AGRONOMY, FORESTY AND WATER MANAGEMENT

General Farming and Crop Production

UDK 635.21:631.5(470.64)

Optimization of technology for growing potato in the mountainous zone of the KBR

Abdulmalik A. Batukaev, Zalim-Geri S. Shibzukhov

Abstract. This article is devoted to optimizing the technology for growing potatoes in the soil and climatic conditions of the high mountain zone of Kabardino-Balkaria. To obtain a high-quality product, thoughtful agricultural technology, a high level of biosecurity and spatial isolation are required. In the mountainous zone there is a phytosanitary zone, free from harmful insects and diseases. In such conditions, potatoes can be grown without the use of chemical protection products. It remains to solve the issue of increasing soil fertility to obtain consistently high yields. To do this, we proposed to grow potatoes in a properly structured crop rotation. The next step in increasing productivity was the selection of highly efficient potato varieties. Obtaining a relatively high yield of potato tubers was influenced by the use of correct crop rotation in growing technology. Also, adding compost before the start of the experiment improved soil characteristics and produced consistently high yields. The incorporation of pea and bean residues into the soil also did not go unnoticed. After these agrotechnical measures, the soil structure improved and was enriched with organic matter. Gala has the highest profitability among the studied varieties (485.3%); this is due to the fact that this variety showed the highest yield and, with the same costs and cost of tubers, the highest net income was obtained from growing this variety. The market sales value of the tubers of the cultivated crops was slightly higher than that of competitors using traditional growing methods. The selling price of grown products was only 15% higher than the market average. Even with such a slight increase in the experiments, the net income per 1 hectare ranged from 360 to 485 thousand rubles. Based on the results of the research, it has been proved that in the conditions of a mountainous zone it is advisable and economically profitable to grow potatoes of different varieties.

Keywords: potatoes, yield, crop rotation, biochemical composition, cost, profitability

UDK 633.15:631.81.095.337(470.64)

Increasing productivity and grain quality of hybrid corn grain depending on the application of microfertilizers

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Abstract. The article examines the influence of the timing of microfertilizer application on the productivity of early ripening corn hybrids in the foothill zone of Kabardino-Balkaria. The purpose of the study was to determine the impact of MicroStim-Zinc, MicroStim-Copper and MicroStim-Boron microfertilizers on the productivity of the mid-early corn hybrid Golden Cob

232 MV in rainfed conditions on leached chernozem. It has been established that in the conditions of Kabardino-Balkaria in the foothill zone, when applying a dose of $N_{90}P_{90}K_{45}$ to corn with joint foliar treatment of corn plants in the phase of 6-8 leaves of the hybrid corn Golden Cob 232 MV with MicroStim Boron and MicroStim Copper at a dose of 0.1 kg/ha. a.s. leads the increase in green mass yield to 43.5-44.3 c/ha and grain to 28.1-29.0 c/ha. During field experience and economic analysis, the high profitability of using $N_{90}P_{90}K_{45}$ together with foliar treatment MicroStim-Boron and MicroStim-Copper was established – 233.4-238.4%, where net income is 23.6-24.5 thousand rubles/hectares when growing grain, and when growing for green fodder – 158.0-158.2% and net income 5.3-5.4 thousand rubles/ha. Options Background 2 + MicroStim-Zinc, Boron and MicroStim-Zinc, Copper have proved to be economically less profitable, where the total costs are unreasonably high.

