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EFFICIENCY OF THE PHYTO SUPPLEMENTS FOR PREVENTIVE MAINTENANCES OF GASTROINTESTINAL DISEASES BESIDE RED FOXES

In the article the results of research and production experience on the effectiveness of application of herbal drugs “Fitopank” and “Gastroacid” for the prevention of gastroenteritis among foxes. After using phyto supplements, the AST level reduced by 3.6%, but remained above normal. Occurs the normalization of the levels of urea and urea nitrogen - a decline of 33.6% and 33.8%, respectively. After applying phyto supplements “Fitopank” and “Gastroacid” there was an increase of 6.3% level of red blood cells, reducing by 32% and 52.9% level leukocytes and erythrocytes sedimentation rate respectively, with all indicators remained within normal limits. There for, integrated application of feed phyto supplements foxes fodder for prevention of gastrointestinal diseases in an particularly gastroenteritis, had a positive effect on clinical and physiological of the condition state animals and also contributed to the improvement of metabolism, the gastrointestinal tract, liver, kidneys, the blood, which confirmed by morphological and biochemical indicators of blood of foxes.

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DEPOSITION OF MINERAL SUBSTANCE IN THE LIVER QUAIL EXPOSED TO ELEVATED DOSES OF VITAMIN

One of the factors influencing the rate of growth, productivity and biological value of poultry products, is the content of trace elements and fat-soluble vitamins and their interaction.

A special place among the trace elements belongs to the iron, zinc, copper and cobalt. Maintaining the level of mineral nutrition is especially acute and urgent for poultry, including quails. This is due to the high level of metabolism of poultry, which is more sensitive to deficiency of minerals in the diet.

Hence, the development of poultry industry requires more detailed study of the conditions of quails feeding and keeping with the purpose of expanding and improving the range of products.

The aim of research was to determine the effect of feeding additional vitamins A, D and E on the mineral composition of the liver of quails.

The experiment was carried out on quails by group-analog method. As the basic feed ration "Mulyheyn" of industrial production of JSC "Kyiv-Atlantic Ukraine" was used. Quails of the 1 control group were fed with basic diet. In feeding the quails of the 2, 3 and 4 research groups in addition to the basic diet were added to 10% of vitamins A, D and E and studied their effects on mineral elements accumulation in the liver of poultry. At the end of the experiment control slaughter of four heads of each group was made. Mineral content was determined by the conventional method.

Results. Feeding high doses of vitamins A, D and E have different impact on mineral elements content in the liver of quails. Thus, 10 per cent supplement of vitamin contributed to an increase in the liver of experimental quails calcium on 4.5%, 18.6% of manganese, zinc on 3.5%, copper on 22.1%, 1.5% of iron, while the magnesium content decreased by 13.0%.

Under 10% increased doses of vitamin D in the diet of experimental quails the content of certain minerals has undergone significant changes. Thus, the calcium content in the liver decreased by 12.1%. The rest of the surveyed items increased compared with the control group, in particular magnesium – on 10.1%, iron - by 7.8%, manganese – on 8.7%, zinc - by 16.1%, copper - by 13.9%.

Feeding vitamin E in excess of 10% of basic diet of quails contributed to an increase iron by 2.6%, 18.8% of manganese, zinc - by 14.4% in liver. But calcium content decreased by 24.2%, magnesium - by 5.4%.

As a result of the research it was found that the additional introduction into quails diet of high doses of vitamin A in the amount of 10% of the basic diet positively affects on adoption of manganese by - 18.6, and copper - by 22.1% in quails liver.

Increased doses of vitamin D enhances the iron content in the liver of experimental quails on 7.8%, zinc - by 16.1%, magnesium - by 10.1%.

The additional feeding of vitamin E helped to reduce calcium deposits in the liver of quails by 24.2%, iron - by 2.6%, zinc - by 14.4%.

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PORK QUALITY INDICATORS FEEDING WITH PROTEIN-VITAMIN MINERAL SUPPLEMENTS "MINAKTYVIT"

The quality control of pork production is extremely important in modern conditions. It is necessary to control a set of meat quality indicators when moving to the so-called "industrial pork" and developing the technologies of pig breeding over the last decade.

The quality of meat is influenced by many factors. Feeding is the main of them. Therefore, a number of farms use protein-vitamin-mineral supplements with a certain set of enzymes in the feeding of pigs. Their action releases remote feed nutrients, increases their digestibility and the productivity of animals.

The aim of the research was to find out the level of physical and chemical characteristics of the longest back muscle in young pigs of large white breed and the morphological composition of carcasses when feeding with the new protein-vitamin mineral supplement “Minaktyvit”.

The experiment consisted of equalizing and main periods. The diet structure, as well as the mass of each diet component and the percentage of protein-vitamin mineral supplement varied according to phases of growth. The total number of feed increased from 1 kg / pig per day (8 - 14 kg of live weight) to 1.5 kg / pig per day (14 - 30 kg of live weight), from 2.5 kg / pig per day (30 - 60 kg of live weight) to 3 kg / pig per day (60 - 110 kg of live weight). The equalizing period lasted for 15 days. During this period the animals received a balanced complete feed. During the main period the animals in the control group received a diet with protein-vitamin mineral supplements, while the animals in the experimental group the protein-vitamin mineral supplement starter “Minaktyvit” in the amount of 250 kg per ton in the composition of the grain diet. The duration of feeding with the supplement in such proportion was 33 days. When reaching a live weight of 30 kg, the animals received the protein-vitamin mineral supplement grower “Minaktyvit” in the amount of 150 kg per ton. The duration of feeding was 50 days. When reaching a weight of 60 kg the experimental group received the protein-vitamin mineral supplement finisher “Minaktyvit” in the amount of 100 kg per ton. The main period of experiment lasted for 145 days.

At the end of the scientific and economic experiment the slaughter of pigs (by 3 pigs from each group) was carried out. Then carcasses were deboned to determine the physical and chemical characteristics of pork and the morphological composition of carcasses.

Enriching the diets of young pigs with the protein-vitamin mineral supplement “Minaktyvit” has no negative effect on feed intake and positively influences on meat quality and the morphological composition of carcasses.

The productive effect of feeding with protein-vitamin mineral supplement “Minaktyvit” increased the average daily gains by 95 g or 15.68%, while their level is 701 g in the experimental group of animals and 606 g in the control group.

The control slaughter of pigs was carried out to determine the meat indicators. Pre slaughter live weight of animals was 103.8 ± 1.18 kg in the control group and 119.4 ± 0.55 kg in the experimental one.

When feeding with protein-vitamin mineral supplement “Minaktyvit”, it is observed the increase of protein by 1.9% and the decrease of fat by 0.39% in the muscle tissue in the experimental group of animals. That is a positive fact. Such changes are likely to have influenced on the meat calorie content, which is by 129 kilo-joule more in the experimental group than in the control one.

An important indicator of the quality of meat is active acidity (pH). For high quality pork pH is 5.6 – 6.0. This indicator in young pigs in both groups varies between 5.67 – 5.79.

The morphological composition of pig carcasses shows that feeding of the investigated supplement causes a tendency to increase the carcass weight. The amount of meat increased by 8.2 kg ($P < 0.01$), and that of fat by 4.3 kg ($P < 0.05$) in the experimental group. As for the bone mass, this indicator has incredibly increased by 1.8 kg in the experimental group of animals.

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THE IMPACT OF ALUMINOSILICATE CONTENT OF CERTAIN TRACE ELEMENTS IN MILK OF SOWS

Recently in Ukraine, as in many developed foreign countries, various studies on the use of minerals for the manufacture, fodder additives and fillers for blends in animal feed, their introduction into the soil, the use of medical drugs and the like.

However, unfortunately, this time about the use of detergents, there is a bias and distrust. Apparently, one reason for such thoughts is insufficient globosapiens of these substances. This attitude and view of the detergent permanently restrained and constrains their use in the national economy, and particularly in medicine, veterinary medicine and animal husbandry.

It is well known that rations are balanced not only for protein, carbohydrates and fats, but also mineral elements and vitamins. The lack of a separate macro - and microelements, the violation of their ratio in the diets of animals leads to a significant reduction in the efficiency of utilization of nutrients of feed that, in turn, leads to a significant reduction of productivity of animals, especially calves.

The higher the productivity of animals, the more intensive metabolic processes, including mineral. The relative content of mineral (ash) elements in the animal organism is 4-6 % of its weight depending on age and diet.

Given the above, the purpose of our research was experimental substantiation of feeding sows alunova flour and kaolin, and their mixtures influence on the correction of the exchange of microelements, the dynamics of Fe, Zn, Cu, Co in the milk of sows during lactation.

The object of research were the sows of large white breed 2-4 litters live weight of 200-220 kg.

The study was performed by the method of group analogues in each group were selected idle sows by 8 goals.

Experience continued: equalizing period is 15 days, and the accounting period is 142 days.

Mentioned drugs were administered in the feed. The feed was prepared for every 10 days.

The staple diet of pregnant sows, as in the first 84 days and last 30 days before farrowing provided the basic needs of animals in nutrients.

