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GROWTH INTENSITY AND HEMATOLOGICAL PARAMTERS IN JONG FEMELE LAMB FOR THE INCREASED ENERGY LEVEL IN THE DIET

Studies on young female lamb Ukrainian mountaincarpathian breed 6-9 months of age in summer – autumn grazing period in the foothills of the Carpathians it is found that increasing the level of energy in feed on 7.3% (0.7 MJ) through the use of local feed grains has a positive productive and metabolic effect. In particular, it is shown that the experimental feeding of mixed fodders with a high content of energy increases the body weight of the animals at 9 months of age 2.6%, the average daily gain by – 6.3%, a gain of wool by – 11.9% compared with the on control group. The values of the linear growth of young female lamb control and experimental groups during the experimental period did not differ significantly among themselves. It was also found that an increased level of energy in feed on young female lamb increases in blood of 9 months of age the haemoglobin level of 4.6%, and total protein - 6.0%, whereas the difference in the number of erythrocytes and leukocytes in blood of animals of the control and experimental groups is not significant, and is within physiological standards.

The cost of feed consumed per 1 kg of live weight gain in female lamb of experimental group for the period from 6 to 9 months of age was 20.7% (UAH 236,3 grn.) lower than in the control group.

Keywords: *female lamb, Ukrainian mountaincarpathian breed, feeding, energy, growth intensity, hematological parameters*

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EFFICIENCY OF PROTEIN VITAMIN MINERAL SUPPLEMENTS WHEN FATTENING PIGS

The undeniable fact of the effective pig production is the importance of full feeding of young pigs on fattening. However, it is impossible to ensure the biological value of pigs ration without the use of biologically active components of different origin as a component of premixes and additives.

Biologically active additives include protein-vitamin-mineral additive Intermix. That's why, the study of its impact on the productive and slaughter quality of young pigs is relevant.

20 gilts of Large White breed with an average live weight of 65 kg were selected to conduct scientific and economic experiment. They were divided into two groups according to the principle of analogues and then they were placed on fattening. All animals were kept in similar conditions. Feeding was two-time by dry grain mix and watering was flowing.

The protein-vitamin-mineral additive Intermix in the amount of 10% to the mass of the feed

was added to the pigs diet of the second group during the main period of experiment. The fattening stock of the control group consumed the main diet that included the bran of barley and wheat during the main period of the experiment.

We have weighed pigs, recorded consumption of feed, determined increments and feed costs by 1 kg of growth during the experiment. It has been established that feed supplement Intermix in the amount of 10% to the forage mass is an effective means for increasing the biological effect of concentrate rations on meat fattening pigs.

Thus, the usage of the feed supplement Intermix increases the average daily gain of young piglets for fattening by 110,9 g, or 14,8%, with a reduction of energy feed units by 1 kg increase of 0,64 compared with the animals of the control group. Feeding of pigs on rations containing 10% of Intermix causes increase of slaughtering indicators; so the slaughter mass increases by 7,6%, carcass weight increases by 2,85%, mass of byproducts increases by 7,4%.

A more complete diet was created due to Intermix; it positively influenced on the formation of muscle tissue of pigs. This is proved by the higher amount of meat in the carcasses of the experimental group of pigs, contributes to a slight increase in the mass of cutting and the amount of muscle tissue in it with the same amount of fat and bones. Thus, the pig carcasses of the second stage have the meat yield by 4,76% higher and the lard is by 3,82% less than that of the control group.

The difference in the bones output is only 0,94%. The second group had a decrease.

Keywords: protein vitamin mineral supplement, young pigs, feeding, growth, slaughter, carcass yield, byproducts, spin

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BROILER CHICKENS GROWING WITH FODDER BIOCATALYSED FULL-ENZYME PREPARATION WITH ACTIVATORS

We kept two poultry groups in group cages for research; each group (control and experiment) had 20 heads. Poultry received full-diet mixed fodder; it met their needs in accordance with detailed rules.

At the beginning of the experiment the enzyme preparation PFB Plus (fodder biocatalysed full-enzyme preparation with activators) was added to the poultry diet.

With the onset of in the experimental group of birds, the PKB (a fodder biocompatible full-enzyme active substance with activators); it was added in a dose of 500 grams per ton of feed.

The experiment lasted for 42 days. 40 broiler chickens of one-day age were selected for the experiment. Two groups of 20 chickens were formed.

Growth and development of broiler chickens were evaluated by relevant zootechnical parameters. The poultry live weight was measured in the morning before feeding; it was individual weighing on scales at the age of 1, 7, 14, 21, 28, 35 and 42 days. It was established that the use of fodder biocatalysed full-enzyme preparation with activators in broiler chickens feeding increases

the live weight at the end of growth by 9.4%; the average daily increments during the growing season increase by 9.5%, feed costs per 1 kilogram of growth decrease by 8, 6%.

The half-gutted carcasses increased their weight by 10.4%, gutted carcasses increased their weight by 12.3%. According to the results of the control slaughter there was not any significant influence of the investigated factor on the mass of the internal organs.

As a result of the research there was no negative effect on the basic hematological parameters; they were within the limits of the physiological norm.

According to the results of the economic evaluation of the enzyme preparation use we had profit from chickens fed by the investigated factor.

Keywords: *broiler chickens, productivity, increments, feeding, diets, fodder biocatalysed full-enzyme preparation with activators.*

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PRODUCTIVITY AND MORPHOLOGICAL STRUCTURE OF THE ENDOCRINE GLANDS OF BULL CALVES AT FEEDING TO THEM OF THE MODIFIED BRAGA

The use of a steamed modified braga influenced positively for fattening bulls productivity. The average of daily increments for experimental group bulls increased by 172 g (23,7%), the while feed costs per 1 kg of growth decreased by 1,7 feed units (19,2%).

The mass of the adrenal glands of the experimental animals remained at the control level for using a steamed modified braga. The increase in the diameter of the gland was due to the brain substance, since the magnitude of the cortical in the adrenal glands of the experimental animals was similar to that of the control animals.

