

AGRONOMY

Zatsepina I. V. THE ABILITY OF VARIETIES OF PEARS AND FORMS OF QUINCE IS ROOTED WITH GREEN CUTTINGS WHEN USING AN ANTARIC ACID GROWTH STIMULANT IN ARTIFICIAL FOG CONDITIONS

Plant growth stimulators are a group of organic substances that influence the growth and development of plants. They increase the resistance of plants to stress, various diseases, as well as the effects of adverse factors. Plant growth stimulants have a beneficial effect on the plant, accelerate the onset of flowering, rejuvenate old crops, and improve the quality of fruits. This article presents the results of research on the use of a plant growth stimulator that helps green pear and quince cuttings to form root formations. In the process of work, experimental studies were conducted to study rootability on pear varieties: Autumn Yakovleva (k), Tenderness, Alegro, Yakovlev's Favorite, Skorospelka from Michurinsk and quince: Severnaya, VA 29, No. 21, Provencal. As a result of the conducted research, we used succinic acid (200 mg/l), a plant growth stimulator, for 24 hours in our work. Water was used for control. As a result of the conducted studies, it was found that when processing pear and quince varieties with succinic acid (200 mg/l 24 hours), quince VA 29, No. 21, Provencal, Severnaya had the greatest rooting result. Without treatment with plant growth stimulants, the best result was noted in Northern quince. When treated with plant growth regulator succinic acid (200 mg / l 24 hours), the highest plant height, the diameter of the conditional root neck, the number of roots and the length of the roots were characterized by Northern quince. Without treatment with plant growth stimulants, Northern quince had the greatest length of increments, the diameter of the conditional root neck, the number of roots, and the length of the roots.

Keywords: *plant growth stimulator, green cuttings, rootstocks, varieties, pear, quince.*

Kovtunov S.N., Torikov V.E. DEPENDENCE OF PRODUCTIVITY AND SEED QUALITY OF THE SUNFLOWER HYBRID FAKEL ON THE MINERAL FERTILIZERS AND BIOLOGICAL PREPARATION

In the variants of the field experiment in the flowering phase of the mid-early sunflower hybrid after complex mineral fertilization with NPK 15:15:15 and sulfur, as well as, the biological preparation Humistim, a growth in plant height and an increase in aboveground biomass have been noted, as compared with the variants with azophoska without sulfur. The plants were higher in variants with complex fertilization containing sulfur and after the biological preparation Rostmoment. There was an increase in the diameter of the flower heads in the variants with higher rates of mineral fertilizers (N124,5P90K150), with sulfur content S60 and the biological preparation Rostmoment, as compared with the variant N93,5P60K120 (S40) and the control one. A similar situation was with such indicators as "the seed number in the head" and "the mass of seeds in the head". The share of the mineral nutrition influence on the yield was 51%, and of biological preparation - 43%. The thousand-seed weight and grain-unit increased in the variants where Humistim and Rostmoment bio preparations were used against the background of higher rates of fertilizers (N124P90K150 (S60)). In variants with higher plant nutrition, the huskiness of seeds decreased. The highest seed yield of 4.82 t/ha was in the variants with mineral fertilizers at the rate of N124.5P90K150, with a sulfur content of S60 and with Humistim at the rate of 4 l/ha with working fluid consumption of 200 l/ha. Against this background, coarse and plump seeds were formed with the thousand-seed weight of 65.6 g and the highest grain-unit of 376.1 g/l. The oil content in the seeds increased in the experimental variants, where sulfur-containing fertilizers were applied, and the crops were treated with biological preparations. The oil content of the seeds reached 45.1-45.4%, whereas in the variants without biological preparations, it was 42.0-42.4%. In the variants with biological preparations Rostmoment and Humistim and without sulfur-containing fertilizers, the oil content of seeds ranged from 43.1-43.54%. The oil yield in differently fertilized variants of the field experiment and the application of biological preparations depended on the yield of seeds and their oil content.