As shown by the results of the experience of feeding kaolin, alunova flour and their mixtures had a positive effect on trace element content of milk. So the content of trace elements Iron, Cobalt, Cuprum and Zinc in the milk of mares and grew up on the first day of lactation in colostrum, these figures have increased: iron and cobalt in the second experimental group 3.8-3.2 m and 5.0 %.

The additional introduction of kaolin and alunova flour in the diets of gestating and lactating ewes in the number of 135-160 and (67 + 67) grams per head per day resulted in the increase of these elements: Iron – 6,9-10,2 and 10,3 %. Cobalt in milk increased by 24.1-26.3 per cent.

The copper content of the colostrum and milk of sows research in the first day of lactation was at 0.16 to 0.26 mg. counterparts In research, these figures were lower by 23,01 is 38.5 %. Use alunova and kaolin meal in diets of gestating and lactating sows in the amount of 5.5 % based on the dry substance and their mixture (3 ± 3 %) allows to raise the level of Iron, Cobalt and Zinc,

and at the same time to reduce the amount of copper in colostrum and milk ewes throughout lactation.

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ENRICHING PRESERVATIVE OF MELANOIDIN NATURE FOR FEEDING YOUNG CATTLE

The article describes the material on use of enriching preservative of melanoidin nature made of sphagnum peat of hydrolytic cleavage by chemical conversion method. Application of the new enriching preservative for ensiling grass-legume mixture promotes obtaining high quality forage with metabolizable energy concentration in dry matter of 8.64 MJ, 115.6 g of crude protein, 27.2 g of crude oil with no butyric acid and acidity, equal to 4.2.

Experiments on quality of silage prepared in production environment, and to determine the efficiency of animal production were carried out by OJSC “Alexandria-Agro”, of Kamenets district of Brest region in department “Stavy” in July 2015. Two batches of green fodder for storage made of air dry grass were laid.

Study of efficiency of feeding animals with silage with enriching preservative was conducted with young cattle of black-motley breed starting from 6 months of age with average live weight of 170 kg.

Differences in feeding consisted in the fact that young animals of II experimental group were fed with analogue silage instead of spontaneous fermentation silage prepared using enriching preservative. The period of habituation to the new feed was 3 days, experimental feeding with silage - 60 days. Feeds of the basic diet were: corn silage prepared during the phase of wax ripeness of grain by conventional technology, silage with enriching preservative and without it and own-produced compound feed made in branch “Nikolaevo” of “Agroprodukt” of Kamenets district.

Research and economic studies with young cattle over six months of age on feeding with experimental silage in comparison with analogue spontaneous fermentation showed its good digestibility in animals. The use of grass-legume silage made with new preservative in feed diets for young cattle provides daily weight gain at the level of 938 g, which differs by 4.6% in comparison with animals fed with silage of spontaneous fermentation under similar conditions of feeding and management.

Feeding animals with silage prepared with the use of enriching preservative of melanoidin nature reduces feed costs of 1 kg of weight gain by 4.6%. It ensures profit obtained from experimental young animals equal to 35.31 thousand rubles per 1 head for the entire period of experiment and reduction of prime cost of 1 kg of weight gain by 627 rubles.

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PERFORMANCE AND MEAT QUALITY OF PIGS FED WITH PROTEIN AND VITAMIN SUPPLEMENTS

It is shown that the use of feeding young pigs protein and vitamin supplements Vitaprot-BTU domestic production and Polish Provimi-Standard of 10% of concentrated feed increases average daily increments according to 131g and 70g, or at 18,63% and 10% while reducing the cost of feed for 1 kg increase to 15,78% and 9,13%.

Animals with the addition Vitaprot-BTU in the diet had better slaughter rates than the consumption of additives Provimi-standards.

This supplement has contributed significantly to increasing slaughter weight control ($P < 0,05$), carcass weight and release ($P < 0,01$), and reduce internal fat mass (by 34,2%) may indicate some progress towards lipid metabolism its decline in favor of strengthening protein, ie muscle growth, because increased carcass weight, in which the fat has been separated at slaughter.

In the third group of animals that eat additive-Standard Provimi, compared to controls, there is a tendency to increase the mass slaughter by 9,7% ($P < 0,01$), carcass weight (10,5%), internal fat (8,5%), there is unlikely reducing the weight of liver and lung and kidney weight increase.

The use of feeding pigs Vitaprot-BTU leads to an increase in carcass weight 12,72 kg, or 18,8% ($P < 0,01$), whereas the feeding additives Provimi-standard carcass weight prevailing benchmark to 7,12 kg or by 10,5% ($P < 0,05$).

According to the morphological composition of carcasses preference should be given to animals of the second group in which the amount of muscle tissue increased by 13,21 kg (at 35,16%; $P < 0,05$) with the appropriate amount of fat reduction (by 10,26%) . Meat yield of these animals dominated the control level to 13,89%, and fat decreased by 24,54% compared with the same output bones.

Feeding both additives causes decrease in the average thickness of subcutaneous bacon 13,5% and 7,8% and an increase in the number of carcasses and meat output and therefore reduce fat.

Feeding supplements studied is not material to replace the physical-chemical parameters of muscle tissue. Exposure minced meat for 30 days of storage in a frozen state helps stabilize the performance bound moisture content, pH, color intensity, no likely impact on tenderness, marbling and calories.

These results were obtained in the scientific and economic experiments conducted on three groups-analogues young pigs of large white breed, on 10 goals each. Animals in the control group received the complete feed, research - additives Vitaprot-BTU and Provimi-Standard of 10% of concentrated feed diet. Average daily rate increases made by groups 703g (control), 834g and 773g, and before slaughter live weight – 107,4 kg 116,5kg and 112,6 kg.

Keywords: young pigs, feed additives, feeding, performance, slaughter performance, meat quality.

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EFFECT OF FEEDING ENZYME PREPARATION MEK-BTU-6 PRODUCTIVITY, AMINO AND FATTY ACID COMPOSITION OF PIGS

It is shown that the introduction of the diet of young pigs in growing meat MEK-BTU-6 at doses of 0.2; 0.3 and 0.5 kg/t of feed increases the average daily increments animals under 7.6; 10.1 and 9.0%, while reducing energy costs feed units per 1 kg increase by 7.4; 5.6 and 2.9%. And also leads to an increase in slaughter weight of 8,21-15.04%, carcass weight at 7.01-11.49%, tends to increase the mass of internal organs.

In the study of amino acid composition of muscle tissue of experimental animals, there likely increase in almost all essential and essential amino-acids. Feeding young pigs enzyme preparation MEK-BTU-6 causes likely increase of lysine at 1.3 and 3.8%, valine by 5.6 and 8.2%, methionine 3.9 and 5.1%, isoleucine 3,7 and 0.5%, leucine by 0.6 and 4.2%, serine by 7.5 and 14.9%, proline 20.1 and 44.5% and reducing cystine 2.9 and 7.8%, phenylalanine and 6.6 and 8.2%, and tyrosine significant changes were observed.

As for the replacement acids is significantly increased the content of glutamic acid by 7.3 and 16.6%, glycine by 9.8 and 13.9%, alanine 10.6 and 13.6%, aspartic acid 0.2 and 6,7%. Enzyme preparation MEK-BTU-6 in the diet of young pigs leads to increase of replacement of all acids except histidine and arginine, which remained at the same level.

So, overall in the muscle tissue of young animals that eat enzyme preparation MEK-BTU-6 content of amino acids increased in comparison with their counterparts in the control group by 4.2 and 11.0%.

The new enzyme preparation MEK-BTU-6 in the diets of young pigs has no material impact on the amount of fatty acids spinal bacon. But among the saturated fatty acids increased the content of palmitic, margaric, stearic acid and arachidonic acid. Among monounsaturated content increases marharinolein, oleic, and reduced the number hondoin, mirystolein and palmitolein.

The data obtained from scientific and economic experiment in four groups-analogues young white breed pigs, with 10 goals in the group. The first group was a control and received a complete feed. The animals research groups within 141 days of the main period of the experiment fed the enzyme preparation MEK-BTU-6 in the indicated doses. The level of nourishment provided to obtain average daily increments according to groups: 632 g (control), 680 g, 697 g, 689 g. At the end of the experiment was performed three control slaughter animals from each group and taken samples of the longest back muscle for the determination of amino acids and spinal bacon to study fatty acid composition.

Keywords: young pigs, MEK-BTU-6, feeding, performance, amino acids, fatty acids.

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EFFECT OF MIXED LYGAND COMPLEX OF ZINC ON MILK PRODUCTION IN HIGHLY PRODUCTIVE COWS OF HUNGARIAN SELECTION HOLSTEIN BREED

The article shows the results of different efficiency levels of mixed lygand complex of Zinc to obtain clean milk from highly productive Holstein cows of Hungarian selection. In experimental feeding cows we used small component forage mixture composed of feed-concentrates mixed lygand complex of zinc, sulfate salts of copper, cobalt, manganese, sodium selenite, that added to forage mixture to these micronutrients to normal, and selenium concentration was adjusted to 0.3 mg / kg of dry matter intake. Feeding experimental groups differed from the control group that cows from the 2nd experimental group reduced additive of mixed lygand complex of zinc from 788 mg (control group) to 670 mg or 15%, cows from the 3rd experimental group - up to 552 mg or 30% , cows from the 4th experimental group - up to 433 mg or 45% and cows from the 5th experimental group - up to 315 mg or 60%.