In the microstructure of the gland there was a decrease in all the quantitative indices of the glomerular and mesentricular cortex, as well as the cerebral matter of the adrenal glands. In the buccal zone of the cortex, the increase in the number of nuclei was accompanied by a decrease in their diameter and volume in order to compensate for the function. The latter, judging by the indicator of the number of karioplasms, was not fully compensated. In the mesentery area of the cortex and brain substance, while maintaining the number of nuclei per 1 sq. mm. almost at the control level, their diameter and volume considerably decreased, which led to a decrease in the number of karioplasma per 1 sq. mm.

In the stage of decompensation of the function there were all areas of adrenal cortex. In the mesentery area of the cortex and brain substance, while maintaining the number of nuclei per 1 sq. mm. almost at the control level, their diameter and volume considerably decreased, which led to a decrease in the number of karioplasma per 1 sq. mm.

The significant structural changes occur in the pancreas of bulls. Despite the fact that the mass of the gland was at the control level, the number of islands of Langergans for 1 sq. mm, the area of one islet, the number of kernels in the island per 1 sq. mm. decreases for feeding of steamed modified braga in comparison with control. All kariometric indices also change in the direction of reduction.

Such structural changes in the glands were within the homeostatic limits, as evidenced by the increasing of the productivity for experimental bulls. Functionally, it influenced positively to the

reduction of the carbohydrate intensity and the enhancement of protein metabolism in the animal body, which it was an adaptive reaction of the corresponding structures to the exogenous stimulus - a steamed modified braga.

Keywords: *the productivity, morphological structure, bull-calves, hemadens, braga, modified, steamed*

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INFLUENCE OF PROTEIN-VITAMIN-MINERAL SUPPLEMENT ON NUTRIENTS DIGESTIBILITY OF YOUNG PIGS RATION

The use of protein-vitamin-mineral supplements in fattening pigs rations allows you to balance it with the necessary nutritional elements. Biologically active substances that are part of the complex PVMS increase the enzyme background of the digestive tract; it leads to a high level of assimilation of the feed nutrients; it explains the positive effect of feed additives on the results of fattening pigs.

The purpose of the research was to study the indicators of nutrients digestibility in the diet of young pigs on fattening and to establish its productive effect when the new protein-vitamin-mineral supplement Intermix VS Finisher is fed.

It was established that during the replacement of 10% of the concentrated feed by the protein-vitamin-mineral supplement Intermix VS Finisher the average daily intake of feed in the researched period was 2.98 kg against 2.99 kg in the control. There were no probable changes in the number of consumed dry matter, crude protein and crude fat. The decrease in the consumption of crude fiber was significant; it was by 7.14g or by 6.4% ($R \leq 0.05$); the decrease in the consumption of crude ash was by 19.2 g or 8.8% ($R \leq 0.05$).

The experiment has shown high digestibility of dry, organic matter and raw ash. The animals of the experimental group fed with the investigated additive Intermix VS Finisher had the coefficient of digestibility of raw fat higher than the control index by 11.12% ($R \leq 0.05$), crude fiber was higher by 13.74% ($P \leq 0.05$), crude ash was higher by 10.63% ($R \leq 0.05$) and dry matter was higher by 2.52% ($P \leq 0.05$). The digestibility of the nitrogenous substances tended to increase by 2.22% but it was uncertain. The digestibility of non-saturated extractives (sugars, starch and pectin) remained at the control level.

It was found that the intake of nitrogen from the diet exceeded its excretion with feces, that is, the nitrogen balance was positive in both groups. However, nitrogen excretion with feces and urine was 14.70% and 11.68% lower of the second group animals than in the control group. As a consequence, the bodies of experimental animals had more retained nitrogen by 5.03 g or 24.27% than in the control. The amount of nitrogen retained in the body was higher in the experimental group by 7.5%.

Improvement of ration of young pigs on fattening by means of protein-vitamin-mineral supplement Intermix VS Finisher provided an increase in average daily increments during the period of balance experiment on 119 g or 14,76% with reduction of feed costs by 1 kg of growth by 0,38 energy feed units or on 8.0%.

Keywords: *BVMD, Intermix, pigs, ration, digestibility, increase*

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**HYDROPOPEASE, BLOOD PROTEIN EXCHANGE AND PRODUCTIVITY OF BUMPERS
FOR THE MICROELEMENTAL CORRECTION OF THEIR RATS**

One of the most important factors in the full feeding of animals is the optimal supply of nutrients and biologically active substances, namely, trace elements. Lacking or excessive MI in rations leads to a disturbance of metabolism in the body, inhibits development and growth, reduces productive qualities, and, by reducing immunity, causes various diseases. The final factor is the close interconnection of trace elements with proteins, carbohydrates, fats, which ultimately reflects on the physiological state of a living organism.

Soil and climatic conditions of the central region are characterized by a lack of feed and water of the following trace elements: cobalt, copper, iron, manganese, zinc. The bioavailability of these microelements for the animal organism is lower than the physiological norm. Increase of biological availability of trace elements by tissues of an organism can be achieved due to their connection with an organic ligand, and in our case with an essential amino acid methionine, thus creating chelating compounds - metionates.

The purpose of the article is to analyze the influence of chelate compounds on the protein metabolism of fattening bulls. The results of hemoglobin studies showed us that its content was also dependent on the applied trace elements. Similarly, an increase in the number of erythrocytes also increased the concentration of hemoglobin. Three months after the application of corrective supplements, the hemoglobin content in the blood of experimental bovine animals in the 2, 3, 4th experimental groups was increased compared to the control group. Also, a similar picture was observed in the dynamics during the whole experimental period of fattening. The best effect on the hemoglobin content in the blood was shown by the addition of chelates (metionates) in the 4th experimental group, which is also confirmed statistically.

The results of the obtained data indicate that the correctional additives of the microelements and their chelates (metionates) used by us increase the level of total protein in the blood serum of fattening bulls.