Keywords: corn hybrid, Golden Ear 232 MV, yield, microelements, MicroStim-Zinc, MicroStim-Copper and MicroStim-Boron, total costs, conditionally net income, profitability

UDK 633.15(470.64)

Development of elements of technology for cultivation of corn hybrids in KBR conditions

Viktor G. Sychev, Irina M. Khanieva, Yuri M. Shogenov, Karina Z. Kasheva

Abstract. This article is devoted to the study of the influence of a plant growth stimulator and complex water-soluble fertilizer on economically valuable traits and grain productivity of corn hybrids. Field experiments were conducted in 2021–2023. in the educational and production complex of the Kabardino-Balkarian State Agrarian University named after V.M. Kokov. The experiments were carried out on leached chernozem. The experimental plot is characterized by the following agrochemical indicators: humus content in the arable horizon – 3.3%, total nitrogen – 0.28%, absorption capacity – 34.4 mg·equivalent per 100 grams of soil, the reaction of the soil solution is neutral (pH – 7). The content of mobile phosphorus is 15.0 mg per 100 g of soil, that is, the average supply (according to Chirikov), the supply of exchangeable potassium is increased – 15-18 mg per 100 g of soil (according to Chirikov). The mechanical composition of this soil is heavy loamy. The content of physical clay in it is 57%. The purpose of the research was to determine the effect of a plant growth stimulator and a complex water-soluble fertilizer on economically valuable traits and grain productivity of the mid-early corn hybrid Rodnik 292 MV and the mid-season corn hybrid Diana MV. It was established that the use of the plant growth stimulator Regoplant and the complex water-soluble fertilizer Plantafol increased the plant height by – 3.7%, the length of the cob – 10.6-13.5%, the number of grains in the cob by – 24.2-26.3%, grain weight per cob by - 15.8-35.9% and weight of 1000 grains – 7.5-9.4%, and also maximized the yield of the Rodnik 292 MV hybrid to 8.16-8.96 t/ha and hybrid Diana MV up to 10.0-10.32 t/ha, where the collection of feed units reached 12.6-13.8 t/ha for the corn hybrid Rodnik 292 MV and for the hybrid Diana MV - 15.7-16, 1 t/ha. At the same time, the protein content increased in corn hybrids Rodnik 292 MB to 13.2-18.4% and Diana MB to 11.8-29.4%.

***Keywords*:** corn hybrid, Spring 292MV, Diana MV, plant height, cob length, number of grains in the cob, grain weight from 1 cob, weight of 1000 grains, grain yield, feed units, digestible protein, starch, protein

UDK 635.152:631.82

Productivity of sweet corn under different backgrounds of mineral nutrition using plant growth stimulants

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Abstract. In the conditions of the Kabardino-Balkarian Republic, sweet corn is considered a relatively new crop. However, there is still no single optimized technology for its cultivation. In this regard, we have set a goal: to optimize the technology for growing sweet corn and increase its productivity with the help of universal stimulants that have proven themselves in the production of grain and vegetable crops. During a field experiment, the effect of stimulants was established against the background of the application of mineral fertilizers. For each variant of the recommended doses of mineral nutrition, stimulants were used and their effect on the productivity of sweet corn was studied. With insufficient intensification, sweet corn productivity can drop by 60 percent or more. In our experiments, the productivity of corn varied and depended on the background of mineral nutrition and the use of stimulants. The effect of stimulants on plant productivity showed positive dynamics. The weight of one cob in the control variant (water) was the smallest, but a significant increase in productivity indicators was observed from the action of stimulants. The use of fertilizers and stimulants has significantly increased the productivity of sweet corn. We also conducted experiments to determine the yield of grain from the cob. This indicator is one of the important ones in determining product yield. The maximum values were also reached with an increased background of mineral nutrition with the use of Alfastim 88.7%. The studied drugs have proven themselves to be excellent under different backgrounds of mineral nutrition. The most effective drug in the experiments was Alfastim. The best use of this drug on sweet corn plants increases productivity and grain yield on any background of mineral nutrition.