Key words: *sunflower, hybrid, yield, quality, seed size, grain-unit, huskiness, oil content.*

Konovalova N. Yr., Konovalova S.S. **AGROPHYTOCENOSES OF PERENNIAL GRASSES FOR INTENSIVE USE IN THE CONDITIONS OF THE EUROPEAN NORTH OF RUSSIA**

The article presents the results of 4 years of research on the study of agrotechnical techniques for creating agrophytocenoses of perennial grasses for intensive use. The research method included conducting field experiments on medium cultivated, sod-podzolic, medium loamy drained soil. Agrophytocenoses consisted of clover, alfalfa changeable, meadow fescue, cane fescue, timothy, rump, perennial ryegrass. The following types of mineral fertilizers were used for grass mixtures: diamphoska in the spring; ammonium nitrate after the first mowing. The aim of the research was to study the influence of agrotechnical techniques on the formation of highly productive agrophytocenoses of perennial grasses for intensive use in the conditions of the European North of the Russian Federation. The scientific novelty of the research consists in the fact that for the first time on sod-podzolic soils, the influence of agrotechnical techniques on the botanical composition, yields and nutritional value of legume-cereal herbage with three-axis use has been studied. The conducted studies allowed us to establish that the composition of agrophytocenoses varied over the years of use, which affected the yield and nutritional value of the plant mass. According to the results of the conducted studies, it was found that the content of sown grass species in the herbage was high regardless of the species composition and the method of sowing and amounted to 65.8-86.6% in the fourth year of use. The sowing method had an impact on the botanical composition of agrophytocenoses – the amount of weed vegetation was 1.2-1.4 times higher with the undercover sowing method. According to the yield of 9.2-9.9 t/ha, grass mixtures with cane fescue were distinguished. Grass mixtures with three-axis use exceeded two-axis use in protein collection by 12-32%, in terms of protein content in 1 kg of CB by 24-43%.

Keywords: agrophytocenosis, perennial grasses, mowing, nutritive value, crop yields, fertilizers

VETERINARY MEDICINE AND ZOOTECHNY

Abylkasymov D., Abrampalskaya O.V., Guseva D.Y., Sudarev N.P. **ECONOMICALLY USEFUL SIGNS OF HIGHLY PRODUCTIVE COWS WITH DIFFERENT TECHNOLOGIES OF THEIR MAINTENANCE**

The article presents the results of a study of the influence of housing conditions on the manifestation of biological signs of highly productive dairy cows. The analysis was carried out in the herd of breeding plant «Kalininskoe» in the Tver region. In terms of milk productivity, cows contained in the conditions of industrial technology of maintenance (II gr.) reliably ($P<0.001$) outperform animals with traditional content. The difference in milk yield of the cows of the first lactation in favor of group II was 1232 kg of milk, in cows of the second and third lactation 873 and 720 kg. In terms of milk fat output, the trend is similar. The fat content in milk in both groups of cows was almost the same. The reproductive capacity of group II cows was higher than that of group I animals. Age and live weight at the first fruitful insemination in cows of group II occurred 13 days earlier, and their live weight was 12 kg higher ($P<0.001$). However, the insemination index in cows of all ages of group I was lower than in animals of group II. Cows in the conditions of traditional technology of keeping had a shorter (by 17-21 days) service period. The duration of pregnancy in group I cows was 3-4 days shorter than in group II animals. In terms of productive longevity, the difference between the compared groups was 0.9 lactation ($P<0.001$) in favor of group I cows. Their milk yield for a lifetime (37326 kg) significantly and reliably exceeds the indicator (30285 kg) of group II animals ($P<0.01$). The technology of keeping under the same feeding conditions affects the productivity, reproductive ability and duration of use of cows. The tethered technology of keeping cows with walking (I gr.) had a more favorable effect on the indicators of reproductive function and the service life of animals, whereas with loose (II gr.) animals give more milk per lactation, regardless of age. Therefore, the search for the optimal technology for keeping cows in the conditions of a particular farm remains relevant.

Keywords: highly productive herds, maintenance technologies, milk productivity, reproductive capacity, lifetime milk yield, age of cows, duration of use.