During the trial period, their concentration in the bulls of the control group also increased, but this is due to the age and growth of animals. However, in the Bugites of experimental groups, the content of total protein significantly increased under the influence of corrective supplementation of trace elements, and especially under the influence of their chelate compounds (metionates). Already three months after the micronutrient supplement was fed, the level of total protein in the serum of bulls in all experimental groups significantly increased compared to the animals in the control group.

Keywords: trace elements (TE), metionates, chelating compounds, bulls, erythropoiesis, protein metabolism

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THE INFLUENCE OF DIFFERENT FACTORS ON DAIRY PRODUCTIVITY OF CROPS

The article presents the results of studying the effect of type of stress resistance of cows, fodder stress and temperature on milk productivity.

It was found that among the experimental cows 36% had a high, 48% primary and 16% low type of stress resistance. Animals with a high type of stress-resistance, after the stress factor, reduced the one-time hopes by 1.2 kg (7.31%) ($P>0.9$), the milk yield rate was 0.17 kg / min. (8.58%) ($P>0.9$), and with a nisk type, respectively, 3.3 kg (24.6%), 0.68 kg / min. (39.0%). A reliable difference ($P>0,9$) is established between the first and third groups.

The study of the milk productivity of cows of different types of stress-resistant plants shows that during 4 lactations, animals of the first type had more than normal diets in comparison with the weak type. Average annual productivity of cows of all types during 1-3 lactation increases, respectively: 9.7; 4.6; 3%. With 4th lactation in cows of all types of stress tolerance, milk yields tendency to decrease.

The transfer of dairy cows to the winter ration is a responsible and up-to-date complex process of adaptation to the action of the fodder stressor.

Within 15 days, the reduction in the feeding of the green mass and the replacement of its silage negatively affected the average daily diets, their level decreased from 11.8 to 9.8 kg (16.9%).

After switching to winter rations for 12 days, the average daily intake is reduced from 9.8 to 8.4 kg (14.3%), and from 13 days, the level of nutrition increased and was within $lim=9.6-9.3$ kg. During the period of preparation and transition to winter rations, the average daily diet decreased by 31.2%.

The air temperature does not have a significant impact on the amount of daily daily intake.

Keywords: cows, Ukrainian black-and-white milk breed, milk-on productivity, stress-resistance, stress factors, stressors, stress-strain, stress-resistance, average daily tastes, air temperature, winter-stool period

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NEW CREATION OF DAIRY CATTLE A NEW POPULATION ON BUKOVINA'S FARMS

Based on the materials of economic practice and theoretical generalizations of the processes that occur in market relations in Bukovina, problems of the development of intensive dairy cattle breeding in the basic breeding farms of the Chernivtsi region are covered.

The materials are used and generalized, their analysis is oriented towards the successful

solution of the set production tasks in the given region.

The indicators of the dairy productivity of cows of the Bukovina breed group of the new population, the heights of heifers in different age periods, the physiological characteristics of the udders, the suitability of cows for machine milking, the productivity of the daughters of bulls-producers and the measurements of the body of the first-born of different genotypes are covered.

A correlation has been established that increases with the increase in blood content by the improved breed of the newly created breed group of dairy cattle, despite its constitutional strength, like other high-performance breed, is demanding for the external environment of the Bukovina region.

Growth rates of experimental heifers in summer age animals exceeded other farms in the region by 4-2 cm or 3.5-1.6%. According to the development of the chest, they prevail by 5.5-4.5% compared to other breeding farms, that is, the trend of the advantage of growth at 6 months of age persisted in the annual. For the development of the chest, they prevail at 5.5-4.5% compared with the control, that is, the trend of the advantage of growth at 12 months of age persisted and in 24 months.

For the first time, a new breed of Ukrainian red dairy cattle of a new generation has been created for the future, which will become a new Bukovina dairy breed that has a large enough number of animals of common origin, similar in appearance and constitution, character and productivity level with stable heredity, good reproductive ability, resistance to diseases and correspond to the parameters of the program for creating a breeding achievement in livestock.

Keywords: *breed, productivity, live weight, lactation, line, genotype*

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PRODUCTIVITY AND CHEMICAL COMPOSITION OF BEEF OF DIFFERENT BREEDS ANIMALS

Meat is one of the main foods, an important source of protein. It contains nutrients essential for people's lives (proteins, fats, carbohydrates, minerals, vitamins and other biologically active substances). In Ukraine, the problem of increasing the production of beef and raising its quality is particularly topical. These studies are devoted to the productivity, chemical composition and caloric content of meat of bulls of Ukrainian black-and-white dairy breed, Aberdeen-Angus and Simmental breeds.

Three groups of bulls were formed, each has ten heads; the bulls of Simmental breed, Ukrainian black-and-white dairy breed and the Aberdeen-Angus breed were grown and kept in identical conditions. The muscle tissue of the average carcass sample and the longest muscle of the back were studied. Animals were slaughtered at twelve, fifteen and eighteen months.

The live weight of experimental bulls at the twelve months age ranged from 304 kg (Ukrainian black-and-white dairy breed) to 356 kg (Simmental breed). Dry substance in the average sample of carcasses ranged from 20.12 to 25.60% depending on the breed. The pure bulls of the Aberdeen-Angus breed (25.60%) have accumulated the most number of nutrients in the body, especially protein (16.60%) and fat (8.20%). The caloric content of meat in the Aberdeen-Angus animals was 2797 kJ.

The obtained data testify to the fact that the bulls of the Aberdeen-Angus breed with intensive muscle growth more intensively deposited fat. Therefore, at twelve months age their meat had a relatively high caloric content (2797 kJ). At the age of fifteen months, the tendency to favor the bulls of the Aberdeen-Angus breed over the Simmental breed was preserved by the accumulation of fat and caloric content of the meat.

The beef of Aberdeen-Angus breed bulls had more solids were than Simmental breed bulls by 2.96%, ($P < 0.001$), and the caloric content of the meat was 3,156kJ. The bulls of Ukrainian black-and-white dairy breed grew slower, their meat was characterized by higher humidity (74.37%) and lower caloric content (2770.9 kJ), compared to the Simmental counterparts by 7% ($P < 0.001$).