Keywords: sweet corn, microbiological preparations, productivity, cob diameter, grain yield

ANIMAL SCIENCE AND VETERINARY MEDICINE

Private Animal Husbandry, Feeding, Feed Preparation and Livestock Production Technologies

UDK 636.082.474:636.085

Productive qualities of broiler chickens using sodium humate

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Abstract. The experimental part of our research was carried out on broiler chickens of the "Ross-308" cross. These studies are aimed at specifically studying processes such as growth and development of the studied poultry when sodium humate is included in the diet in appropriate dosages. As a result of scientific experimental experiments, we were able to establish the following that the most optimal dosage of this inclusion is 200-250 mg per 1 kg of feed, which gives the most significant progressive values of the main parameters of poultry accounting. The introduction of sodium humate had a positive effect on growth criteria, in particular on live weight and related growth indicators of chickens. The feed additive used in the diet of poultry

provides an opportunity to reduce the mortality rate of broiler chickens and thereby increases the cost-effective production of poultry meat at a poultry enterprise. The studied data allow us to say with confidence that the selected biologically active compounds increase the level of protein in muscle tissue, which generally has a positive effect on protein metabolism in the body of broiler chickens. Based on the results of the studies, it was established that the feed additive sodium humate in a fractional value of 250 mg per 1 kg of main feed improved the safety of livestock, live weight and the efficiency of meat production of broiler chickens.

***Keywords*:** broiler chickens, "Ross-308" cross, live weight, livestock safety, sodium humate, profitability

UDK 636.5:636.085.552

Study of the digestibility and nutrients of poultry feed with the addition of phospholipid and probiotic

Mukhamed K. Kozhokov, Taulan R. Kudaev, Valentina S. Gappoeva, Bella S. Nikkolova

Abstract. In recent years in the practice of feeding meat poultry probiotics and phospholipids have been successfully used to effectively eliminate nitrates and nitrites from the body. The purpose of the study is to study the digestibility and digestibility of nutrients in meat quail feed with a subtoxic level of nitrates when a probiotic (Provitol) and a phospholipid (Lecithin) are introduced into its composition for denitrification in the gastrointestinal tract of the bird. During a physiological experiment with the joint addition of the probiotic Provitol at a dosage of 1250 g/t and Lecithin at a dosage of 1000 g/t of feed in meat poultry, in a comparative aspect, superiority in the digestibility coefficients of dry matter was observed by 4.05% (P>0.95), organic matter – by 3.85% (P>0.95), crude protein – by 4.02% (P>0.95) and nitrogen-free extractive substances– by 4.05% (P>0.95). At the same time, the bird deposited 12.29% more nitrogen in its body per day (P>0.95). It was shown that due to the synergism of the denitrifying effect of both drugs, there was an increase in the activity of proteinases in the digestive tract of poultry, more calcium and phosphorus were deposited in the body, which led to better digestibility of nitrogen in mixed feed from the amount consumed per day by 6.33% (P>0, 95). Thus, the effectiveness of the synergism of the denitrifying effect on the body of a probiotic (Provitol) and a phospholipid (Lecithin) has been scientifically substantiated, in which an increase in the activity of proteinases in the digestive tract of poultry is observed, which, in general, leads to the activation of digestive processes and a beneficial effect on the formation of bone tissue meat birds.

Keywords: meat quail, nitrates and nitrites, probiotic, phospholipid, digestibility, nutrients, denitrification

UDK 636.52/.58:636.085/.087.

The influence of feed additives on the body's defenses in replacement young animals and laying hens

Alexander A. Ovchinnikov

Abstract. Not all biologically active additives used in the diets of farm animals and poultry can exhibit a pronounced immunostimulating effect. In a comparative experiment, two sorption-

probiotic additives were studied when growing replacement young animals and laying hens of the parent stock of the Ross-308 cross in an amount of 0.50 kg/t of feed. Analysis of the antibody titer in poultry during the growing period showed that chickens are born with colostral immunity to the main infectious diseases of poultry. In the postnatal period, as a result of routine vaccinations, the immune response in the body increases by 107 days, and in laying hens – by 154 days and subsequently decreases by 379 days. The feed additive Sorbitox, in comparison with the control group, reduced the culling of replacement young animals by 5 heads, with Probitox – by 7 heads, in laying hens – by 7 and 15 heads. respectively. At the same time, if in the control group with diseases of infectious etiology 8 birds were culled, then in the group with Sorbitox the number of birds with this pathology decreased to 1 head; with the addition of Probitox there were no birds; sanitary defects in the groups with the studied feed additives decreased by 14 and 21 head. The safety of replacement young animals with the addition of Sorbitox increased by 1.5%, laying hens – by 1.4%, in the group with Probitox – by 2.1 and 6.9%, respectively, and feed costs decreased by 4.4-12. 8%.

