0.001 g/kg body weight dose once a day with food. When added to the basic diet Dihydroquercetin dog experimental group show an increase in indicators such as red blood cells – by 18.3% ( $p < 0.01$ ), hemoglobin – by 11.7% ( $p < 0.01$ ) hematocrit – 7.1% ( $p < 0.01$ ), white blood cells – by 9.1% ( $p < 0.05$ ) compared to control data. The research results give reason to believe that the use of dietary supplements in Dihydroquercetin in dogs diet dose 0.001 g/kg allows significantly increase the morphological and physiological indicators of animal organism. In this case a significant increase erythrocytes and hemoglobin and hematocrit indicates increased oxidative metabolism and function of the intensity of the blood in dogs treated with the drug, and increase in the blood indicates an increase in immune status.

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#### THE USE OF SHUNGITE IN THE DIETS OF HIGH PRODUCTIVE CATTLE

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Keywords: ruminants, dairy cattle, ruminal, productivity.

The research focused on the optimization and stimulation of digestion by using of biologically active substances and their complexes. The task was to study the possibility of optimizing the digestive processes and, consequently, increase the productivity of highly productive ruminants caused by the feeding of mineral shungite. Studies conducted on lactating cows and calves Black-Motley breed in the conditions of the FUSE «Kljonovo-Chegodaevo», Moscow region. 1 scientific-economic experience on the principle analogues was formed 2 groups of lactating cows of Black-Motley breed, on 15 ones in each, while

the level of productivity 6500-7000 kg of milk per lactation. In the 2nd scientific and economic experience was formed 2 groups of calves of Black-Motley breed at the age of 3-4 months, staged with the live weight of 100-110 kg, 15 heads in each group. Animals of the experimental groups received the basic diet of farm mineral shungite at the rate of 0.3% of the ration dry matter. The results showed that the inclusion in the composition of the diet of dairy cattle shungite contributes to the optimization of fermentation processes in the rumen, which is manifested in the decrease of ammonia concentration by 25.4%, the increase of amylolytic activity of microorganisms by 2.6%, the concentration of LFP 3.3% and mass of microorganisms. Introduction to the basic diet of lactating cows mineral shungite helped increase milk productivity of cows to 5.4-8.9 percent. Data of individual weighing of calves showed that feeding of mineral shungite improves the intensity of animals growth. Thus, the average daily live weight gain of calves fed the diet with the mineral shungite, increased by 8.4%.

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#### EFFICIENCY OF PROTECTED LYSINE IN THE FEEDING OF DAIRY COWS

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Keywords: feeding, cow, dairy, protected, lysine.

The aim of research is feed additive use efficiency raising of the protected from decay in ruminal lysine Liziperl™ in feeding of highly productive cows calved for balancing rations in the level of lysine. In the experiment three groups of 13 animals studied the influence of feeding protected lysine toyoung female with a yield of 7.500 kg of milk per year from 11 to 100 days of lactation, at 40 and 80 g/head/day, for diet of feed intake, milk production level and quality characteristics of milk, for the biochemical status of blood and indicators of economic efficiency of milk production. As a result of balancing diet feeding cows experimental groups by the level of lysine, increased milk yield of standard (of 4%) of fat per 100 days of lactation was 5.0 and 8.4% ( $P \leq 0.05$ ), with an increase in output of milk fat and protein. Feed consumption per 1 kg of milk expressed metabolizable energy were lower than controls at 3.5-6.6%. Based on the results of biochemical studies in the blood test group II cows installed upward trend in the total protein level and the amount of free amino acids, as well as the activity of ALT, with a significant increase in the concentration of free lysine of 20.7%. Calculations of economic efficiency have shown that the use of the protected lysine Liziperl™ feeding calved dairy cows, in the amount of 40 and 80 g/head/day, significantly increases the cost of the unit cost of dairy products in the first 100 days of lactation in obtaining additional income from the sale of milk in the amount of 3.6-4.2%.

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#### NON-CONVENTIONAL SOURCES OF PROTEIN EFFICIENCY IN COMBIFEEDS FOR LACTING COWS

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**Keywords:** lactating cows, rapeseed, meal, camelina, meal, milk, milk production.

The purpose of research is improving the efficiency of use of feed concentrates for lactating cows newly calved by use in their feed the rapeseed meal and camelina meal. The feasibility of using protein components obtained from the seeds of cruciferous crops – canola and winter camelina has been determined in two trials for Holstein cows of Black-Motley breed. In the first trial it has been found that the inclusion of 5.0-10.0% rapeseed meal in animal feed provides the 1.4-3.4% increase in protein milk yield. Introduction into the feed 10.0-15.0% of camelina meal provides the 2.8-4.2%. Increase of milk production within the animal of experimental groups (in terms of milk 4% fat). The best indicators of cost per 1 kg of 4% fat milk have been found to be in the 2nd and 3d experimental groups: 8.53-8,57 MJ OE; 135-137 crude protein; 343-348 g of combifeed. Replacing of sunflower meal by 15.0% Camelina sativa in the combifeed-concentrate has raised nutrient digestibility of feed ration compounds. Profitability level of milk production has been 7.5 abs.% higher than the control.