The growing of bulls before the eighteen months age showed that pure simmentals reached a live weight of 541 kg, aberdeen-angus reached a live weight of 510 kg, and bulls of Ukrainian black-and-white dairy breeds reached a live weight of of 447 kg; it is 94 kg less than simmentals. These data indicate that it is advisable to feed intensively Simmental and Aberdeen-Angus bulls. The question regarding the bulls of the Ukrainian black-and-white dairy breed needs to be studied in detail. Perhaps, it is necessary to develop special technologies of intensive fattening of bulls of dairy breeds.

The eighteen months old bulls of the Aberdeen-Angus breed had the highest caloric content of meat; it was 3296 kJ. The difference is likely in comparison with the Simmental breed ($P < 0.001$). The experiments objectivity increases when the meat qualities are also studied after the breakdown of the back longest muscle. The bulls of the Aberdeen-Angus breed had the best indicators according to the chemical composition and caloric content of meat. The caloric content of the meat of the back longest muscle of the twelve-month-old bulls of the Aberdeen-Angus breed was 2839 kJ, the Simmental breed had 2740 kJ, and the Ukrainian black-breasted breed had 2768.7 kJ. The content of dry matter in the muscle of the longest muscle of the back is, respectively, 21.60%; 20.83% and 20.31%.

It was found that fifteen months bulls of the Aberdeen-Angus breed had an advantage over the caloric content of meat – 3054.7 kJ; on a dry matter content in meat – 24.10%, including a fat content – 3.80% and on a protein content – 19.50%. Similar results of the chemical composition of the back longest muscle of the bulls were obtained at eighteen months. In order to obtain meat productivity it is necessary to take into account the breed possibilities of animals.

Keywords: *beef, productivity, breed, Aberdeen-Angus breed , Simmental breed, Ukrainian black-and-white dairy breed, chemical composition*

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FEATURES OF SUGAR EFFICIENCY OF MEAT HERBS IN DEPENDENCE FROM GENETIC PRECAUTION

An increase in the production of meat products can only be achieved through the fullest possible use of the biological potential of animals. World experience has shown that specialized

meat cattle breeding is the least costly and resource-saving production of high quality beef. To do this, in the north of Ukraine there are large areas of natural pastures and hayfields for keeping and grazing livestock at low investment costs. The effectiveness of meat cattle depends to a large extent on the right choice of breed for a particular breeding zone. The expediency of breeding one or another beef breed is the quantity and quality of beef.

However, in order to obtain a beef that meets the requirements of the modern market, it is necessary to look for various technological solutions related to the selection of the herd, as well as to create acceptable conditions for keeping and feeding livestock. Major producers of beef in the conditions of the formation of a multidisciplinary agrarian sphere were and remain large commodity companies. The aim of the work was a comparative analysis of slaughter and meat qualities of cattle, which is bred in one agrarian association of enterprises - "Agricor Holding" of Chernihiv region. Today agro-association according to separate breeding programs breeds meat cattle of genotypes and has achieved certain industrial successes. The following tribal statuses have been awarded to the enterprise: breeding plant for breeding of cattle of the Znamensky type of Polissya breed, Simmental meat, Polissya meat, Aberdeen-Angus breeds and Charolais breed and breeding reproducers for cattle breeding Southern meat breed and breed limousine.

In the conditions of the holding, a scientific and economic experiment was conducted to determine the adaptive and productive capacities of fattening bulls of the two most famous European breeds and recently imported Southern beef breeds from the North of Ukraine. The control group became animals of the Polissya breed, which was brought out in the conditions of the North of Ukraine, for a long time was breeding on the farm and well attached to its technological features. Each group was selected for 8 bulls with an approximate live weight.

It was found that imported meat from the Aberdeen-Angus and Sharolace breeds imported into the Chernihiv region, with a well-balanced balanced feeding and proper care, revealed a fairly high fattening and slaughter potential, which manifested itself in adapting to the new environmental conditions. The results of the control slaughter showed that these breeds still have an advantage over domestic breeds in the conditions of the northern part of Ukraine due to slaughter and meat qualities.

Keywords: *meat cattle, bulls, live weight, slaughter quality, half weight, slaughter, chemical composition of meat*

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ASSESSMENT TECHNIQUE FOR STRESS RESISTANCE OF SHOW JUMPING HORSES

Today, the main focus of sport horse breeding is to obtain high-quality horses for participation in equestrian competitions. Studies of many scientists have proved that during horse races the horses are under stress, which is caused by many factors: transportation, new stables and neighbors, new training and competition arenas, a large number of viewers, noise, loud music, etc. Many horses do not exhibit maximum performance capability due to the stress during the competitions, which leads to an uncertain assessment and biased horse selection for breeding work.

This work has described the technique for assessing the stress resistance of the horses during participation in exhibitions and competitions. The purpose of the development of the

technique for assessing the sensitivity of horses to the stress factors effect is the possibility of obtaining indicators of the level of the stress response and adaptation of horses to stressors. The study was conducted for 10 show jumping horses of the Dergachivsky Children and Youth Equestrian School, during the participation of horses in 10 exhibitions. The determination of the higher nervous activity (HNA) types of horses was carried out according to the methodical recommendations of the All-Russia Scientific Research Institute of horse breeding.

According to the results of the HNA type determination, we obtained the following grouping of show jumping horses: four horses belong to a strong balanced flexible type with great strength of the nervous system (I), two horses belong to a strong balanced sedentary HNA type with great strength of the nervous system (II), two horses - to a strong unbalanced HNA type with great strength of the nervous system (III) and the remaining two horses - to a strong unbalanced HNA type with insufficient strength of the nervous system (III-).

To obtain the indicators of the stress response level during exhibitions and competitions, we have developed the requirements for the behavior of horses, under which they should be assessed after each exhibition. In the course of the study, we have identified seven main factors that affect the stress state of horses during participation in exhibitions and competitions: transportation to the place of exhibition, loud music, large numbers of viewers, photo and video equipment, concentration of horses in limited space, applause and other noise stimuli, change of weather conditions. A system for assessing the response of horses to them has also been developed.