Based on the data obtained during the scientific and economic experiment, it was found that the elimination of zinc deficiency in forage mixture on 55% on the account of mixed lygand complex of zinc in the diets of dairy cows of Holstein breed of Hungarian selection in the first 100 days of lactation, provide experimental cows in this element and encouraged by the highest performance compared to the control and experimental groups, which eliminated the deficiency in zinc by 100%, 85%, 70% and 40%. Top figures for average daily milk yield had cows from the 4th and research group that dominated the average daily yield of natural milk of cows from the 1st control group by 7.6%, the 2 nd experimental group by - 4.2%, the 3rd experimental group - 3.2% and the 5 th experimental group by - 2.9% the fat content of milk in the 1st control group -3.67%, the 2nd - 3.70% the 3rd - 3.69% the 4th and -3.73% and the 5 th - 3.71%.

Gross milk yield per cow of 4 percent fat during the first 100 days of lactation was: the 1st control group of 3,650 kg, 2d experimental group 3770 or 4.1% more than control, 3rd - 3800 kg or 5 % more than control, 4th - 3960 kg or 9.4% more than control and 5th - 3830 kg or 5.8% more than control. Costs metabolize energy per 1 kg of milk made in the 1st control group, 7.65 MJ and the 2nd, 3rd, 4th and 5th experimental groups respectively 7.40; 7.33; 7.11 and 7.31 MJ.

Based on data obtained during the scientific and economic experiment proved that a genetic potential of highly productive cows of Holstein breed of Hungarian selection is best realized in the forest-steppe zone of Ukraine at liquidation of zinc deficiency by 55% through the use of mixed lygand complex of this element.

Keywords: highly productive cows, premix, minerals, trace sulfate salts of copper, cobalt, manganese, sodium selenite, mixed lygand complex of Zinc, lactation, milk yield, milk fat, forage mixture, deficiency.

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CANNING WET CORN WITH INHIBITION OF LACTIC FERMENTATION

Harvesting and storage of wet corn in sealed storehouses without grinding for the long-term use for cattle feeding after depressurization for milk complexes is an urgent problem.

We have developed a technological method of preserving wet corn grain that includes introduction of sodium chloride and differs by application of sodium chloride on wet grain at the rate of up to 3% to provide significant osmotic pressure and antimicrobial effect.

The experiment was conducted in terms of biochemical laboratory of the Institute of Feeds and Agriculture of Podillia of NAAS. We used corn grain with moisture content of 25%, which was mixed with sodium chloride in the amount of 3.0% in combination with the preparation of osmotolerant lactic acid bacteria at the dose of 3 mg/kg and put into 3-liter glass jars having hermetic polyethylene covers with hydroseals. We similarly treated wet corn grain with sodium chloride at the dose of 3% from grain forage mass and studied forage additive instead of osmotolerant lactic acid bacteria also put down in 3-liter glass jars. During grain storage the intensity and duration of fermentation was determined. Gas emission was recorded every day by weight method. Glass jars were opened after 2-month grain storage in hermetic conditions. When the jars were opened we determined dry matter content, pH, ammonia nitrogen, total acidity, organic acids and alcohol.

Aerobic stability after depressurization of containers in the production environment is an important indicator of the nutritional value of the preserved wet grain. When the fermentation processes were over the jars were opened, and the dynamics of mold fungi emergence on the preserved corn was fixed under aerobic conditions. The results of observations of mold growing on wet preserved corn grain for one week at 15°C showed that mold microzones were found on grain treated with 3% sodium chloride and in combination with 3% sodium chloride with osmotolerant lactic acid bacteria. The emergence of large mold patches was observed in the control jars and when treating grain with osmotolerant lactic acid bacteria only, while the variant of treatment with 3% sodium chloride in combination with the studied additive the emergence of mold was recorded on the tenth day. This period is sufficient for keeping grain depressurized for feeding cows.

700 t of wet corn were preserved at the pedigree cattle breeding plant "Litynskiy", Lityn region, Vinnytsia oblast in 2014 using our technology. During 6-month period a feeding value of preserved corn grain was analyzed.

The research results give reasons to believe that the developed technological method of preserving corn with low moisture content is a promising one for the industrial dairy complexes.

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EFFICIENCY OF APPLICATION OF BACTERIAL-ENZYME PREPARATION LITOSYL PLUS WHEN THE ENSILAGE OF ALFALFA

Important role in creating stable fodder base for dairy complexes with the same type of year-round feeding is played by alfalfa, that has a high food value of protein and used for making hay, silage and haylage. However an ensilage of alfalfa is a problematic through high buffer capacity and low sugar content, and to get a high-quality silage it is practically impossible without application of preservatives.

The biological preservatives of bacterial-enzymatic action, which unlike chemical preservatives are cheaper and environmentally safer showed themselves in modern terms.

The purpose of research is to determine the dose-use bacterial enzyme Litosyl plus for silaging of alfalfa, by comparing the organoleptic and biochemical indicators of quality, the chemical composition of the resulting silage. This preparation developed DP «Enzyme» of m Ladizhin and shows by itself complex combination of bacterial ferment of Litosyl with the optimally chosen synergic association of two species of lactobacilli and lactic streptococci and enzymes cellulase, pectinases and β -glucanase.

Studies conducted in the laboratory of the Institute of forages UAAS, where in different degrees of dry-curing of alfalfa (adverse weather, humidity 80,91 %, and favorable - 69,92%) were laid parameters of silage with different doses of preservatives.

It is established that when ensiling alfalfa in adverse weather, you need to apply 10 g/t of the mass of bacterial-enzyme preparation Litosyl plus, and in favorable weather, 8 g/t.

With increasing doses of bacterial-enzyme Litosyl plus share of lactic acid in the amount determined by acid increased by inclement weather from 44% to 67% and for favorable from 49.18 to 78.74%. In experimental variants not found butyric acid, while the version without conservation, its share was 8.0 and 14.7%. Use ensured effective conservation processes of fermentation, which is manifested in strong suppression proteolytic processes and consequently led to decrease in the proportion of ammonia nitrogen in total nitrogen feed to 8.99 and 7.77%. Survival crude protein level was 82.67 and 96.46%, while the silo without conservation rate is 52.54 and 86.56%.

The energy value of food harvested is 8.74 and 8.90 MJ MA kilogram of dry matter that dominates the control at 0.63 and 0.84 MJ of energy exchange.

Thus, studies have shown that bacterial-enzyme Litosyl plus, subject to compliance with technological requirements procurement requirements and application influences the increase conservation and quality silage with lucerne, both favorable and in unfavorable weather and can be recommended for wide introduction in agricultural production.

Keywords: lucerne, silage, bacterial-enzyme preparation, crude protein, ammonia nitrogen, doses conservation.

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INFLUENCE OF METAL CHELATOR COMPOSITION ON THE GROWTH AND DEVELOPMENT OF CALVES

Mineral elements enter the chemical body composition of animals mainly as a structural material, and are also involved in the processes of digestion of nutrients in feed, their absorption, synthesis, decomposition and allocation of metabolic products from the body. They create the necessary conditions for normal function of enzymes, hormones, vitamins; stabilize acid-base balance and osmotic pressure.

Complete diet along with other nutrients must be balanced for vitamins and mineral elements. The low viability of calves is caused to some extent by a deficit of carotene, vitamin C, micro and macro elements in the bodies of calf cows and by insufficient intake of feed during postnatal development.

During the protein, mineral and vitamin deficiencies in animals there is a violation of all circuits of metabolic and immunological status. Most sensitive in this regard are the young animals in the early stages of ontogeny because of imperfections of adaptive responses they have not yet obtained stable ability to maintain balance of their inner environment. Adverse effects of biotic and abiotic factors lead to a weakening of resistance, increases the risk of the emergence and spread of various diseases. Therefore, the most of households have very serious need in feeding of newborn calves and optimizing supply of young, especially in winter and spring. Organizing a complete animal feed should take into account the relationship between mineral and other factors of supply. In practice, the diets of farm animals control and balance content of 15 elements: calcium, phosphorus, magnesium, potassium, sulfur, sodium, chlorine, iron, zinc, manganese, copper, cobalt, iodine, selenium, fluoride.

Shortage of mineral substances in ration can be eliminated by injection of natural components to its content (straw, concentrates, juicy fodders), and mineral substances in a form of premixes, additives of microelements, among which the most important role is taken by metal chelation complexes.

The authors of the articles conducted a research on the impact of metal chelation complex on the growth and development of calves. As a result of conducted researches we determined that the schemes of watering by milk and calf milk replacer did not differ. The ration of researched groups was added with metal chelation composition in amount of 20 ml/unit/day.