Voronova K.A., Kletikova L.V. **ASSESSMENT OF THE ADAPTIVE POTENTIAL OF CALVES AT THE FIRST SIGNS OF NUTRITIONAL DYSPEPSIA**

The main problem of diseases of the digestive system is the birth of functionally immature calves, which is the main reason for their low adaptive capacity. Due to the violation of the technology of rearing young animals, untimely feeding of colostrum in calves, alimentary dyspepsia was noted with characteristic clinical signs, severe diarrheal syndrome. At the beginning of the disease in the general blood test, a slowdown in the erythrocyte sedimentation rate is noted. When analyzing the leukogram, the percentage concentration of lymphocytes is at the upper limit of the reference value, monocytes - at the bottom. Index of intoxication of Ya.Ya. Kalf-Kalifa shows a quantitative shift of the leukocyte formula towards neutrophils, the ILSOE index indicates dehydration of the calves, accompanied by intoxication. In the study of the physicochemical properties of urine, the density of urine was increased to 1.050, the concentration of hydrogen ions was slightly reduced, functional proteinuria was noted, which is a consequence of dehydration. In the urinary sediment, crystals of oxalate, calcium carbonate and sulfate and hypuric acid were found. In the coprogram, the physical properties are changed (the color is whitish-yellow, the consistency is liquid, the smell is sour); microscopy of native preparations shows a small amount of indigestible fiber, grains of extracellular and intracellular starch, a large number of drops of neutral fats, which indicates a violation of the digestive and absorption function of the small intestine. The algorithm for diagnosing alimentary dyspepsia includes a routine clinical examination, urinalysis, feces, a complete blood count, including a leukogram and integral indicators. The first signs of the disease are frequent liquid feces, the presence of undigested food particles in the feces, the frequency of urination is reduced, urine density is increased, the presence of inorganic substances. In the leukogram, an assessment of the content of individual cellular elements is necessary; from leukocyte indices, the index of Ya.Ya. Kalf-Kalifa, N.I. Yabluchansky, L.Kh. Harkavy, D.O. Ivanov, the index of the ratio of leukocytes and ESR.

Keywords: calves, nutritional dyspepsia, leukogram, integral leukocyte indices, coprogram, urinalysis.

Danilenko A.V., Andreyanov O.N., Postevoy A.N. **MODERN TECHNOLOGIES FOR PRODUCTION OF MOLLUSCOCIDES**

*The purpose of the presented studies was to expand the range of biological molluscocides and the raw material base of plant products containing surfactants, as well as to carry out a modern technical approach to increase the yield of active substances into the active substance. The technology of preparing molluscocid agents consisted in alcoholic extraction of plant raw materials at room temperature. For the preparation of extracts, medicinal and cosmetic plants were used - Smolevka white (*Silenelatifolia*), Mylnyanka medicinal (*Saponariaofficinalis*). At the beginning of the studies, a powder of herbal preparations was prepared, then aqueous and alcoholic extracts. The boiling point of the extractants was calculated from the Clapeyron-Clausius equation. The prepared preparations were a dark green gel-like mass with a specific odor highly soluble in water and alcohol. The weight of the extracts was 10-20% of the used collection. Preparations with molluscocidal activity had surfactant properties. An aqueous plant extract was used to control the preparations. As a result of studies, it was found that at a temperature of 45 °S, a significant reduction in the time for obtaining extractant during intensification of the technological process occurs. In the course of the tests, a methodological approach to the production of molluscocid agents based on vegetable components containing surfactants by maceration (alcohol extraction at ambient temperature) was developed. The presented technical approach made it possible to reduce the destruction of biologically active substances. In the process of physicochemical synthesis, it was possible to reduce the energy intensity and cost of the technological process. Plant extracts based on soap herbs had high molluscocidal activity against freshwater land gastropods.*

Keywords: molluscocidal activity, surfactants, herbal agents, alcohol, extract.

Kalashnikov A.E., Novikova T.V., Voevodina Yu.A., Ryzhakina T.P., Schegolkov N.F., Gosteva E.R. **APPLICATION OF NETWORK BIOLOGY METHODS FOR THE ANALYSIS OF THE BIOLOGICAL BASIS OF THE IMMUNITY OF FARM ANIMALS**