The observations and assessments of show jumping horses were performed during the participation of horses in 6 exhibitions in the preparatory period and in 4 exhibitions - in the competition. The application of the technique for assessing the stress resistance of horses showed that horses of a strong, balanced flexible HNA type quickly adapted to new irritants, their behavior did not require correction. For horses of strong balanced sedentary and strong unbalanced HNA types, it is necessary to improve the training system in order to increase their stress resistance. The technique described above enables us to study the response of horses to the effect of various stress factors, to monitor the adaptation of horses to the stressor effect in dynamics and to adjust the training system, taking into account the individual characteristics of the horse.

Keywords: *stress resistance, higher nervous activity type, show jumping, training of horses, capability*

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USE OF PROTEIN ADDITIVES IN THE PRODUCTION OF SAUSAGE PRODUCTS

In the conditions of deficiency of meat raw materials and their constant rise in price, the improvement of the technology of meat products is a topical issue in order to save raw materials and increase the output. One of the ways to reduce raw material losses is to use new types of protein additives that have functional and technological properties similar to meat raw materials.

In recent years, the interest of producers of meat products to the use of protein additives of animal origin has increased. Such proteins are most naturally combined with meat raw materials, they are natural products and do not contain preservatives, flavors and other additives, They have

high nutritional and biological value, and are almost completely assimilated by the human body.

The article deals with the issues of practical use of protein preparations obtained on the basis of animal proteins in the technologies of sausages production.

Keywords: *protein additives, protein preparation, boiled sausages, wetting ability, moisture retaining ability, "West Kiur - 95", quality assessment, indicators, technology*

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PROVING OF THE MODIFIED PECTIN'S HARMLESSNESS

The technology of producing traditional sour-milk drinks involves the use of yeasts containing microorganisms. These bioobjects are not always resistant to the inhibitory factors contained in the milk and act from the outside. Reducing the effect of fermentation complicates the technology of making dairy products. To overcome these problems, it is possible to stabilize (immobilize) leaven on organic carriers. For this purpose, natural carriers of protein, lipid and hydrocarbon nature are used. Among carriers of hydrocarbon nature, pectin has a widespread distribution, which possesses sorption and gel-forming properties.

In order to increase the number of reactive groups on the surface of pectin, which would increase its adsorption properties, its modification was carried out using physical and chemical methods. For further use of modified pectin as a nutritional supplement, preclinical studies are required. The indicators of harmlessness of modified pectin remain unstudied.

The purpose of the research is to test the obtained modified pectin in experimental animals (linear mice) as a carrier for the immobilization of cells and enzymes, leaven for sour milk drinks.

The harmlessness of the modified pectin was determined on linear mice. Mice from the control group were intraperitoneally injected with 0.3 ml of physiological saline solution. Animals from the 1st experimental group received 0.3 ml of 5.0% suspension of modified pectin. Mice from the second experimental group were intraperitoneally injected with 0.3 ml of 10.0% suspension of modified pectin.

Observation over experimental mice during a decade showed that deaths of animals in all groups were not noted. It was found that general inhibition was observed during the first 4-7 hours after administration of the modified pectin suspension in mice in the second experimental group. In 80.0% of mice from this experimental group, a disorder of the function of the gastroenteric tract was observed for 24 hours. Over time, the mice recovered active mobility, responded well to external factors (sounds, light and touches), regularly ate food and drank water at will.

Only the absence of appetite was detected within 5-8 hours in mice from the first experimental group. According to pathologic-anatomical investigations of the internal organs of animals, it was found out that the tongue, esophagus, stomach and intestines in mice from experimental groups did not differ from the digestive organs of control group mice. Similarly, no morphological changes in the heart, liver, kidneys, spleen, and lungs in mice of both experimental groups were detected.

No changes in the activity of aminotransferases in the liver of white mice were detected after the administration of high doses of modified pectin.

The protein content of the test animals in the liver was 41.8 – 43.0%. Indicators in animals

from experimental groups did not have a significant difference in protein content in the liver of mice from the control group. Thus, it has been established that intragastric administration of 5.0% and 10.0% of the modified pectin suspension (0,3 ml/animal) does not affect the protein metabolism in the liver of experimental mice.

Keywords: *modified pectin, experimental animals, total protein, aspartate aminotransferase, alanine aminotransferase, determination of harmlessness, liver of mice*

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MICROBIOLOGICAL STUDY OF THE NUTRITIONAL MEDIUM FOR CHIRONOMUS LARVAE UNDER VARIOUS PASTERIZATION MODES

The bacteria habitat is the water bulk and the bottom sediments. Depending on their location, they are divided into bacterioplankton (planktonic forms) and bacteriobentos (bottom sediments inhabitants). A significant amount of bacteria develops in the water-air interface – (bacterioneistone) and in water-solid substrates interface (bacterioperiphyton). The species composition of bacterial flora and the orientation of microbiological processes in the reservoirs depend on the ecological status of the reservoirs, their physical and hydrochemical characteristics and the presence of other groups of hydrobionts.

Chironomus larvae is an important elements in the trophic chains of fish. The main nutrient medium for larvae is the silt of lakes, ponds and rivers.

The microbiological composition of the native and pasteurized silt from the Ros' river as the main component of the nutrient medium for the cultivation of the Chironomus larvae remains unexplored.

The microflora of water and bottom sediments reflects various levels of water trophic. Bacteria play an extremely important role in aquatic ecosystems. They participate in the transformation of complex organic substances into simple compounds, suitable for absorption by hydrobionts of other trophic levels.

In lake ecosystems, the bacterial composition is formed depending on the environmental conditions of the habitat. The largest amount of bacteria is found in eutrophic waters and the smallest – in oligotrophic waters. At the same time, in different ecological zones of eutrophic waters, which differ in the level of oxygen dissolved in water, the dependence of the development of individual bacterial groups on ecological conditions manifests clearly.

The largest amount of microorganisms is observed in the upper layer of silt, where a peculiar film of bacteria forms. It contains a lot of thiobacteria and iron bacteria and plays a significant role in the substances transformation in the reservoir. Lack of Oxygen promotes the development of anaerobic bacteria fermenting plant residues with methane and Hydrogen formation.