At birth, the live weight of cows of controlled group ” was 42 kg, and the animals of researched group - 42,1 kg. On the 21st day the live weight of researched group was 3.1 kg more than the live weight of controlled group. The average daily growth of controlled group was within 715 g, and researched group – 745 g. At the end of research, the calves of researched group prevailed similar animals of controlled group for 2.2 kg, allowing receiving for the group 22 kg of living weight more than in controlled group.

As the received data certify, the indexes of total protein, calcium, inorganic phosphors, sugar in animals of controlled and researched groups were within permitted limits.

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***BALANCE OF NITROGEN, CALCIUM AND PHOSPHORUS IN LAYING HENS' BODY
WHEN FEEDING WITH MUSTARD OIL CAKE AND FERMENT SUPPLEMENTS
"MAZZERASA"***

Nutrients entering the body of animals are involved in complex physiological reactions that take place in cells, tissues and organs. As the digestibility rate as a result of the digestive tract gives an idea of the metabolism completely, we examined the balance of nitrogen, calcium and phosphorus in laying hens.

In order to find out the way the protein metabolism works, we can judge by the level of nitrogen usage of feed, which is essential for muscle tissue building. Organization of complete laying hens feeding during experiments makes it possible to obtain objective results and justify them logically.

The main diet control group for laying hens 25-37 weeks of age was balanced in essential nutrients. The rest of the group instead of barley treated with 4 and 6% mustard oil cake and 500 g / t ferment supplements Mazzerasa. Taking into account the balance of certain nutrition elements we can judge the nutrients absorption in general, not only its digestibility or availability to the body.

Estimating the average nitrogen balance we should emphasize that due to the replacement of barley into mustard meal the quantity of used nitrogen increased up to 1.9% in groups II and IV, up to 2.9% in group III and up to 0.7% in group IV.

However, the increase in nitrogen consumption has not led to better digesting as it was found in droppings in excessive amount. In comparison with nitrogen consumption, calcium intake in all groups was around 3.66 – 3.68 g per day.

At the same time, a clear trend is evident in increased excretion of calcium from egg as shells weight in birds under experiment was higher. Bold calcium from bird droppings in the experimental group was lower than in controls.

So in poultry diets of experimental groups the availability of calcium was higher. In group I the availability of calcium was 73.0% in group II – 77.7%, in group III – 76.1%, in group IV - 77.1% and in group V - 77.5%. The absorption of calcium in the body was at 2.46-3.81% of consumption, and tended to be increased in bird research groups, especially in II and IV. The average daily phosphorus consumption in poultry during the balance experiment was at 0.59 – 0.61 g without significant difference. However, it should be noted that bird droppings of research groups allocated less phosphorus compared with the control group.

The availability of phosphorus in the diet of birds in group I was 27.1%, in groups II and IV – 33.3%, group III - 31.2% and group V - 30.5%, which is half less compared with calcium. The following fact should be mentioned that research poultry groups and eggs have devoted more phosphorus ($R \geq 0,999$), and namely: groups II and IV – more than 12.1%, group III – more than 21.6% and group V – more than 10.3%.

It must be emphasized that the body bird research groups delayed more phosphorus compared with group I, in groups II and IV – more than 4.21%, group III – more than 0.57% and group V – more than 1.35%.

Thus, the bird research group has devoted more calcium and phosphorus from the egg, assimilated in the body more, but lost less in droppings, so the availability of calcium and phosphorus in poultry diets of experimental groups was higher.

Key words: bird, calcium, phosphorus, mustard oil cake, ferment supplement.

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***EFFICIENCY OF NEW STRUCTURES OF DIETS FOR COWS IN THE 2ND THIRD PART
OF LACTATION FOR OBTAINING MILK GOOD FOR CHEESE PRODUCTION AT
SUMMER FEEDING***

The purpose of this experiment was testing the efficiency of the use of previously developed by dairy cattle feeding laboratory of RUE “SPC of Belarus for animal husbandry” of the new optimal structure of diets for dairy cows with milk yield of 5.5 thousand kg of milk per lactation and more in the 2nd third part of lactation during summer feeding, with the distinguishing feature of reduction of concentrates, corn silage as well as increasing the amount of silage and green mass on productivity of animals, composition and properties of milk, enzymatic cheese quality, homeostasis of organism products covering feeds.

Experiments were carried out at dairy farm complex “Vankovschina” SHF JSC “Slutsk cheese-making plant” of Minsk region with two groups of analogue cows of black-motley breed with milk yield per lactation of 5824 and 5816 kg of standardized milk with 4% fat content during the 2nd third part of lactation (85 -190 days after calving) at summer feeding in accordance with the methodological guidelines of VIZH. Accounting period of the study made 90 days (May-September 2015).

Feed diets for cows were developed under detailed rules of the RAAS and RUE “SPC of Belarus for animal husbandry” and were similar for general nutrition for cows of the both groups.

Application of diets with adjusted structure of feed had no adverse effect on the animal's appetite, as the palatability of feed in both groups was good, and no digestive disorders were observed.

Animals of the both groups were in the same feeding conditions (three time a day feeding with mobile wagon) and management (with milking at the milking platform).

During the experiment feeds we analyzed, their palatability, milk performance, composition and basic technological properties of milk suitable for enzymatic cheese production and biochemical parameters of blood, as well as product covering feeds were observed.

The experiment results showed that use of new structure or proven feed ratio in the diet for dairy cows during the 2nd third part of lactation, compared to control, resulted in a higher average milk yield of both natural and standardized fat content of 4% (by 3.43 and 4.10% respectively), greater lactation stability (by 3.70%), milk protein yield (by 4.19%) and obtaining extra profit after milk sale of “basic conditional” fat content (3.6%) 1742 rubles more counted per one head (prices of 2015).

New structures of diets or proportion of feeds for cows in main lactation cycle during summer feeding resulted in a strengthening of the functional activity of the blood-forming organs, improving nitrogen and mineral metabolism in animals compared to the control, which was one of the factors (conditions) determining efficiency of using feeds and dairy performance of animals.

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USE OF BY-PRODUCTS FOR DAIRY COWS FEEDING

The aim of the research was to study application of secondary products in feeding dairy cows in mid-lactation.

Scientific and economic experiment was conducted on cows by balanced groups method. 40 cows of black-motley breed were selected taking into account age, performance, physiological state and body weight. The animals were divided into four groups of 10 animals each: control and three experimental groups.

According to the scheme of feeding the control group received feed of own production, and II, III and IV experimental groups – compound feed with inclusion of feed concentrate of 15, 20, 25% on the basis of dried beet pulp, molasses and feed defecate instead of the grain part.

Development of experimental feed formulations was carried out in the feed shop at SE "ZhodinoAgroPlemElita" using own production raw materials. Dried beet pulp, molasses, feed defecate manufactured at OJSC "Slutsk Sugar Refinery Plant".

Based on the feed grain mixture concentrate, sunflower and rapeseed meal, experimental batches of compound feeds for animals were prepared. By the forage and nutritional effect differences between the compound feeds were minor.

The studies helped to determine that the use of feed concentrate in diet in the amount of 15% by weight in the compound feed allows to increase the average yield of milk of basic fat content by 4.8%, decrease the costs of feed units by 3.3%. Feeding animals with feed concentrate in the compound feed in the amount of 20% by weight provides increase of average daily milk yield with basic fat content by 6.6% and decrease of feed units costs by 4.4%. Compound feed with the inclusion of 25% by weight of the feed concentrate increases the average milk yield by 8.4%, and decreases feed costs by 5.6%.

Inclusion in the diet of dairy cows in the primary cycle of lactation of feed concentrate in the amount of 15-25% by weight in compound feed helps to reduce the prime cost of milk to 2.6-2.1% and obtain extra profit per one animal and one experiment of 300-505 thousand Belarusian rubles. Thus, it was determined that inclusion in diets of feed concentrate in the amount of 15, 20, 25% by weight in compound feed instead of grain part for dairy cows in the main lactation cycle had a positive impact on the palatability of feed, morphological and biochemical composition of blood and enhanced milk performance. Implementation of 15-25% of feed concentrate based on dried beet pulp, molasses and defecate increases the concentration of red blood cells by 3.3-5.5% and acid capacity by 2.9-7.2%. The tendency to increase of calcium level in blood of cows in experimental groups – by 4.5-7.6% and phosphorus level - by 6.0-7.9%. Use in diets for cows of 15, 20, 25%

feed concentrate allows to increase milk performance up to 17.4-18.0 kg of milk or by 4.8-8.4%, fat content – up to 3.69-3.72% or by 0.05-0.08 percentage points, as well as decrease of feed costs by 3.3-5.6% compared with the control group.

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INCREASE BIOLOGICAL VALUE OF PROTEIN IN POULTRY COMPOUND FEEDS

The high productivity of poultry can only be obtained with a balance diet of amino acid composition of protein. For poultry lysine, methionine, cystine, tryptophan, arginine, histidine, leucine, isoleucine, phenylalanine, threonine, valine, and for young - glycine is essential. Research of many scientists demonstrated that addition of syntetic amino acids into the composition of diet of birds enhances their productivity, development and growth.