The object of the study of immunity is not only the genome, but the animal organism as a whole. The study is carried out at the level of the metabolome and phenome with a deepening into genetic processes, incl. transcriptional regulation. In order to efficiently and informatively investigate the influence of harmful factors of the industrial environment on the body of an animal, it is necessary to comprehensively study the genetic effects of immunity and evaluate the preliminary results of our own and previously published studies of the immune status in biological databases. The research methods are statistical calculations in the structural and population genetics of farm animals, as well as molecular genetics, such as highly efficient parallel sequencing of complete DNaseq genomes (or their target fragments related to the target and regulatory RNAseq genes), as well as scanning expression profiles using chips (heat maps). The resulting data is huge and complex for interpretation and visualization. The data processing is carried out by methods of statistical analysis, namely neural networks, multivariate and Bayesian analysis, as well as using linear models. To realize mathematical calculations, since we are talking about working with large amounts of data ("big data"), there are need to buy the time of yandex.cloud or azure.cloud (oracle.cloud computation) calculation servers, or construct own clustered server networks. The tasks of building national operating systems from software computing environments are also actual. The storage of statistical data requires the system development of systems and standards for the classification and codification of genomic data, for example, in Microsoft server or RedDB, PostreSQL, MySQL class environments. The data visualization is conveniently carried out by a number of systems based on the SAS and R software environments, but this may already be beyond the scope of this review.

Keywords: network biology, big data analysis, animal breeding, genetic value, innate immunity, phenotype, genotype

Lodyanov V.V., Denisov D.A. **INDICATORS OF THE QUALITY OF INCUBATION OSTRICH EGGS WHEN BIOLOGICALLY ACTIVE PREPARATIONS ARE INCLUDED IN THE DIET**

The article considers the effect of a dietary supplement included in the diet on the egg production of Black African ostriches. The chemical composition of eggs and their mass have been determined. The calculation of the economic efficiency of including a biologically active supplement in the diet was carried out. Such high rates of fertilization of eggs obtained from female black African ostriches in both experimental groups allowed creating conditions for obtaining a larger number of ostriches than in the control group. In the first experimental group by 25.9%, in the experimental group number two – by 14.8%. At the same time, the yield of ostriches, depending on the number of eggs laid for incubation in both experimental groups, had values higher than the same indicator in the control group by 14.0 and 8.0%, respectively. After studying the incubation process, as well as analyzing the loss of moisture in eggs during incubation, it was found that during the entire incubation period, both in the experimental and control groups, the amount of moisture content in eggs was at the same level, or its decrease was not significant, it follows that we selected the optimal for eggs obtained from female black African ostrich. Calculation of indicators of economic efficiency of using a biologically active additive in the process of incubation of eggs obtained from black African ostrich females showed that in both experimental groups, during the entire experiment, not only the number of incubation eggs increased by 51 and 21 pieces, but also the cost of eggs decreased, despite the additional costs of a biologically active additive.

Keywords: Black African ostrich, egg production, quality, biologically active additives.

Subbotina I.A., Osmolovsky A.A. **CLIMATIC FEATURES OF PARASITISM AND PREVALENCE OF IXODIC TICKS IN DIFFERENT AREAS OF VITEBSK AND THE VITEBSK REGION**

Despite numerous anti-epidemiological measures, on the territory of the Republic of Belarus, the growth of infectious and invasive diseases of humans and animals, the pathogens of which are transmitted by blood-sucking mites and insects, continues. A special place is occupied by diseases whose pathogens are transmitted by ixodic ticks. The purpose of the study is to study the climatic, geographical and seasonal dynamics of parasitism of ixodic ticks in various regions of Vitebsk and the Vitebsk region. The research was carried out in the period from 2019 to 2021. In total 12 routes were covered, 48 flag-km were worked out, 211 ticks were collected. The generic and species affiliation of ticks removed from animals was determined using the N.A. Filippova (1977.). It has been established that in recent years there has been a tendency to change the season of tick activity and the seasonality of tick infections and invasions towards their registration throughout the year (all seasons of the year). In the surveyed area, the fauna of epidemically and epizootically significant species responsible for the spread of tick-borne infections and invasions is represented by ticks of the genera Ixodes (70%) and Dermacentor (30%). It was revealed that I. ricinus is the absolute dominant in the territory of Vitebsk and the Vitebsk region. The number of I. ricinus ranged from 2.6 to 5.4 specimens per flag km in the Vitebsk region and from 3.9 to 4.8 specimens per flag km in the forest and park zone of Vitebsk.

Keywords: ixodic ticks, Vitebsk region, geography, seasonal dynamics.