Keywords: replacement young animals, laying hens, feed additive, antibody titer, safety, feed costs

Breeding, Selection, Genetics and Biotechnology of Animals

UDK 636.271.034.082.233

Milk productivity of cows of the Kholmogorskaya breed, daughters of the different breeding bulls

Ilya N. Varachev

Abstract. The realization of breeding and productive qualities largely depends on the hereditary qualities of animals. At the same time, genetic progress in dairy cattle breeding is determined by the breeding value of sires. The paper shows the results of studies on the comparative assessment of the milk productivity of cows of the Kholmogorskaya breed – daughters of different sires of the Vis Back Ideal 1013415 and Reflection Sovering 198998 lines. The research was carried out on the basis of the agricultural enterprise JSC "Ilyich's Path" in the Zavyalovsky district of the Udmurt Republic. The research was carried out on the basis of a modern dairy complex with a cow population of more than 1200 heads, and an average milk yield per cow of 8360 kg of milk. The research results characterize the breeding value of stud bulls, which is confirmed by the high milk productivity of their daughters. For two completed lactations, the milk yield of cows of the line Vis Back Idial 1013415 averaged 7934 kg of milk, the mass fraction of fat in milk varied from 3.79% to 3.94%, and the mass fraction of protein from 3.13% to 3.18%. The maximum productivity in lactation 1 (7809 kg; MJ 3.94%; MDB 3.14%) and lactation 2 (8482 kg; MJ 3.93%; MDB 3.15%) was the daughters of the Danner Pi sire. In the group of Reflection Sovering198998 cows, milk yield averaged 7729 kg of milk, the mass fraction of fat in milk varied from 3.81% to 4.0%, and the mass fraction of protein from 3.14% to 3.19%. The daughters of the Prosperous sire had the maximum productivity in lactation 1 (7635 kg; MJ 3.82%; MDB 3.16%) and in lactation 2 (8152 kg; MJ 3.84%; MDB 3.17%).

Keywords: milk productivity, line, breed, Kholmogorskaya, bulls-producers, cows

AGROENGINEERING AND FOOD TECHNOLOGIES

Technologies, Machines and Equipment for the Agro-industrial Complex

UDK 631.352

A device for processing the zone of the trunk circle of an intensive garden on sloping lands

Aslan K. Apazhev, Artur M. Egozhev, Nizam A. Aliev, Khasan A. Apkhudov

Abstract. The existing designs of machines for processing trunk zones do not allow to process fully the trunk strip of fruit plantations with a single pass of the unit along the row line, which negatively affects the effectiveness of their use on terraced slopes, where the approach to the row line is possible only from one side. Basically, producers of fruit and berry products operating in the conditions of foothill slope gardening do not have special machines and mechanisms for surface treatment of the tamping zone in one pass of the unit. Therefore, the development of technical means for bypassing the stem of a tree in the conditions of slope terraced gardening and the implementation of a mower design mechanism based on it is an urgent problem. To improve the quality and reduce the energy performance of the mower when turning the rotary section, with rotary working bodies with knives mounted on it, around the tree stem, a design and technological scheme of a two-rotor mower is proposed for processing the area of the trunk circle of trees in a terrace in one pass of a machine-tractor unit. The obtained results of laboratory studies of technical and technological parameters, as well as production tests of the two-rotor mower mechanism, confirmed the high quality of the technological process.