Poultry production is directly dependent on the provision of poultry feed, so for the stable, uniform production quality feed grains are selected including the most adaptive and plastic feed crops. Triticale - a hybrid of wheat and rye, which has high productivity, hardiness and others useful characteristics. Some triticale varieties have higher contents of crude protein compared to wheat and rye.

The aim of research was to determine the characteristics of protein complex of triticale grain and show its feeding value for the forage industry. We investigated samples of corn, wheat, barley, triticale, grain remainders and soybean cake and meal. The amino acid composition of compound feeds containing with triticale fotokalorymatography and chromatography methods was studied.

Results. The analysis of amino acid composition of samples of corn, wheat, oats, barley, triticale and extruded soybean was conducted and compared. The usefulness of protein feed, into composition of which entered triticale and barley grain, with normalized poultry's demand was evaluated. Biological value grain cereal crops protein due to their amino acid composition is determined. It is proved that protein in the grain composition of triticale has higher usefulness compared to that included in barley grain. It has a high quality index, because it contains all the essential amino acids. Availability of amino acids in the body of birds of each amino acid that goes into composition of feed is determined. It was determined what amino acids should be additionally included in to feed composition.

Thus, the balance of amino acid in poultry fodder needs increase of the normal protein level and selection of components so as to achieve minimum input of their synthetic counterparts.

When feeding birds one must consider not only the content of amino acids in the raw materials but also heir availability for assimilation in the binds body.

Keywords: grain triticale, barley, corn, poultry, protein, usefulness, amino acid availability.

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***THE PRODUCTIVITY OF CHICKENS-BROILERS FED BY MIXED FODDERS
DIFFERENTLY PRODUCED***

The goal of our research was to establish the productive action of complete mixed foddors manufactured industrially and mixed foddors manufactured on the grain basis with adding of protein and vitamin and mineral additive. The experiment was conducted at the research farm of Vinnytsia national agrarian university. Two groups of day-old chickens-broilers of Ross 308 cross were selected according to conventional methods; each group had 20 heads. The experiment was conducted during 42 days; the basic period was 32 days, the comparative one was 7 days. The researched poultry was kept at battery cages under the high sanitary conditions, including light and temperature, the chickens were fed according to the experiment scheme. It was established that feeding by researched protein and vitamin and mineral additive and mixed foddors manufactured from own raw materials positively influences on growth and metabolism of researched chicken-broilers of Ross 308 cross in comparison with mixed foddors manufactured industrially. The usage of protein and vitamin and mineral additive increases the body weight by 8.5 % in comparison with complete mixed foddors. The broilers of the second group had the largest absolute and average daily growth by 8.6 %. Besides, it was proved that poultry survival of the researched group has increased by 6 % in comparison with controlled counterparts. The feed costs per 1 kg of growth were lower by 2.7 % in comparison with controlled group. It was proved that additional usage of feed additive causes the increase of hemoglobin by 2.3 % and glucose by 16.8 % compared to the control group. So, the usage of protein and vitamin and mineral additive as an ingredient of grain mixed fodder activates protein and carbohydrate exchange and oxygenating and recuperative body processes; it was researched due to the results of blood analysis. Evaluating the efficiency of complete mixed foddors for chickens-broilers feeding it was proved that cost-effectiveness of broilers meat production has increased by 7.7% due to the usage of PVMA and homemade grain ingredients.

Key words: feeding, chickens-broilers, mixed fodder, body weight, blood.

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PERFORMANCE OF REPAIR YOUNG PIGS ACCORDING TO THE METHODS OF CULTIVATION

Studied growing replacement chicks in 3 ways – no walk in the room; with a walk in vygulnyh concreted areas and a summer camp. The dynamics of growth and development of animals at different ways of keeping, payment of food, time of occurrence and duration of sexual inclination gilts, performance reared pigs. The results obtained research found that growing gilts (z 2- to 8 months of age) in the summer camp led to lower average daily rate (in 14,4-9,8%), increased the cost of feed for 1 kg of growth (9,2-10,3%), but contributed to earlier puberty, strengthening the skeleton compared to peers who held bezvyhulno.

Animals II group who used to exercise vygulnyh sites, in terms of growth and reproduction is almost not inferior counterparts III group.

Guinea, which held bezvyhulno, matched counterparts who used exercise, respectively bahatoplidnistyu to 11,8-13,4% and 4,1-5,2% milk 14,3-6,9 and 6,6-3% 7% weight in the slot 2 months of age – 14,1-6,6% and 7,0-1,2%. Between the repair pigs grown using exercise (second and third groups) by the performance difference was not significant.

The results of the economic analysis suggests that growing gilts Camp and use vygulnyh grounds, promotes their further productivity and cost reduction obtained from these pigs at 2 months of age compared with bezvyhulnym holding respectively 12,3-13.1% and 5.9-5.4 percent.

Growing gilts Camp vygulnyh sites and paved ensure growing animals with a strong constitution, which are characterized by high reproductive and productive qualities.

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INFLUENCE OF BREEDS ON THE GROWTH, DEVELOPMENT AND PRODUCTIVE QUALITIES OF CALVES

Animals' meat productivity of a particular breed is determined by morphological and physiological characteristics, which are formed and developed under the influence of heredity and the conditions of animals feeding and keeping during their breeding. The cattle of Charolais and Aberdeen-Angus breeds are widely used for industrial crossing with dairy cows and dual-purpose breeds. Crossbred calves inherit a high rate of growth, the carcass yield and a higher yield of lean meat. Therefore, the meat of calves derived from beef cattle and their hybrids, grown according to the "cow-calf" system is of great interest. The goal of this experiment was to study the effect of genotypic factors on the growth, development and productive qualities of beef calves.

In order to study the meat productivity of Aberdeen-Angus young bulls x black-and-motley hybrids and Charolais pure breeds, the control slaughter of calves at the age of 6.5 – 7 months was conducted. The first control group included Aberdeen-Angus young bulls x black-and-motley hybrids grown at the Agro-industrial Cooperative “Lasitsk” of Pinsk district, Brest region. The control slaughter group consisted of 15 calves, 9 of them were boned. The second group included Charolais young bulls grown on the “Pedigree farm enterprise “Druzhba” of Kobrin district. The control slaughter group consisted of 5 calves.

When studying the influence of breeds on the growth, development and productive qualities of Aberdeen-Angus young bulls x black-and-motley hybrids and Charolais pure breeds grown according to the “cow-calf” system, it was found that the Charolais pure bred young bulls predominate by the growth and development in all age periods. Their live weight is higher by 8–14 kg or 6.5–16.1%. Charolais pure bred young bulls also predominate by the main slaughter indicators: the pair carcass weight – by 41.6 kg or 42.9%, the carcass yield and the slaughter yield – by 13.8% and 13.6% respectively. The fleshy part of the carcass mainly determines the nutritional and commodity qualities of meat. In our experiment, the half-carcasses of calves of the group II contained flesh by 12,4 kg or 31,4% ($P < 0,001$), more than the half-carcasses of calves of the group I. Myasnosti rate 20,6 % higher than in bulls charolais breed. The pH indicators and color intensity were slightly higher in the control group of young bulls, where the difference was 8.5% and 4.4% respectively. Significant differences on the water-binding capacity of meat between the groups have not been found.

It is experimentally proved that growing calves of charolais breed until the age of 6-6.5 months according to the “cow-calf” system provides high quantitative and qualitative indicators of meat productivity and a significant advantage over aberdeen-angus x black-and-white calves.

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***GENETIC BELONGING OF COWS OF UKRAINIAN RED-AND-WHITE DAIRY BREEDS
TO THE PARENT LINE IS AN IMPORTANT RESERVE TO IMPROVE THEIR
EXTERIOR TYPE AND INCREASING OF MILK PRODUCTION***

This article analyzes milk production and exterior traits of cows of Ukrainian Red-and-White dairy breeds of different factory lines in leading breeding farms of Vinnytsia region.

The results of analysis of milk production and exterior traits of cows of Ukrainian Red-and-White dairy breeds indicate a hereditary resistance due to transmission through the best bull sires, which in turn confirms their high class and selected right direction to consolidate breeding species. Established that the highest milk production had daughters of bulls lines Eleveyshna 1491007.65 (milk yield per first lactation 6520-6826 kg, II - 7274-7380 kg and III - 7774 kg) and Cavalier 1620273.72 (yield per first lactation 6499-6627 kg, II - 6959 kg and III - 7428 kg). For the complex of linear descriptive features of first-calf heifers, the highest rating took daughters of bulls lines Eleveyshna 14910007.65, Kavalera - 162027.72 and Honovera Red 1629391.72. When conducting linear classification of first-calf heifers exterior is observed that a rating of "Very good" as "Well-

plus" received 69.2% of heads, enough for selection in breeding group and creates the necessary conditions for the realization of the genetic potential of milk production animals. Authors point out that the results of linear estimation of first-calf heifers (80,0-83,5 points) suggests a good development of dairy type, combined with a high estimate of their udder (80,5-84,3 points), creates the necessary conditions for the realization of genetic potential milk productivity of animals. The use of linear classification methods according to authors made it possible objectively determine the level of exterior signs of first-calf heifers of Ukrainian Red-and-White dairy breeds which according to estimates are characterized by good signs of development of dairy type and high milk production. On the basis of researches were made conclusions and described the prospects for further researches, where the main is that conditions of breeding factories of Vinnytsya region for breeding cows of Ukrainian Red-and-White dairy breeds, taking into account the number and level of offspring milk production most valuable turned out to be bull-sires of lines Eleveyshna 1491007.65 and Cavalier 1620273.72, and intensive use of bulls improvers of these lines to enhance the exterior of constitutional-type of cows and to increase their milk production.