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#### ACTIVITY OF ASPARTATE AMINOTRANSFERASE IN THE TISSUES OF THE DUODENUM IN RABBITS IN DIFFERENT PHASES OF POSTNATAL ONTOGENESIS

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**Keywords:** rabbits, aspartate aminotransferase, duodenum, intestine, enzyme, phase, power.

The purpose of the study is improving different body systems of animals in separate development phases of postnatal ontogenesis. To achieve this goal we studied the patterns of age-related changes of the activity of aspartate aminotransferase in the tissues of the duodenum of rabbits in different phases. Used rabbits breed gray giant at the age 1, 6, 12, 18, 24, 30, 45, 60,

90 and 120 days. The duodenum was divided into three parts: proximal, medial and distal. In every part of the duodenum was isolated two layers: mucous and muscle. In their studies of early postnatal life of rabbits was divided into phases. The studies show that due to changes in the structure and function of the muscular and mucous layers of the mucous membrane of the duodenum, due to changes in the composition and amount of food the activity of the enzyme varies. The activity of AST in the tissues of the mucous and muscle layers of the proximal, medial and distal parts of the duodenum at the age 1 day of rabbits in the colostrum nutrition phase, compared with other age groups, relatively low. In the first six days of life, in colostrum nutrition phase, the enzyme activity increases significantly. To twelve daily age rabbits, in the first dairy feeding phase, the activity of AST also increased significantly. Subsequently, the daily age of eighteen, in the second phase of dairy feeding, the activity of AST decreased significantly in the tissues of both layers of the proximal, medial and distal parts of the duodenum. From the daily age of eighteen of rabbits in the tissues mucous layer of the proximal, medial and distal parts and in muscle layer of the distal part of the duodenum, the activity of AST is stabilized. In the muscle layer of the proximal and medial parts of the gut in subsequent phases of feeding rabbits the nature and intensity of age-related changes in activity of AST are slightly different. These distinctive features in the muscle layer of the mentioned parts of the duodenum, possibly associated with peculiarities of generation of their structure. Thus, the most intensive processes of transamination of aminoacids with the participation of aspartate aminotransferase in the examined tissues are seen in rabbits at early stages of postnatal period, to eighteenday old.

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#### QUALITY INDICATORS OF WOOL CROSSBREDS BRIGHT AKZHAIK MEAT-WOOL BREED DEPENDING FROM THE SELECTION OF PARENTAL PAIRS

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Keywords: wool, fineness, class, clipping, quality, strength, selection.

The purpose of the study is improving the wool productivity of sheep of Akzhaik meat-wool breed at the expense of different selections of parents. For research used two variants of selection of parental pairs: Akzhaik meat-wool sheep producing meat-type (weight not less than 110 kg, wool production in the original 9.5 kg, wool length of 15.0 cm, fineness of wool 50 quality) were paired with ewes class I and II at the age of 2.5 years is not a local type of herd age and sex depending on the class ewes were divided into two groups of 200 animals each. The same principle was formed the second option of selection of parental pairs. Only were used for mating with avamat-kami class I and II rams-manufacturers of custom herd (live weight 102 kg, wool production in the original 8.24 kg, wool length 15.5 cm, wool fineness 50 quality). The study of wool production and



physico-technical properties of the wool yearling bright were carried out using established techniques in research laboratories of wool VNIIOK Stavropol. As a result of the conducted researches it is established that the increase in meat content of Akzhaik meat-wool sheep has no adverse effects on wool productivity bright. So the hair is bright at one year of age was typical for crossbreeding in fineness and the staple well-adjusted. Significant differences in physico-technical properties between the compared groups was not available and the wool meet the requirements of the textile industry for a homogenous semi-fine wool.

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#### AGE CHANGES OF $\gamma$ -GLUTAMYL TRANSFERASE ACTIVITY IN TISSUES OF MUSCLES OF THE RABBITS EXTREMITIES

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Keywords: rabbits,  $\gamma$ -glutamyl transferase, muscles, enzyme.