The aim of the study was to establish the bacterial composition of water silt as the main component of the nutrient medium for the Chironomus larvae and to identify the effects of different modes of temperature treatment (pasteurization) on the quantitative and qualitative composition of the silt microflora from the Ros' river. The investigated nutrient medium was pasteurized under

prolonged pasteurization (65°C), short pasteurization (75°C), and instant pasteurization (95°C). Inoculations for MPA were made on the base of silt nutrient media, using 3- and 8- multiple dilution. Inoculations were carried out in two ways: on the surface of the MPA (option A) and in the MPA bulk (option B). Inoculations were carried out in order to receive separate colonies with specific features.

Petri's cups were carefully examined the isolated colonies that grew up on the surface of the MPA were studied. Attention was paid to the size, shape, color, the nature of the edges and the surface of the colonies, their consistency and other features of cultural properties.

While analyzing the bacterial inoculations, we noticed the dominant growth of the colonies of Bacillus sp., Pseudomonas spp. and coccus microflora in different dilutions.

Bacillus sp. is an aerobic soil bacteria "hay bacterium" which forms endospores. Studies have shown that the colonies are dry, creasy, velvety, colorless or pink. The edges of the colony were wavy, coral-like.

Colonies of Pseudomonas spp. were of different shapes: flat irregular shapes, large convex shiny, mucous, dwarf or dotted, folded. They had a gray or yellowish-gray color, slightly convex, oily consistency.

Cocca – are spherical bacteria of regular round shape sized 0.5-1.5 microns, optional anaerobes, growing in aerobic conditions. They were located in the smears in the form of irregular clusters or singly, gram-positive, immovable. The composition of the cell wall includes peptidoglycan (murein) and teichoic acids. They are unpretentious for the nutrient medium, well cultivated in simple media.

It was established that in a native mule the amount of bacteria was $3.7 \cdot 10^8$ NSU / 1 g. The smallest amount of microorganisms was isolated in pasteurized silt inoculations - for instant pasteurization (95°C) - the amount of bacteria was $1.3 \cdot 10^6$ NSU / 1 g.

It was also found that in a native mule, the species of Pseudomonas spp. accounted for 45.9% of the total number of colony-forming organisms, Bacillus sp. – 32.4% and cocca microflora – 21.7%.

Keywords: *nutrient medium, pasteurization modes, colony growth, Pseudomonas spp., Bacillus sp., Cocca microflora*

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THE USE OF PORK WITH PSE AND DFD SIGNS FOR SAUSAGE PRODUCTION

Today a significant reduction of the agricultural animals number requires from the meat industry the use of non-waste technologies, that is, the complete processing of raw materials and the maximum preservation of the product. In order to solve the problem of the meat raw materials lack we should use innovative technologies for the meat raw materials processing. However, it also greatly depends on how we can prevent the meat deterioration on time.

The article presents the organoleptic and physico-chemical parameters of semi-smoked sausages with PSE and DFD pork.

The purpose of the research is to compare the semi-smoked sausage Krakivska and semi-smoked sausages with PSE and DFD pork. The object of research is NOR-, PSE- and DFD pork.

The pH meat largely reflects the mechanism of the pork defects formation. Measurement of

the muscle tissue pH in 45 minutes, 24 and 48 hours after slaughter showed that the active acidity had no significant differences; it was within the normal range. The meat glycolysis in all carcasses was normal, too.

Similar dynamics was observed in changes of moisture retaining capacity during six daily storage of meat. It should be noted that regardless the meat category the moisture-retaining ability is maximal in the stage of vapor meat (1 hour after slaughter).

It can be argued that the replacement of NOR pork by PSE and DFD pork in 10% does not significantly affect the organoleptic characteristics of the finished product; it was proved by a general organoleptic parameters assessment.

The obtained data show that if meat raw material is replaced by pork with PSE and DFD signs, the mass fraction of moisture in experimental samples is lower than in control ones, besides it also reduced output of finished raw materials.

It is established that now both the problem of raw materials directed use and the course of autolysis are of particular importance, since the proportion of animals with signs of PSE and DFD is significantly increased. The use of such raw materials in certain quantities does not significantly affect the quality of semi-smoked sausage products.

Keywords: *sausages, pork, PSE and DFD signs, technology*

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DEVELOPMENT OF TECHNOLOGY OF RECEIPT OF СПРЕДОВ WITH THE USE OF VEGETABLE OILS

The aim of the research is to define the quality requirements of milk as a raw material for the production of spreads using vegetable oils and to develop of cream and vegetable spread production technology.

In order to accomplish the aim of research we have the following tasks:

- to develop the technology of obtaining cream-vegetable spread, to determine its composition and properties;*
- to select vegetable oils for the purpose of their use in order to correct the fatty acid composition of the fatty basis;*
- to select an emulsifier taking into account its influence on the technological properties of spreads with different fat content;*
- to develop a technological scheme for cream and vegetable spread production, to establish optimal technological regimes of its production.*

A comprehensive research was conducted to accomplish the aim of work.

As a result of research we have determined the physical and chemical composition of milk, its suitability for the production of spreads has been analyzed.

A cream and vegetable spread recipe has been developed. Product composition and properties have been researched.

We took into account the melting point and hardness of spread developing its recipe. It should be mentioned that fatty acid composition is the main to the nutritional value of fatty foods, the ratio of polyunsaturated and saturated fatty acids should be also taken into account.

The optimal ratio of fatty ingredients to get a high-quality product is the following milk fat –

50%, vegetable oil – (15-20)%.

The technological process of spreads production includes the following operations:

- preparation of loose raw materials;
- preparation of water-milk and fat components;
- dosage of components and preparation of emulsion;
- hypothermia and plasticization of the emulsion;
- finished products packaging.

These correct operation ensures efficient and qualitative production of products.

The physical and chemical parameters of vegetable oils have been studied and analyzed.

The recipe of cream and vegetable spread was created. We have researched product composition and properties. It was proved that the optimal ratio of fatty ingredients to get a high-quality product is the following milk fat – 50%, vegetable oil – (15-20)%.