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***DYNAMICS INDICATORS OF BLOOD OF ZAAZEN KIDS BREED DEPENDS ON
GROWING METHOD***

Having been kept in different keeping conditions, an animal organism undergoes constantly to various influence of environment. Homeostasis has been preserved with the help of adaptation mechanism which is the necessary condition for normal cell and tissue life. Internal medium of organism forms the blood together within lymph and tissue fluid.

Blood system of animal organism maintains acidity and alkalinity, temperature, cell homeostasis, performing protective, transportation, regulatory and other functions. Blood content has a vital meaning for the animal interior characteristic to play a great role or even the first role for the maintenance all the processes take place in the organism.

Morphological blood test is one of the most objective means for judging about its physical state and resistance of experimental organism. Morphological blood content can be changed and depends on physiological state of organism, keeping conditions, and feeding, age, sex and breed origin. That's why to study morphological blood content and its biochemical indices is one of the most important factors of organism state in general.

The study of different ways of influence on kids growing of Zaanenska breed in milky period, morphological and biochemical blood indices and indices of natural organism resistance have been covered. The following parameters have been determined: hemoglobin, erythrocyte and leukocyte content, total protein, albumin, globulin, bactericide and lisocym activity of blood serum.

The experiments have been conducted in 3 groups of kids which have been grown in suckling way (1 control group), separate and contact method (2 experimental group) and hand-feeding (3 experimental group) to 3 months age, from 3 month to 6 month in group pens ropeless on a deep bedding.

Main indices of blood in experimental youngsters have been within physiological norm, though unequal character of morphological and biochemical changes in blood content at the age

aspect of kids depending on growing method have been shown in the analysis of conducted searches. Growing animals in milky period separately from their mothers with the hand feeding method certifies about the strength of metabolic processes in body tissues and provides much higher level of humoral protection of kids' organisms.

To study the peculiarities of morphological and biochemical blood content of animals gives the opportunity to find the methods of increasing their productivity in certain conditions of feeding and keeping.

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MEAT PERFORMANCE OF STEERS OF LIMOUSINE BREED OF DIVERSE WEIGHT CONDITIONS

The aim of the research was to study the meat performance of Limousine breed of steers of diverse weight conditions, reared prior to weaning in conditions of inundated agriculture of PripyatsPolesye in Belarus at year-round housing.

As a result of researches it was determined that at control slaughter of Limousine breed steers of diverse weight conditions and reared prior to weaning at different management technologies, the slaughter yield and carcass yield at the age of 20, 28 and 24 months, respectively, made 59.9 and 59.5 % in the first group, and 60.5 and 60.3% in the second group, that were kept in summer with their mothers in the pasture prior to weaning. The animals of the third group, which was on the year-round housing, showed 65.3 and 64.4% figures.

Good meat carcasses were obtained from experimental animals – meat pulp content in carcasses was in the range of 83.4-85.9%, which corresponds to the level of world standards for the best meat breeds. The pulp : bones ratio made 5-6:1, that proves high quality of the carcasses obtained. And meatiness ratio (pulp yield per 1 kg of bones in carcass) was the highest in the animals of the third group, reared at year-round housing - 6.14 kg vs. 5.7 kg, and 5.1 kg in the second and the first one, that were in inundated pastures during the suckling period. High pulp yield per 1 kg of bones in the experimental calves was obtained from the collar butt (10.8-11.7 kg) and, with the most valuable in culinary respect, from lumbar (7.57-8.37 kg) and coxofemoral (5.29-7.1 kg) cuts.

The study of slaughter indices, as well as morphological structure of half-carcasses of experimental animals show that Limousine breed steers reared in different conditions, have relatively high indices of meat traits and correspond to the breed type. Conditions of suckling management of calves in the summer period had no sufficient effect on formation of carcasses of adult animals. Based on the experimental data obtained, it should be noted that since the Limousine breed is relatively long-period growth breed and capable of building up muscle mass for a longer period of time, the slaughter of animals should be carried out at heavy weight conditions.

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ETHOLOGY OF SUPERREPLACEMENT CALVES KEPT IN DIFFERENT WAYS

The article presents data on timing observations of the behavior acts of superreplacement calves during 180 minutes (60 min. after 1 hour of feed distribution, 60 min. after 6 hours of feed distribution and 60 min. after 12 hours of feed distribution). Research was conducted in the PAC “Agrofirm Rodina”, Stryzhavka, Vinnytsia region, Vinnytsia oblast on 2 groups of superreplacement 12-month aged calves of the Ukrainian black motley dairy cattle breed. Superreplacement calves of the control group were kept tethered, research group – loose in group cages on a wooden floor with face-type blocks (recreation area), cement floor, manure removal using delta scraper, feed tables, which allows farmers to distribute feed once a day.

Evaluation of ethological indicators of 12-month bulls showed significant differences in the behavior of animals under loose and tethered maintenance. Superreplacement calves kept loose spent 18.1% ($P < 0.001$) less time compared with calves kept tethered to eat feeds 1 hour after their distribution. At the same time chewing duration of bulls kept loose was longer by 21.8% ($P < 0.01$).

Under the conditions of loose keeping superreplacement young calves chew and move longer. This state of the behavior theory indicates a minimal impact of the environment on animals. When kept loose a negative effect of one animal on another is much smaller and the movement enables to improve the metabolic processes that lead to increased live weight.

Six hours after feed distribution it was revealed that animals spend time mostly lying down and having a rest. Bulls kept tethered were lying, eating food and standing longer compared with animals kept loose. However, bulls kept loose spent more time for chewing and movement.

Timing of bulls' activities in 12 hours after feed distribution to the feed table showed that feed intake under tethered keeping decreased 5.4 times compared with the analysis carried out 1 hour after feed distribution and the analysis in 6 hours – 1.8 times, under loose keeping – 5.5 and 1.6 times. This is explained by the fact that the amount of feeds on the feed table reduced and the remaining feeds were mainly crude by the structure; therefore bulls in both groups were not willing to eat them. Therefore, the duration of rest in twelve hours after feed distribution was 48.77 minutes for animals kept tethered and 41.96 minutes for animals kept loose. Thus, most time for the rest was spent by the experimental animals lying down.

Calves kept tethered were eating feeds longer compared with animals kept loose. However, bulls kept loose spent more time moving.

When selling average live weight of calves kept tethered was 404 kg, and average live weight of calves kept loose was 446 kg, which is 10.4% more. When the animals were kept loose the conditions for meat productivity formation were more comfortable, allowing farmers to get higher profit from the sale compared with keeping animal tethered.

Keywords: ethology, timing, calves, bulls, tether, loose keeping, feed tables, comfort, live weight, duration.

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***MICROBIAL CONTAMINATION OF INDOOR AIR WHERE TO CONTAIN THE BULLS
UKRAINIAN BLACK-MOTLEY DAIRY BREED***

The conditions of detention of cattle at livestock facilities worsens with increasing microbial pollution. The increase of microbial bodies in the air leads to reduced animal productivity, negatively affects animal health, undermines their adaptive capacity.

Today it investigated insufficiently the microbial contamination of areas under different methods of keeping of calves and young cattle.

It is known that the microbial contamination changes significantly during the day, but comparative data under different content in scientific works are not represented.

The purpose of the research comes from the comparative evaluation microbial pollution of air in the confinement of calves under different conditions during the day.

For studies it selected bull calves of Ukrainian black-speckled dairy breed at 4 months of age, who are in two sections with 40 goals from tethering and loose housing in group cages.

Bacterial air pollution was investigated in Petri dishes for meat-pectin agar. The air sampling was carried out in 10 locations in 6, 12, 18, 24 hours and in the 30 number of months in the stall period.

On average 5 days installed that with tethering content of microbial bodies in 6 hours, and when fastened — 24 hours.

The increase of microbial bodies in the air from 12 to 18 hours is due to the distribution of feed and manure removal.

The content of calves in group cages creates the conditions for the restriction of reproduction of microbial cells.

With age of calves the contamination by microbes increases. So, on average for 5 days research the microbial contamination indoor air, which contains the 16-month bull-calves in comparison with 4-month old following: 140,6%; 168,5%; 157,5%; 159,7% (tie the content) and 115,3%; 137,4%; 140,5%; 138,6% (loose housing).

The relative humidity in the air of premises for keeping of calves was in the range of 62-74% without a leash and 86-89% on a leash. Therefore, in such conditions it tied housing found more microbial cells than in loose housing.