Keywords: two-rotor mower, tree trunk, trunk area, slope farming

UDK 631.334

Justification of a soil particle trajectory in the technology of subsoil application of liquid organic fertilizers

Taslim S. Baybulatov, Muslim G. Abdulnatipov, Yusup G. Yusupov, Timur T. Baybulatov

Abstract. The article shows the effectiveness of using the technology of subsoil application of liquid organic fertilizers (LOU), which is promising and contributes to their better distribution in the soil, expanding the zone and period of their action and preserving the environment. To implement this technology, it is proposed to use cultivator blades under which the pulverizers are installed. The technological process is as follows: when the cultivator blade moves, the soil layer is cut and temporarily raised, where at this moment the LOC solution is spread, after which the raised soil layer is lowered, saturated with the sprayed fertilizer solution and covering it from above. The trajectory of movement of a soil particle falling from the cultivator blade is theoretically justified, taking into account air resistance and an additionally installed guide plate, during subsoil application of liquid organic fertilizers. The equations of motion or a mathematical model of the motion of the trajectory of a soil particle falling from the guide plate are determined, taking into account air resistance. The resulting equations characterize the size of

the zone of influence of liquid fertilizers on the soil when they are applied under a raised layer of soil, from which we can determine the necessary values and parameters for applying liquid fertilizers, which will ensure their high-quality and uniform distribution in a zone temporarily unfilled with soil.

Keywords: subsoil application, trajectory, soil particle, cultivator blade, liquid organic fertilizers, equation of motion

UDK. 631.354.2.02

Justification of the design and technological scheme of a combined sowing unit for mountain feed production

Vladislav Kh. Mishkhozhev, Alamakhad D. Bekarov, Aliy Kh. Gabaev

Abstract. Mountain forage lands of Kabardino-Balkaria play an important role in the republic's livestock farming and are used quite intensively as a place for summer grazing and for hay production. Such intensive use gradually leads to a decrease in the productivity of these lands. To restore and increase the productivity of forage lands, it is necessary to sow periodically grass seeds with high feed value, as well as apply fertilizers. Both of these processes can be combined if the proposed combined seeder with a disk spreading mechanism is used to mechanize the process. Due to the fact that the territory in which the mountain forage lands are located has complex terrain and slopes of varying steepness, the proposed combined seeder is equipped with a special hydromechanical system. This system ensures the spreading of seeds and fertilizers depending on the steepness of the slope on which the unit is currently operating. This ensures the design working width of the unit and the uniform distribution of seeds and fertilizers over the cultivated area. The hydraulic elements of the combined seeder (hydraulic motors, hydraulic cylinders) operate from the common hydraulic system of the tractor with which it is coupled.

Keywords: land, feed, productivity, overseeding, seeds, seeder, disk, hydraulics, fertilizers, slopes

UDK 634:631.353.73

Mathematical modeling of the process of operation of a picker-chopper of cut branches of fruit trees

Luan M. Khazhmetov, Timur M. Apkhudov, Aslan U. Zammoev, Inal O. Makuashev

Abstract. Regular pruning of fruit trees is an essential prerequisite for increasing the yield and quality of the fruit. Cleaning and disposal of cut branches of fruit plants in orchards are mandatory operations in the technological process of fruit production. At the same time, they are associated with high material and labor costs caused by the low level of mechanization and low efficiency of the technologies used. The most promising is the use of cut branches in crushed form for mulching the soil. This contributes to the accumulation and preservation of moisture in the soil, enriching it with organic matter, mineral nutrition elements, improving agrophysical properties and ultimately involving alienated wood in the cycle of substances without harming the environment. To implement this technology for recycling wood waste, a design was proposed for a pick-up chopper of cut branches of fruit trees, equipped with two stages of rotary twin-roll