The amount of the emulsifier and its influence on the quality indices of the finished product are determined.

The technology of production of spreads from milk and vegetable raw materials is developed.

Keywords: *spread, oil, fat, milk, emulsifiers, emulsifications, affinage, compounding, processing, milk, indexes, product, research*

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RESEARCH OF FISH PRODUCTION TECHNOLOGY IN ENTERPRISE OF SE «ULANOVSKY FISH CELL»

When breeding fish should take into account their specificity, which is associated with their life and reproduction in the aquatic environment. A number of factors that have a significant impact on this process are abiotic, biotic and anthropogenic. The first two groups are more weighty and operate directly on fish. The third group relates to production factors and may be manifested in changes in living conditions. Under conditions of changing environmental conditions, the influence of anthropogenic factors increases. The number, species composition of fish and other hydrobionts is negatively affected by the deterioration of the hydrological regime and the physical and chemical composition of marine and freshwater resources.

The use of hormonal stimulation improves the reproduction of carp at low ambient temperatures, which is relevant at the present time.

The purpose of the work - the artificial reproduction and the influence of the abiotic factors on the carp when applying hormonal injections.

Materials and methods of research: the research was carried out at the farm of the state enterprise "Ulan Rivets", which is located in the Khmelnytsky district of the Vinnitsia region, in the basin of the river Snivoda.

For research purposes, all flocks of sexually matured individuals of carp of Ukrainian breeds grown on the farm were used, from which two groups were formed by the method of groups. The control group received injections into the back muscles and experimental group receiving

injections into the thoracic fin.

Conducting the hormonal dasg for females was carried out in stages in two doses: the previous one (1/10 doses) and allowing the injection, since the egg showed a slight displacement of the nucleus. Females received hormones at a dose of 3-4 mg / kg. The dose for males was ½ doses of females they received during the repeated administration of the drug to the females. The interval between the administration of hormones was 12 hours: at 8 o'clock and at 20 o'clock.

Females of the experimental group carp two hours earlier gave caviar than the control group, and their working fertility exceeds 38.9% higher.

There were no special differences in the incubation of eggs in control and experimental groups. The output of the larva in both groups was 75%. However, in the control group, the number of larvae received from females was 4183 thousand pieces, which is 2031.6 thousand units, or 33% less than the experimental one. All the larva obtained during the research has been implemented.

Having determined the indicators of economic efficiency, it was found that the profitability of the economy with the use of pituitary injections increases by 24%.

Keywords: *breeding, carp, hormonal injections, caviar, female fertility, female reproductive organs, pituitary gland*

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ENERGY RATING NEGRAMOTNOV MEAT PRODUCTIVITY OF CALVES OF UKRAINIAN BLACK-SPECKLED DAIRY BREED

Beef production significantly depends on ensuring calves and young cattle standard conditions and feeding. At the same time in the conditions of reformed agricultural enterprises producing milk any organizational, technological and hygienic problems in the production of high quality beef from young.

Industrial technology is very often limit some natural needs of the animals. The intense exploitation of animals leads to stressful situations, increases the sensitivity of animals to the deterioration of the microclimate, changes in feeding, constant animals etc. This is due to the fact that the industrial technology of production processes is assumed cyclical process and continuous management of animals (weighing, veterinary treatment, etc.), and all this is a prerequisite for the reproduction of microorganisms and development of the stress state.

The study found that the influence of the conditions of detention bulls in tethered and loose ways increased live weight gain: when the harness bulls reached 18 months of age 328,9 kg, average daily gain 612 g per day, the relative growth of 19.4%, and their counterparts – 454,3 kg 877 g, 20.9 percent, respectively.

It is proved that with tethering content live weight at 18 months of age 372,6 kg, while loose – 482,3 kg Average daily live weight gain in improved technology compared with the current – higher by 31.6% (60% saved) and 33.6% (with 50% preserved).

The energy value of the edible portion of the carcass retained for beef production calves at 18 months of age the Ukrainian black-motley dairy breed in 1 kg of carcasses in loose housing 20% more than in harness, and adipose tissue, on the contrary, but qualitative indicator for the amount of protein is higher, that is a desirable factor for beef production.

Keywords: *beef, cattle, bulls, breed, value, production, energy, maintenance, live weight*

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HEALTHY CLEAN CLEAN AND CLEANER PIGS AND TELEVISION IN VARIOUS EVERYDAY PERIODS

Using industrial breeding of breeds of Ukrainian black-and-white dairy breeds with bulls - breeders of Ukrainian meat breed for the production of beef, the advantage over the pure-bred bulls and heifers is proven.

It was investigated that the conditions of feeding and maintenance of experimental young animals ensure the obtaining of beef from bulls and heifers of pure-sided and local at the level of genetic instincts, and the advantages of domestic piglets over pure-sourced due to the manifestation of the heterocyst effect.

The study of the economic efficiency of beef production for the use of industrial crossbreeding of cows of Ukrainian black-and-white milk breed with breeding boars of Ukrainian breed breed has shown that it is possible to obtain more income from landed young animals by 2.16 times (bulls) and by 1.89 times (from calves) at a higher level of profitability.

Investigation of the body structure of pure-sided and local bulls and calves showed that, by measure, they confirm the meat type of the body in the native young.

It was established that the proportionality of young animals of cattle is confirmed by the advantage of the local bulls over purebred by the indices: stretching, compactness – by 10.48%, pelvic 4.61%, and bony – by 2.37%.

Keywords: *body structure, age, period, pedigree, breed, land, heifers, bulls*

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PHYSICO-CHEMICAL CHARACTERISTICS OF THE MUSCLE TISSUE COMPOSITION OF STORE PIGS

The article describes the analysis of the studies of physicochemical characteristics of the muscle tissue composition of the experimental purebred and hybrid store pigs under the conditions of the "National Plus" Subsidiary of the "National" Private Company of the Dnipropetrovsk region.

One of the important tasks in the study is to determine the best genotypes of the pigs, which should be used in cross-breeding for the purpose of wider use of beef-making qualities.