Research has established that the microbial contamination in the premises, which contained calves of Ukrainian black-speckled dairy breed significantly less than in 4-and 16-year-mzezewa age with loose housing. When you use free stall housing of calves is important to reduce the amount of moisture in the indoor air to standard indicators.

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SELECTION OF COWS BY DIFFERENT METHODS AND PURPOSES

It is topical to study the use of different methods in cattle selection at milk producing commercial enterprises. That will allow using rationally genetic characteristics of Ukrainian black and white dairy cows.

The aim of research was to evaluate the use of homogeneous and heterogeneous-group selection to breeding cows and those of the production group.

The breeding group included 80 cows with the average milk production of 5026 kg per lactation; 40 cows with the average milk yield of 4376 kg were selected to the production group.

According to the principle of groups-analogues and in order to study homogeneous-group selection 10 breeding cows in the third lactation and older with regard to medium yields of 5118 kg were selected. The experimental group (production group) included cows-analogues with milk yields of 4415 kg per lactation. Milk productivity of bull's mother was 5256 kg in the control and 4486 kg in the experimental group.

The studies by using heterogeneous-group selection were conducted on 20 cows, where the control group included 10 cows with milk yield of 5038 kg per lactation, and the experimental group – 4135 kg (10 cows).

The milk productivity of bull's mother in breeding cows by using homogeneous-group selection was 5356 kg. It is close to the milk yields of 10 Ukrainian black and white dairy cows, which was 5118 kg of milk per lactation in the average.

The resulting milk productivity of heifers in the third lactation has shown that they provide 5215 kg of milk in the average that is only by 1.89% more than in the lactation of cows. It proves that milk yields of cows were preserved in their heifers.

The production group of cows had milk yields of 4415 kg that is by 15.92% lower than the breeding cows. Therefore, the bull-sire with mother's milk productivity of 4486 kg was used in the homogeneous-group selection. The heifers from these cows and the bull provide milk yields of 4465 kg that is close to their mothers' productivity.

Thus, the cows' milk productivity was preserved and shown up in the heifers when using the homogeneous-group selection in breeding cows and those of the production group.

The use of heterogeneous-group selection by breeding cows and those of the production group and the bull-sire with mother's high milk productivity of 8535 kg for breeding cows and 6186 kg for the production group has significantly increased the yield of their heifers. So, from the breeding cows with milk yields of 5038 kg we obtained heifers, whose yields increased to 6786 kg or by 34.47% and in cows of the production group by 49.60% (5160 kg).

The comparative evaluation of milk yields in breeding heifers and those of the production group by using homogeneous-group selection compared with heterogeneous-group showed significant difference at $P < 0.001$. This proves that using the heterogeneous-group selection is effective at milk producing commercial enterprises.

At the enterprises producing milk it is advisable to divide the herd of dairy cows by their working purpose: breeding cows, the production group and the spoiled ones. It is necessary to use pure

breeding and heterogeneous-group selection that will significantly increase the milk productivity of heifers.

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FEATURES OF COW'S ETHOLOGY UNDER DIFFERENT SIZES OF MIXED BOXES FOR THE COWS HAVING DELICATE SOLID TYPE OF CONSTITUTION

Keeping of cows in one building with other sex and age groups of cattle requires clarification of the housing size and feeding. For this purpose mixed boxes must be supplied.

Motivations of the cows' behavior arise on the basis of signaling to search stimuli of the environment and one of these indicators is a mixed box.

Mixed boxes of different lengths with the basic, secondary and movable frames that allow you to adjust the length of mixed boxes from 600 to 2100 mm were arranged. Experiments were conducted on cows of the Ukrainian black motley dairy cattle breed. 10 animals were selected by the method of groups-analogues. Cows were placed in mixed boxes of different length. Behavior of cows in these mixed boxes was studied using "Guidelines on the Study of Farm Animal Behavior" (1975) with supplements to them by Professor L. Poliovyi (1998).

It was established that the cows spent 2.03-4.2 minutes to examine the place for their rest depending on the size of the mixed box.

It was found that the cows paid special attention to the length of the box. They examined it several times (4 to 8 actions).

Thus, as for the housing inspection, the cows spent the shortest time period or inspection of the size of boxes 900 mm long, which is likely at 600, 1200, 1800 and 2100 mm ($P < 0.001$). As for the choice of the body side for relaxation, the shortest time period was spend by the cows on the acts of that action from 1.98 to 4.42 minutes, which makes 900 mm mixed box the most optimal one for the cows.

Total time spent on the studied acts of the cows' behavior was established in significant parameters from 8.89 minutes (mixed box 900 mm long) to 18.17 minutes (mixed box 2100 mm long), incl. when comparing time spent by the cows in mixed boxes 900 mm long by 12.1%, 1200 mm long by 17.2%, 1500 mm long by 47%, 1800 long by 94.3% and 2100 mm long by 104.4% less than in mixed box 900 mm long.

All this indicates that in the reconstruction of livestock housings the optimal length of a mixed box is 900 mm, which allows cows to change the motivation of stresses before they rest on average in 2.22 minutes.

Selection of cows with the delicate solid type of constitution is one of factors for replenishing the herd of cows of the Ukrainian black motley dairy breed with both high milk production and adaptation of cows to keeping loose in mixed boxes.

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NUMBER OF CHARACTERISTICS AND SELECTION OF COWS OF DIFFERENT TYPES

Keeping of valuable parental characteristics plays a dominant role to obtain the young of the highest milk productivity.

Homogeneous and heterogeneous types are used in the selection of animals. When using homogeneous selection the young keep or even enhance productive and breeding characteristics of their ancestors. The accumulation of intermediate inheritance in the young may show up in the homogeneity or heterogeneity of characteristics. In terms of production the selection is usually conducted by one of two characteristics, either milk yield or milk fat. Therefore, there is not enough data to conduct the selection of different types and forms. Thus, the study of selection of Ukrainian black and white dairy cows by type and form with different number of characteristics is relevant.

The evaluation by rate of inheritance from matched pairs: milk yield, percentage of fat and protein (by one, two and three characteristics) is carried out.

$$h^2 = \frac{\Pi_o}{\Pi_\sigma}$$

where h^2 – rate of inheritance; Π_o – heifers' advantage over the average in the herd; Π_σ – parental advantage over the average in the herd.

By using homogeneous-group selection we obtained cows' milk yields of 5231.4 kg. Such cows were selected a sire with mother's productivity of 5302 kg.

Heifers' milk yields were 5285.1 kg or by 1.03% more than cow's yield and by 0.32% less than that of bull's mother. The rate of inheritance is quite high – 0.76. When using heterogeneous-group selection the difference in yields between cows and bull's mothers was substantial – 1,690.6 kg or 146.8% in bull's mother favor. Heifers' yields dominated cows' yields by 13.65% or 492.9 kg. So, when using heterogeneous-group selection by one characteristic we obtained a significant increase of productivity in low productive cows.

Ukrainian black and white dairy cows have low milk fat percentage. Thus, when using homogeneous-group selection by two characteristics we obtained heifers' milk yield of 4764.7 kg and milk fat content of 3.86%. As a result, heifers' milk yield decreased by 9.85%. Rate of inheritance by milk yield was 0.62, and by milk fat content – 0.41. When using heterogeneous-group selection cows had milk yield of 3018.6 kg, while their heifers – higher by 21.22%. One disadvantage of heterogeneous-group selection is a significant decrease of the inheritance rate in both characteristics: by milk yield to 0.36, by milk fat to 0.27.

Regardless of the type and form the selection by three characteristics (yield, fat and protein percentage) showed that all the indicators decreased compared to the selection by one or two characteristics (yield by 10.68%, fat percentage increased by 0.06%). The same bull-sires were used both in the heterogeneous- group with a small number of cows and in the homogeneous-group selection. Therefore, the productivity of cows by milk yields was less than the productivity of bull's mother by 1779.4 kg, and that by fat and protein content in milk increased by 0.06 and 0.14%.

Thus it was found to use homogeneous-group selection for the cows with the highest milk yields and heterogeneous-group one for those of low productivity during the first stage. It will reveal genetic characteristics of cows and bull-sires in their young.

After the consolidation of milk production it is reasonable to conduct the selection by two and three characteristics that will improve not only quantitative but also qualitative indicators of milk production.

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PRODUCTIVITY OF BULLS OF UKRAINIAN BEEF BREED DEPENDING ON THE DEVELOPMENT OF BEEF CONFORMATION TRAITS

At present stage of breeding beef cattle it is important to know the laws of formation of meat productivity of animals with various development of meat forms. It will allow to predict meat performance the depending on age and exterior. Research has been conducted on Ukrainian meat breed bulls on the basis of breeding plant "Volia", Cherkasy region. From birth to weaning the calves stayed with the mothers. At the age of 8 months animals were put trial to study their own productivity that lasted up to the age of 18-, 21-, and 23 months. Grouping of slaughter animals was based on the balanced group-analog method. Muscle index, index of meatiness, net gain (a carcass weight gain per day of life) have been calculated in accordance with the requirements of ICAR. Meat forms of bulls were evaluated according to the guidelines.