choppers. The lack of sufficient data on the processes of interaction between the working parts of shredders and cut branches of fruit trees hinders the improvement of the machine and its widespread introduction into agricultural production. The purpose of the study is to develop a mathematical model of the operation process of a picker-chopper of cut branches of fruit trees. The subject of the study is the process of crushing cut branches of fruit trees using a two-roll rotary chopper into wood mulch. The research was carried out using methods of classical mechanics, physical and mathematical modeling. The object of study is a rotary two-roll grinder. Mathematical modeling of the operation process of the pick-up chopper made it possible to establish the kinematic parameters of the movement of the chopper working body and the rational parameters of the front δ_n = –5°…–15° and rear sharpening angles of the knife $\delta_з$ = 60°-70°, the radius R of the cutting edge of the knife 75-125 mm, the peripheral speed of the cutting edge of the knife v_0 = 8-12 m/s, the cutting speed of branches 10-12 m/s, feed speed of branches v_n = 1,4-2,1 m/s, gap between the cutting edge of the knife and the shaft of the opposite rotor $s = 0{,}003$ m.

Keywords: gardening, fruit trees, pruning, selection, grinding, twin-roll rotary grinder, modeling, kinematic parameters, operating modes

Food Systems

UDK 641.5:664.95

Culinary products for functional purposes based On fish raw materials

Anna T. Vasyukova, Alexandra S. Moskalenko, Anatoly R. Edvars, Olga A. Khlebnikova

Abstract. In the production of semi-finished and finished products from minced fish, the improvement of recipes and technologies aimed at increasing the nutritional and biological value, as well as product safety, is of particular importance. One of the ways to increase functional properties is the use of bioactive peptides in combination with phenolic compounds and other plant dietary supplements, which leads to improved organoleptic characteristics. Many scientists consider accessibility for various social groups of consumers – functional products – to be the most important properties of products. For research, the most accessible marine fishery objects were selected, recommended for the production of minced meat and dishes based on them – hake, pollock and cod, which belong to the cod family. These fish have water-rich (0.82%) white muscle tissue, are unique in calorie content (69-86 kcal), lean (0.6-0.9%) with a high protein concentration (16.0-19.0%). Barley and rice flour were used as functional ingredients, and vegetables and spices were also introduced into the recipes. The control was recipe No. 541. Fish cutlets or balls. Based on experimental studies, the concentrations of plant functional additives were established at 5-15%, which made it possible to increase the ultimate shear stress (USS) by 10.7%, 8.7% and 12.2%, respectively, and the moisture-holding capacity (MHC) of the samples correlates with tenderness and USS. Weight loss during heat treatment is 20-21%, depending on the concentration of the introduced functional additive at a concentration of 5-10%. The developed technology ensures an expansion of the range of functional fish semi-finished products, which is important for the nutrition of socially vulnerable segments of the population.

Keywords: functional formulations, moisture-holding capacity, plant materials, concentrations

UDK 637.4.04/.07

Determination of the quality of edible chicken eggs during storage by changes in the state of ovalbumin

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Abstract. The study of the relationship between changes in protein and the quality of eggs during storage is of great importance in commodity examination (assessing the freshness of eggs) and food technology (increasing the stability of protein products during their processing). The purpose of the study is to predict the equivalent age of edible chicken eggs by s-ovalbumin protein content. The object of the study was the eggs of the "Hisex Brown" cross hens. The eggs were stored in laboratory conditions at an air temperature of 22±1°C and a relative humidity of 60-65% for 1, 5, 10, 15, 20 and 30 days. The freshness of eggs was assessed by the yolk index, white pH and Haugh units. The content of s-ovalbumin was determined by the colorimetric method with biuret reagent on a spectrophotometer at a wavelength of 540 nm. Depending on the weight category of eggs, wide variations were revealed in the yolk index (CVavg.=5.24%), protein pH (CVavg.=1.04%) and Haugh units (CVavg.=1.55%). The variability of s-ovalbumin content is 0.28%. The results of the correlation analysis indicate a very high correlation (r>0.9) between shelf life and s-ovalbumin content, yolk index and Haugh units, and a high correlation (r>0.8) between shelf life and protein pH. The s-ovalbumin content had a very high negative correlation with Haugh units and a positive correlation with protein pH. The relationship between the studied indicators and the weight of eggs of different weight categories is moderately positive for s-ovalbumin and protein pH and negative for the yolk index and Haugh units. The data obtained formed the basis of a model for predicting the equivalent age of eggs stored at a temperature of 22 °C, using the concentration of s-ovalbumin as an independent variable. The model is characterized by high reliability (R^2=0.963). The results of the study indicate the possibility of predicting protein conformational changes and studying the effect of protein degradation on the processes of foaming and spoilage of eggs during storage.