Skvortsov A.I., Semenov V.G., Potapov N.A., Sattarov V.N., Kharisanova V.L. **MODERNIZATION OF THE PLANT FOR EXTRACTING PERGA FROM THE PERGA HONEYCOMB**

The relevance of the use of perga in various areas of human life contributes to an increase in the volume of its production of perga, which, of course, will contribute to the formation of prospects for the development of the beekeeping industry. Despite the existence of fundamental and applied research in the field of the composition, value of perga and its production technology, in modern beekeeping there are a number of tasks to intensify the production of this product, which is associated with the modernization and improvement of existing devices and equipment, as well as the search for new technologies. The purpose of the work was to familiarize with the results of the modernization of the installation for extracting perga (RF patent No. 2722791 for a utility model). The experimental part of the work was carried out in 2019-2020 at the stationary apiary of LLC "Beekeeping" (Krasnoarmeysky district of the Chuvash Republic). Laboratory studies were carried out at the Chuvash State Agrarian University. The developers have specifically systematized the basic principles of extracting perga from perga honeycombs and proposed ways to resolve them. The purposeful application of the installation for the extraction of perga both in industrial and household apiaries has been scientifically substantiated and experimentally proven. The installation differs in that the fixed teeth are concave like a sickle relative to the movement of the front of the movable teeth. Due to the small revolutions of the shaft rotation relative to the pellets, the parchment will not deform, remaining subsequently unbroken and not bare, which gives the final result of obtaining high-quality parchment. The invention makes it possible to significantly increase the productivity of the installation.

Keywords: parchment, extraction, granules, working chamber, fixed teeth.

ENGINEERING AGROINDUSTRIAL SCIENCE

Nikolaev V.A. **DETERMINATION OF THE FORCES ACTING ON THE GRAIN DURING THE CHANGE IN THE DIRECTION OF MOVEMENT OF THE SIEVE OF THE SEMI-AUTOMATIC GRAIN CLEANING MACHINE IN THE UPPER POSITION**

The main disadvantage of grain cleaning machines equipped with rectangular grates is the limited throughput. To overcome this drawback, a high-performance semi-automatic grain cleaning machine with grates is proposed, representing, in aggregate, an inverted truncated cone that makes vertical oscillations. Earlier, as a result of the analysis of the interaction of the grain with the vertically oscillating sieve, the parameters of the grain trajectory after the first touch of the sieve of the semi-automatic grain cleaning machine were revealed. The profile of the track on which the grate rests through the rollers of the lower ones is determined. The angular velocity of the body of the semi-automatic grain cleaning machine and the period of oscillation of the grids, which allow rational separation of the grain pile, are calculated. To determine the optimal angle of inclination of the lattice, corresponding to the inclination to the horizontal forming an inverted truncated cone, it is necessary to analyze the dynamic parameters of the grain that fell on the sieve during the period of change in the direction of movement of the sieve in the upper position. As a result of calculations, it was established that it continues to accelerate in the area of increasing the acceleration of the grid downwards. The grain in the area of increasing the acceleration of the grid will not have time to stop, since the time of its stop is greater than the time of increasing the acceleration of the grid downwards. Therefore, in order to finally determine the optimal angle of inclination to the horizontal of the forming lattice, it is necessary to analyze the movement of the grain with an equally accelerated downward movement of the sieve.

Keywords: *Cleaning machine, infused truncated cone, vertically oscillating sieve, grain interaction with grill, force of impact on the grain, angle of inclination of the grille.*

Pashin E.L., Ovcharenko A.S., Orlov A.V. **RELATION BETWEEN TENSILE STRENGTH AND VARIATION OF THE PROPERTIES OF RETTED FLAX STALKS**