The purpose of the study is improvement of various in animals body systems in separate development phases of postnatal ontogenesis. To achieve this goal, we have studied the regularities of age-related changes in the activity of gamma-glutamyl transferase in the tissues of the muscles biceps and triceps brachii, quadriceps femoris, gluteus and gastrocnemius muscles of the extremities in rabbits in different phases. Used gray giant breed rabbits at the age 1, 6, 12, 18, 24, 30, 45, 60, 90 and 120 days. Age groups were formed according to the principle of unique, taking into account gender, body weight, type of nervous system and general condition. The animal muscle tissue samples were removed and frozen in liquid nitrogen for further research. The activity of gamma glutamyl transferase was determined by photolorimetric and spectrophotometric methods in the scientific laboratory of the Department of Agricultural Chemistry and Ecology of the Academy. The results show the nature of age-related changes of the enzyme levels in the tissues of the biceps and triceps the first forty-five days of life is about the same. But it should be noted that the increase or decrease intensity of GGT activity in the tissues during this lifetime differs. In the rest of the studied periods of life the nature of the activity of the enzyme in the biceps and shoulder triceps is different. The most intensive changes in the GGT level in the tissues of the biceps is detected from two-month to three-month age (increased 2.7 times,  $p < 0.001$ ) in the tissues of the triceps – from forty-five daily to two months (increased 3.9 times) and from three-months to four-months (increased 3.0 times,  $p < 0.001$ ). The character of changes of enzyme activity in the tissues of thigh quadriceps at different age rabbits differs from that of the rest of the studied muscles. The most intensive GGT activity changes from twenty-four to thirty days age (increased 4.0 times,  $p < 0.001$ ). Age-related changes in GGT level in the tissues of the gluteus and calf muscles are basically the same. The difference is found only in the first six days of rabbits' life. Enzyme level in rabbits in the tissues of the gluteus maximus during the first six days increased by 91.0%,  $p < 0.05$ , and in the tissues of the calf muscle, it falls to 27.3%,  $p < 0.05$ .

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#### LINE GROWTH AND EXTERIOR FEATURES OF BLACK-MOTLEY BREED BULLS BY INTENSIVE BREEDING

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**Keywords:** live, weight, measurements, diet, index, composition.

The purpose of research is beef production efficiency growing of Black-Motley breed by use of natural drug Nukleozeptid. The research was carried out in SEC-farm «Hero» Chekmagushevskogo district of Bashkortostan. To carry out scientific and economic experience were formed 4 groups of Black-Motley breed calves at the age of 6 months, with 10 heads each. Groups were formed on the basis of analogue groups. The animals of the experimental group II had drug Nukleozeptid subcutaneously at dose of 20 ml, test group III – 25 ml and experimental group IV – 30 ml. The bulls of Group I is control and the drug is not administered them. In setting up the experience of the measurements of animals calves experimental groups had no significant differences in performance. Measurements of all groups of calves naturally increases with age. Studies have revealed that during the period of experience in the animals of group I height at the withers increased by 20.6%, height in the sacrum – by 17.9%, length of the body – by 38.4%, the depth of the chest – 37.3%, the width of the breast – 40.2%, putting backside – 25.5% femus width by 45.9%, whereas test groups in bulls (II-IV), these figures were above 0, respectively, 9-2.0; 0.5-1.4; 1.3-1.8; 0.1-1.0; 2.1-4.5; 1.8-3.6%. Indices body had the same trend. Gobies experimental groups, this applies especially to young animals of group III were more massive with well developed chest and back of the torso. It is proved that the introduction of new drug Nukleozeptid contributes to the meat productivity.

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DAIRY EFFICIENCY AND GENE POLYMORPHIC VARIANTS OF KAPPA-CASEIN, BETA-LACTOGLOBULIN OF HOLSTEINED BLACK-MOTLEY CATTLE OF SAMARA TYPE

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Keywords: genotype, milk, productivity, polymorphism, gene, Kappa-casein, beta-lactoglobulin.

The purpose of research is heifers protein dairy raising of Holsteined Black-Motley cattle of Samara type. Studies on the identification of polymorphism and the definition of occurrence frequencies of alleles and genotypes at loci kappa-casein gene (CSN3), beta-lactoglobulin (LGB), and complex genotypes (LGB/CSN3) Holsteined Black-Motley breed cows of Samara type. It was established the influence of the genotypes of these genes for heifers dairy production. The cattle of CJSC «Lunacharsky» with genotype CSN3<sup>BB</sup> for dairy production during 305 days of lactation had an advantage over CSN3<sup>AA</sup> genotype at 348 kg and 468 kg in the CSN3<sup>AB</sup> and butter fat content showed significant superiority to 0.16% ( $P < 0.001$ ) and 0.23% ( $P < 0.01$ ). At the exit of butter fat and 28.1 to 23.9 kg of milk protein by 15.3 and 12.7 kg, respectively. The heifers of «Breeding Farm «Druzhba» with these genotypes are equal. The heifers with genotype LGB<sup>BB</sup> CJSC «Lunacharsky» had lower level to genotypes LGB<sup>AA</sup>, LGB<sup>AB</sup> and the level of dairy production at 208 kg and 75 kg of milk. But had the advantage of butter fat content 0.08%, protein by 0.05-0.03%. The heifers of «Breeding Farm «Druzhba» with the heterozygous genotype LGB<sup>AB</sup> genotype produced significantly more at 478 kg ( $P < 0.05$ ) and 150 kg of milk compared with homozygous genotypes LGB<sup>BB</sup>, LGB<sup>AA</sup> and that increased butter fat output 19.8 kg ( $P < 0.05$ ) and protein – 14.5 kg ( $P < 0.05$ ).

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