Keywords: edible chicken egg, freshness indices, s-ovalbumin, equivalent age of eggs, model

UDK 664.665

Development of technology for dietary flour products

Maya Yu. Tamova, Evgeniy S. Franchenko, Tatiana A. Dzhum, Rostislav A. Zhuravlev

Abstract. Taking into account the expansion of the range of dietary flour products, research has been conducted to develop recipes and technologies for gluten-free pancakes with chitosan. In the course of the study, issues related to the determination of the prescription components of the dough for pancakes from various types of gluten-free flour were solved. As a result of the analysis of the chemical composition and organoleptic evaluation of the pancake dough, rice and corn flour were selected for further research. When studying the viscograms, it was revealed that the dough for pancakes, developed from rice and corn flour, has a reduced viscosity relative to the classical formulation. To stabilize the viscosity of the dough for pancakes made from gluten-free flour, a water-soluble chitosan component was selected, developed according to TU 9289-067-00472124-03 at BIOPROGRESS LLC. As a result of the research, it was determined that the introduction of chitosan into corn flour dough changes the viscosity slightly, which excludes these samples from further studies, at the same time, when chitosan is added to the recipe of rice

flour pancakes, the viscosity of the dough increases and at an amount of 1.0% of the flour weight, it approaches the viscosity of the control sample. Attention was paid to the study of microbiological parameters of the developed flour culinary products, which proved the antibacterial properties of chitosan, which extends the shelf life of the developed products.

***Keywords*:** wheat, corn, rice flour, gluten, viscosity, chitosan, pancakes, organoleptics, microbiological studies, nutritional value

UDK 664.64.016

Evaluation of baking properties of triticale grain of the Valentin-90 variety

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Abstract. Modern technology development provides for increasing the production of products enriched with functional ingredients, which is dictated by the increased interest of consumers in healthy food products. Therefore, there is a tendency to use natural sources of functional nutrients in food production technology. Therefore, it is necessary to search for new types of grain raw materials suitable for baking, with a more balanced nutrient composition. In such a situation, triticale grain is of particular interest, which has a full-fledged protein composition, is rich in vitamins and minerals, and is resistant to fungal diseases. Improving the nutritional status of bread due to triticale flour will make it possible to fill the body's needs for vital amino acids, vitamins and minerals. Breeders of the National Center of Grain named after P.P. Lukyanenko have created varieties of triticale grain for promotion, which requires additional research on the food market to study its baking properties. The objects of study were triticale Valentin-90 grain and Bagrat winter soft wheat, from which flour was obtained and a quality assessment was carried out on the Infraskan 3150 device. Data on the mass fraction of protein in triticale flour of the Valentin-90 variety – 14.9%, in wheat flour of the Bagrat variety – 13.7% were obtained. The crude gluten content in triticale Valentin-90 flour was 23.6%, of the second quality group, in Bagrat wheat flour 28.6%, of the first quality group. The PE indicator (the number of drops) for triticale was 205 c, for Bagrat wheat flour 545 C. The rheology data of the test on the farinograph device showed that in its pure form, triticale flour is not suitable for bread production. The grading of Bagrat wheat flour in doses of 70, 50, 30% improved quality indicators. The valorimetric evaluation of the farinograms of Bagrat wheat flour and a mixture of wheat and triticale flour in the ratio of 70 : 30% practically did not differ from the control. Bread from such a mixture was not inferior to the control sample in terms of volume, porosity and was better balanced in terms of nutrient composition.

***Keywords*:** grain, wheat, triticale, quality, flour, baking properties