Article presents the results of researching a connection between tensile strength of fiber samples (determined accordingly to the currently used state standard) and tensile strength of individual fiber complexes the sample is composed of. According to said standard, the number class of scutched flax fiber largely depends of its tensile strength and the variance of thereof. The variance is determined using 30 individual samples, each one taken usually from a separate pack of fiber during raw material evaluation. The mass of each pack corresponds to the mass of one roll of flax straw, after it's been processed using crushing and scutching machines. Retted straw strip required to form a standard straw roll has a significant degree of variation of stalk length, color and fiber separation ratio. This variation defines the tensile strength variation of individual fibers in any single fiber sample. The standard method of tensile strength measurement, based on single-axis deformation of the fiber bundle, allows us to apply the concept of tensile strength utilization ratio. In order to estimate that ratio we created a structural model of the stretching and tearing process using a simple elastic body model. We used tensometry to determine actual values of tensile strength and elasticity for different batches of fiber, and used those values in the model. As the result we had been able to determine the relation between the tensile strength of the sample and the variation of tensile strength of individual fiber complexes. Five times increase of the standard deviation value results in approximately 1.5 times reduction in tensile strength of the sample. From this we can conclude that undertaking actions to reduce the variation of properties of Retted flax straw can significantly increase the number class of the scotched flax fiber produced from it, mainly due to the tensile strength increase.

Keywords: *flax, scutched flax, stalks, Retted straw, tensile strength, property variation, fiber bundle, strength usage ratio.*

SOCIO-ECONOMIC SCIENCES AND HUMANITIES

Bashmakova E.V., Guseva M.A. **THE DEVELOPMENT OF THE WATER SUPPLY SYSTEM IN ENGLAND IN THE MIDDLE AGES (ON THE EXAMPLE OF THE MONASTERY AND CITY WATER SUPPLY)**

Water has always played an important role in human life. In particular, it was an important factor for the development of both settlements and places of

religious worship. This work gives an idea of the development of the water supply system in Medieval England. The study showed that the main origins of the organization of centralized water supply in the country's settlements are based on the achievements of the Roman Empire. The latter, having conquered Britain, began to actively use its rich experience in organizing centralized water supply to local settlements, places of religious worship. Everyone knows the Roman aqueducts, fountains, baths. Monasteries were the first to create their own water supply system in England. Firstly, they needed clean water for religious ceremonies, and secondly, in the Middle Ages monasteries were important centers of socio-political, economic life of society. As a rule, the organization of the monasteries' water supply was a complex system of lead pipes located at a certain angle. This allowed the water, under the weight of its gravity, to flow freely over them. Monasteries actively shared their achievements with nearby cities. Lincoln, Chester, Exeter and Gloucester show such an example. Cities also sought to maintain the sanitary condition of local water bodies on their own. In particular, washing clothes in sources and channels was banned; «dirty crafts» from the XV began to be actively transferred to the municipal outskirts. The consumption of clean water by water-intensive industries was limited, severe fines were imposed for dumping dirt and waste into sources.

Keywords: *Medieval England, water supply of monasteries, organization of centralized water supply, cities.*

Efimova O. G., Shvetsov N. N. APPLICATION OF DIGITAL TECHNOLOGIES FOR THE FORMATION OF FOREIGN-LANGUAGE AUDIOVISUAL COMPETENCE IN ANIMAL SCIENCE

Due to globalization and digitalization affecting the development of agriculture and agricultural education, it is necessary to develop students' modern competencies. An agricultural university aims within the framework of professionally-oriented linguistic education at the formation of foreign-language competence as well, training skills to participate in professional activities in the foreign language. Objective of the article is an attempt to evaluate the effectiveness of digital foreign-language audiovisual materials for the acquisition of knowledge and skills of cattle handling by zootechnical students. Methods Implementation of IT technologies makes possible teaching students to recognize objects, determine relative sizes, shape without direct contact with animals, which has a positive effect on the safety and comfort of all participants in the process. An interdisciplinary approach allows you to reduce the time for studying both a foreign language and cattle farming. A variety of knowledge transformation allows the educational process to be carried out at the necessary level for future graduates. The use of various tools creates comfortable conditions and motivation for independent work of students to study and consolidate the material of the disciplines involved, increase the effectiveness of auditory classes. Scientific novelty Special digital tools based on the use of various methods and techniques of visualization of educational information on such disciplines as “Animal science” and “Foreign language” improves mastery of educational content. Practical significance is in the students’ involvement in the educational process as one of the main tasks of a modern university staff, which is formed thanks to the digital thinking of the educator, based on the teaching methods and techniques gaining attention and maintaining educational motivation.