The studied physicochemical properties of hybrid store pig meat have shown that all experimental animals have a high quality of meat production, which positively affects the economic benefit of the farm.

Pork has long been considered a valuable foodstuff that contains an easily digestible form of 35-55% dry matter, 10-20% protein, 15-45% fat, 1-55% mineral matter, as well as a number of vitamins A, D and B. This is due not only to its nutritional and flavoring qualities, but also to the ability to maintain its quality in preserving and processing. The quality of meat is determined by the quantitative ratios of the tissue and their physico-chemical, morphological characteristics, which depend on the species, age, sex, fattening of animals and other factors. The quantitative ratio of moisture, protein and fat, pH also affects the quality of the meat's nutritional value.

The purpose of our research is to carry out a comparative evaluation of the physico-chemical composition of the experimental young chickens during purebred breeding and

crossbreeding, and to study the influence of terminal chickens (OptiMus Rattlerow Segers and Hypor Maxter) on meat quality. Materials and methods of research. The research was conducted in the conditions of the State Plus National Company, National "of the Dnipropetrovsk region, in the period from 2015 to 2017, where modern conditions of maintenance are used. Calculations were made using a personal computer and a number of applications.

Meat is one of the most valuable food products because its uniqueness is in high energy intensity, a balanced amino acid composition of proteins, the presence of active substances and high digestibility, which as a whole provides normal human physical development. The animals that have been matched with the IV and VII terminal boar groups with a bias of 4.62% ($P \geq 0.999$) and 4.80% ($P \geq 0.999$) towards pure breeding (LW x LW) have moisture-resistant meat quality. Matching with large white Duroc boar females leads to a decrease in moisture-resistant meat quality in offspring by 8.6% ($P \geq 0.99$).

Also, third group animals, which deviated from control by 0.3%, had lower meat moisture resistance. The combination of (LW x L x L) and (LW x L x P) practically did not differ from each other in the studied rate.

Against the active acidity indicator of pig's muscle tissue, it can be noted that all experimental animals in the groups were practically at the same level of 5.33-5.81 pH, which is the norm, but the highest rate has been obtained at cross-breeding of the parent terminal boar genotype 6.08 (LW x T) and 6.18 (LW x L x T), therefore, these hybrid animals have been notable for the pH value, which is the property of good meat.

The studied physicochemical properties of animal meat in experimental groups showed that all experimental animals did not have a deviation from the norm and were within the standard of 10% in terms of moisture resistance, and 1.1-1.7% in terms of acidity, which suggested that this indicator practically did not depend on genetically selected parental forms.

According to our results of the analysis of the chemical meat composition in the experimental animals (Table 3), the difference between genotypes in the chemical composition of muscle tissue practically did not differ from each other. But the experiment showed that relatively high mass of protein and dry matter was inherent in animals in which the parental form of terminal boars was used.

The content of total moisture in the meat of the first group, which is purebred in our experiment (LW x LW), is $74.2 \pm 0.59\%$, which is the best result, less moisture content has been found in the meat of the VII animal group (LW x L x T) - 72.4 ± 0.47 , which as compared with the control has shown reduction by 2.4%. The nutritional value of the meat depends on the ratio of moisture, protein, fat: where fat significantly affects the taste and quality of the meat, as well as its succulence and such indicator as meat marbling. As the results of our experiment showed, the lowest intramuscular fat content was inherent in the groups of animals where the terminal boars of the Hypor Maxter line were used, in particular in our experiment, this was group VII 2.8 ± 0.13 . The meat of the IV and VI groups practically did not differ in fat and dry matter content: 3.2 ± 0.19 - 3.4 ± 0.22 and 26.1 ± 0.45 - 27.8 ± 0.49 , respectively.

The results of the experiment have indicated that the concentration of protein in the meat composition depends to a large extent on the selected genotype in the combinations, for example, in animals (LW x L x T) the rate of protein content in meat has varied within the range of 20,2-23,8%. According to the ash content, the VI animal group should be noted (LW x L x P) - $1.19 \pm 0.07\%$, an increase of which, as compared with the control, is 7.2%, respectively.

Conclusions. In the industrial production of pork, the stable high quality of products is of paramount importance, which according to the results of our research is confirmed. Receiving high quality pork using foreign horses provides improved pork quality by physical and chemical indicators.

Keywords: meat, slaughter, terminal boar, pig breeding, genotype

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**REACTION OF STRUCTURES OF THE GASTROINTESTINAL TRACT OF YOUNG
RABBITS TO FEED PREBIOTICS**

The intensity of growth of rabbits as a hereditary feature is realized under the influence of feeding. The technology of feeding rabbits is determined by the peculiarities of fodder behavior and structure of the gastrointestinal tract. One of the new fodders with prebiotic action is Prebioolact-Kr, created by workers of the scientific and biotechnological enterprise "BTU Center", Ladyzhin, Vinnitsa region. The drug is completely new, and in feeding young rabbits has not yet been investigated.

The studies were conducted in four groups of young rabbits, selected on an analog basis for 25 heads in each.

After the main period of the experiment, a control slaughter of four heads from the group was performed. The stomach and intestine were dispensed, freed from the contents, weighed, measured the length. After a rough evaluation of the cardiac, funds, pyloric, gastric and intestinal areas, samples were taken and fixed in a 10 percent neutral formalin. The morphometry of the stomach and intestinal structures was performed after formalin fixation on a stereoscopic microscope.

As a result of the research, it was found that the introduction into the diet of the experimental rabbits Prebioolact-Kr in the amount of 1,5, 2,0 and 2,5 g per head per day caused a probable thickening of the mucous membrane of all zones of the stomach in the second and third groups ($P < 0,05$) on average by 1,5% ($P < 0,05-0,01$).

The structures of the small intestines of rabbits have responded to the feeding of the study drug with the probable thawing of the mucous membrane, where as in the thick section there is a probable thickening of the mucous membrane.

Keywords: *prebiotic, young, rabbit, growth, fattening, stomach, intestine, morphological indices*