It was established that animals with better meat form manifestation tend to increase the carcass yield (18, 21 mo.), internal fat (21, 23 mo.), net increase (18, 21 mo.), shackles (18, 21, 23 mo.), feed efficiency for weight gain (from 8 to 18-, 21-, 23-month age) and the decrease of the weight of head and lungs in the studied ages - the signs typical for early mature animals which have a number of negative features: skeleton underdevelopment and tendency to excessive fat accumulation. The bullocks with less developed meat forms, characterized by growth intensity with increased metabolism, less ability to body fat deposition and increased growth rate. Bulls with better developed meat forms had lower weight of the testes as compared to the herdmates with less developed meat forms at all ages. The question arises as to the usefulness of the use of animals with the best meat forms, which are grown for breeding because increase of maturity often leads to reduced fertility. Further research should be related to establishing relationships between the development meat forms of bull and their breeding value.

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MAIN PRINCIPLES AND CONCEPT OF LIVESTOCK PRODUCTS ECOLOGIZATION

Nowadays the increasing demand is met mainly by the intensification of livestock, however along with the modern livestock forms, traditional systems continue to exist. Growth in demand for

livestock products offers new opportunities for billions of poor people whose incomes and nutrition depend on breeding of domestic animals.

The article examines livestock sector as probably one of the biggest pollution sources. Livestock provides people with products of high nutrition value and serves many other economic and social functions but also has a great negative impact on the natural resources. It is determined that organization of non-waste production on agricultural enterprises is central to the processes of livestock production ecologization. Principles and concept of ecologization are established, which should be based on a set of measures, aimed at animal preservation, and environment, which ensures the production of environmentally friendly livestock production by optimizing of loading, maintaining and strengthening factors of natural potential.

An important element in livestock ecologization is neutralization of solid and liquid animal wastes, by organizing non-waste production. In non-waste production all the raw materials becomes a product, thus non-waste technology is a method of production in which raw materials and energy are used in the most rational and complex way that any impacts on the nature do not violate its normal functioning, technological process does not make any waste products as well as other components find their use.

There are many opportunities for animal waste disposal. However, the most environmentally friendly and economically profitable is its recycling to biogas – alternative source of energy, which will increase the livestock production effectiveness.

Key words: ecologization, agricultural production, ecological production, non-waste production, alternative sources of energy.

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***THE THEORETICAL ASPECTS OF THE RELATIONSHIP OF FOOD SECURITY WITH
THE REPRODUCTION AND PRESERVATION OF AGROBIOLOGICAL DIVERSITY IN
TERMS OF SUSTAINABLE DEVELOPMENT OF PRODUCTION***

Ukraine is characterized by favorable natural conditions for agricultural development and production of environmentally friendly agricultural production and processing quality. However, current economic conditions and allowing for the production cycle in agriculture all need more attention ecological and natural climatic risks, causing the level of food safety and greening production.

The sharp deterioration of the ecological situation in almost all regions of the world due to the anthropogenic human activities impact on the quality of the food. With food the body goes 31 much of chemical and biological substances. They fall and accumulate in the food as the biological and on the food chain. Food chain covers all stages of agricultural and industrial production of food commodities and food products, and storage, packaging and labeling. In this regard the security and quality of food is one of the main problems of modern society, which depends on the resolution of public health and preserve the gene pool.

To ensure food security is appropriate to allocate environmental and natural climatic risks justifying the possibility of environmentally friendly production of quality agricultural products, the level of food safety and greening production.

The functioning and development of agriculture as the foundation of food is not properly secured sufficiently substantiated methodical and analytical practices in matters of development and implementation of effective agri-food policy, especially in relation to food security in the economic and national security of Ukraine. Therefore, the development of scientific bases of formation of food security in the system of reproduction and preservation of biodiversity in terms of sustainable production that meets the principles of the market economy and modern changes in the structure of agri-food production, is actual today.

In recent years, major countries are taking steps to develop and support organic agriculture. This is due to rising food needs of 24 people and awareness of humanity degradation of environment caused by the intensification of agriculture. Methods are producing organic agricultural products guarantee the required quality of such products, food safety and do not harm the environment.

Thus, the development of organic production directly contributes to the problem of food security, the essence of which is to provide such socio-economic and environmental situation in the country, in which all its citizens are provided with stable and guaranteed safe and quality food in adequate quantity and assortment. Given the paramount importance of organic production for food security, intensification of its further development relates to the strategic objectives of the state.

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***ECOLOGICAL AND PHYSIOLOGICAL CHARACTERISTICS OF COMMON REED
/PHRAGMITES AUSTRALIS/ SPREAD AND WAYS AS FOR ITS PHYTOMASS
UTILIZATION***

Common reed is a cosmopolite, the plant is known in all physical and geographical zones of Ukraine. It forms almost undiluted groupings, or appears to be dominants or subdominant. Today, a very intense spread of reed is observed plus its area has also increased.

The results of studies, which were carried out in 2000-2015, were used for this analysis.

Processes of waterlogging are connected with spreading of common reed, with is carried out by seeds or in vegetative ways. This is facilitated by such factors as the decrease in the water level in the reservoirs, rarefied vegetation and high level of organic matter in soils. The rhizome of reed branches out greatly. The greatest rate of reed spreading was observed in areas with a lot of soil covering infringement.

This process is associated with waterlogging of lakes, floodplain of rivers and wetlands areas. Thickets of reed depress other plants growth and worsen the habitat of fish.

Variety of problems arise because of plant groupings overgrowth including common reed (the rapid wearing out of the water bodies, the occurrence of fish death phenomena from lack of oxygen, the increase transpiration rate). Among the consequences which can be observed are: the ecological ones (succession of vegetation occurs, overgrowing of reservoirs), the physiological ones (bio-elements concentration change, formation of an oxygen mode in water) and the biologically productive ones (high food quality of reed).

The phytomass of reed can be used as a raw material to produce flour and alcohol, coffee can be produced from rhizomes of plants. There is a problem of phytomass excision from aquatic ecosystems. It is necessary to mow plants below the water surface. The harvester of phytomass cutting must be created. Besides, the underground part of a plant should be used. Earlier drained peat soils turn into peatbogs again and eventually become covered with reed.

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THE STATE OF ICTHYOFAUNA OF SANDRAKSKE LAKE

Fish-farming is a highly productive field of the Ukrainian economy. But today the branch is declining. The analyses of the results of the economic activity of fish-farming enterprises showed that a complex approach to utilization of water resources should be introduced, one of the ways of which is farming the fish in small water bodies and riverbed ponds. Such water bodies are suitable for grazing rearing of carp, grass carp, silver carp and other species of fish.

As a result of the conducted study 16 species of fish and its fry belonging to 5 families were found in Sandrakske lake. The most numerous are the carp family – 11 species and the perch family – 2 species. But after the questioning the amateur fishers whether, catfish, pike and loach were also included into the list.

According to the results of a drag-net catch young perches were 3.7 – 10.2 cm long, roaches – 3.1-10.8 cm, redeyes – 3.7 -7.7cm and crucians – 15.5 – 16.8 cm. Other non-industrial fishes had mainly 2.3 -5.4cm of body length. In general about 220 pieces of young fish were measured.

As to relative population, non-industrial small species of fish prevailed in that water body, especially bleak (98 -99% of the total catch) and gudgeon in some areas – more than 23%.

Absolute population of the bleak in the pond in spring time was more than 12 pieces per square m, gudgeon – 1.14 pcs per square m.

In fishing nets a significant amount of ruff, bleak and gudgeon was found, those species are not valuable and are not desirable in industrial production. The amount of young fish of industrial species (roach, perch, crucian, redeye) was only 1 – 1.5 %.

The result of the study shows that species and numerical structure of the caught young fish was presented mainly with non-industrial species.

Analyses of industrial ichthyofauna shows that carp (3 years old), silver crucian (3 – 4 years old), silver carp (3 years old), perch (4 years old), redeye (4 years old) and ruff (5 years old) also live in the pond. The carps weigh mainly 0.49 – 0.5 kg, silver carps – 0.72 – 1.2 kg, silver crucians – 0.14 – 0.38 kg, perches – 50 -80g.

Carp, crucian and perch are reproduced in the water body in a natural way. According to the results of control catch on the area of 830 square meters amount of the industrial catch per night was 20 fishes weighing 6,39kg. In the catch crucian (35%), carp (25%), perch (20%) and silver carp (10%) prevailed. By weight valuable industrial species dominated : carp (38.8%), silver carp

(30.0%) and silver crucian (24.3%).

The conducted study demonstrated that actual fish productivity of the water body makes up, due to the results of the net catch, 76.68 kg/ha, out of which specific weight of carp, white carp and crucian was 29.76, 23.04 and 18.6kg respectively.

It was established, that actual fish productivity of the water body, taking into consideration all species of fish, was 300kg/ha, out of which 50 kg/ha were industrial fishes.

In the prospect it will be necessary to partially discharge the water, eliminate non-industrial species and carry out stocking the pond with valuable fishes.

Another, less radical way, is biological melioration of the water body, namely, settling one- or two-years old pike perch, which is fed with bleaks. The pike perch consumes 3.5kg of fish per 1kg of live weight.