Keywords: *Foreign language, Animal Science, Interdisciplinarity, Higher education, Agriculture, Competence*

Komissarov V.V. PROMOTION OF THE CONCEPT OF ELECTRIC PLOWING ON THE PAGES OF THE SOVIET POPULAR SCIENCE PRESS

The publication is devoted to futuristic projects of the Soviet intelligentsia in the field of agriculture. The author examines the period of the 1920s-1970s. Attention is focused on such an aspect as the electrification of agriculture, primarily on the development of electric tractors and the use of electricity in mechanized agricultural work. When studying the problem, popular scientific publications in Soviet scientific and technical journals were widely used. Such

projects of electrification of agriculture as electric ploughs, electric tractors, bridge mills are being considered. The author proceeds from the thesis that each technological epoch is characterized by a reassessment of its capabilities. It was the reassessment of the possibilities of electrical engineering at the beginning of the XX century that became one of the reasons for the development of electric plowing projects. Another important factor was the futuristic nature of Soviet ideology. This trait was especially evident in the early years of Soviet power and in the period of the 1950s and 1960s. In the post-war years, electric plowing projects were close to implementation. Numerous experiments were carried out, various models of electric tractors were developed. However, electric plowing was never introduced into mass production. The failure to implement these ideas is associated with a whole range of reasons. Among them are the lack of an appropriate technological base, safety considerations, complexity and high cost of power supply for electric tractors.

Keywords: *intelligentsia, futuristic projects, electrification of agriculture, electric tractor, electric plowing.*

Popova V.N. THE RUSSIAN MARKET OF FERTILIZER UNDER SANCTIONS

On 4th March 2022 the Ministry of Industry and trade of Russia recommended Russian producers to stop export of Russian fertilizers to international market because of logistics problems and refusal of foreign companies to work with Russian goods because of the Ukraine crisis. Besides, unfriendly countries introduced restrictions to Russian exports including fertilizers. Ban on Russia agricultural goods has caused concerns among some global consumers. Countries of Latin America called to exclude Russian fertilizers from sanctions. Such situation, as countries view, threatens food security and entails world starvation, decrease the productivity level of agricultural sector and availability to food. Russian fertilizer – is a strategically important and necessary product, and global consumers couldn't refuse from it immediately. On the 24th March 2022 Office of foreign assets control Department of the Treasury of the USA issued the General License, according to which the Russian fertilizers were withdrawn from sanctions and considered as essential goods. Such solution was adopted in order to avoid shortage of product because of trade and logistics restrictions. Long-term rise in price for fertilizers and its absence could become the reason for reduction of crops in Europe in 2022. Deficit of cereal and oilseeds that mostly exported by Russia, could lead to the following price growth for agricultural resources.

Keywords: *sanctions, Russia, fertilizer, export, trade, agriculture*

Temirdasheva K.A., Gukezhev V.M. THE INFLUENCE OF VARIOUS FACTORS ON THE INCREASE IN COMMERCIAL MILK PRODUCTION

Dairy farming is one of the most important areas in agriculture, in demand at all times. The purpose of the research was to study the state and factors affecting the provision of the population of the Kabardino-Balkarian Republic with milk and dairy products of its own production. Analysis of the results of the study showed that the highest share of self-sufficiency of the republic is in the segment of whole milk products (drinking milk and fermented milk products). It is established that in 2021 milk production in the Republic amounted to 108.8% by 2020, including: in agricultural organizations – 65603t. (106.5% by 2020), in households – 146717t. (109.9%), peasant (farmer) farms and sole proprietors – 86852t. (108.9% by 2020). Milk and cream occupy a large market share not only in the Republic (59.4%), but also in Russia (52%). The second position was occupied by fermented dairy products (24.7%), cheeses, butter and cottage cheese 4.6%, 3.8% and 3.3%, the rest falls on ice cream and milk powder. Currently, breeding and breeding work requires radical improvement. The current state of own production of milk and dairy products in the Kabardino-Balkarian Republic does not contribute to the full provision of milk and dairy products to the population due to low marketability associated with the small size of economic entities. In this regard, we consider it necessary to form special farms with a herd of 200-400 cows to increase the production of commercial milk, which will maximize the productivity

potential of dairy cows and increase their number, taking into account the natural and climatic location of the region.

Keywords: *productivity, milk, own production, red-steppe breed, quality, sales, consumption.*