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THEORETICAL, METHODOLOGICAL, SCIENTIFIC AND INSTITUTIONAL BASICS OF FORMATION OF BANK OF FARM ANIMAL GENETICS RESOURCES OF INSTITUTE OF ANIMAL BREDDING AND GENETICS NAMED M.V.ZUBETS OF NAAS

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The authors has demonstrated the global nature of the problem of domesticated animal gene pool preservation caused by intensive using some transboundary breeds and reduction in the number of aborigen and local ones. Ignoring this problem leads to loss of biodiversity, the restoration of which with traditional methods of breeding work is not possible. The main aim of the article to highlight the key milestones of forming of the theory and methodology of farm animal gene pool preservation, contribute of Ukrainian scientists to the development of the some specific approaches.

The prerequisite of the development and the role of the Bank of farm animal genetic resources of IABG named M.V.Zubets of NAAS in the system of biodiversity preservation were highlighted. As its prototype we considered the Republican Sperm Repository of Central Experimental Station of Artificial Insemination (Brovary). The article shows that solving of problem of farm animal gene pool preservation should be based on a combination of the whole complex of factors: theoretical and methodical, organizational, economic and technological. In the last decades Ukrainian scientists have developed organizational foundations of farm animal gene pool preservation; its basic principle is breed adaptation to the certain climatic zones. They have introduced the seven main organizational forms of the domesticated animal preservation including gene pool population, gene pool herd, relicted animal farm, collections' nursery, farm of gene pool reserve, gene pool reproductor, bank of animal gene pool resources and other banks. They have initiated the development of the concept of creation and placement gene pool objects, its main link is bank of animal gene pool resources.

The article shown that twelve research institutes of National Academy of Agrarian Sciences of Ukraine carry out scientific program "*Preservation of animal's gene poll"*. The Institute of Animal Breeding and Genetics named M.V.Zubets of NAAS is main institution that coordinates its activities. Bank of Animal Gene Pool Resources of institute has been recognized as a national treasure in 1986. Since 2009 Ukraine is a member of the European Regional Focal Point for Animal Genetic Resources at FAO.

The authors state that IABG nd. a. M.V.Zubets of NAAS has developed a methodology for integrated assessment, management and long-term storage of gene

pool resources. The scientists of the institute have introduced methods of genetic and population monitoring of the gene pool herds and systems of regulation and optimization of the number of the gene pool populations through a combination of biotechnological and genetic technologies of cryopreservation of sperm, embryos, oocytes, primary germ cells and DNA, directed selection and creation of virtual cryopreserved gene pool herds. They have identified categories of the gene pool objects for storage and optimal size of deposit, developed requirements for genetic material of each gene pool object of the different species of farm animals, as well as standards of main parameters of the gene pool micropopulations for the some species.

The contribution of scientists of IABG nd. a. M.V.Zubets of NAAS in the development of the conceptual foundations of preservation of animal genetic resources as a cultural and intellectual heritage of the nation was concretized.

The authors used the special historical and scientific methods of research.

Keywords: **animal husbandry, preservation of the farm animal gene pool, cryoconservation, a bank of genetic resources**

INFORMATION SYSTEM IN ANIMAL HUSBANDRY AS A COMPONENT OF BIODIVERSITY CONSERVATION STRATEGIES

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In accordance with international obligations in the context of the Global Plan of Action for the Conservation of Biodiversity in Animals in Ukraine, separate articles of the Law "On Tribal Livestock" and a number of by-laws are directed. The scientific institutions of the system of the National Academy of Agrarian Sciences of Ukraine developed the theoretical bases and components of the strategy of conservation of biodiversity of domestic livestock, based on which the analysis of the dynamics of populations of the main types of farm animals, assessment of the level of risk of disappearance of rocks with the development of methods for their conservation in situ and ex situ.

The purpose of the research is to highlight the individual elements of the strategy of preserving the breeding diversity of farm animals in Ukraine, including the inventory of non- numerous breeds, the assessment of the possibility of their reproduction at the expense of biological material of cryobanks, and the development of the main components of the information system of biodiversity of farm animals in accordance with international requirements.

Material and methods of research. The status of domestic local breeds of farm animals in the breeding subjects in livestock farming is determined by the inventory of herds, as well as data from the State Register of Registry for 2011 and 2015. The presence of sperm of breeders of various breeds and species that can be used to reproduce endangered populations is confirmed by data from the Bank of Animal Genetic Resources at the Bank of Genetic Resources of the Institute of Animal Breeding and Genetics nd. a. M.V.Zubets of NAAS. Monitoring of the status of local domestic breeds of cattle, pigs, horses and sheep in the breeding subjects in the livestock sector of Ukraine for the period of 2011-2015 has shown the instability of the condition in the gene pool herds for reducing the stock population in most of them. Positive dynamics is observed only in the white-headed Ukrainian breed of dairy cattle, where the number of cows increased by 110 goals from 2011 to 2015.

During the aforementioned period, breeders of cattle of gray Ukrainian breed (2 farms), brown Carpathian breed (1 farm) and Swan breed (3 farms), pigs of Mirgorod breed (4 farms), Ukrainian steppe white Breeds (3 farms), sheep of the Ukrainian mountain-Carpathian breed (6 farms) and Sokolsk breed (2 farms), hutsul breed horses (3 farms), which led to a decrease in the total number of these breeds, including mat OK. The number of heads of Hutsul breed of horses was reduced to 50 heads, the bright sokilskoy breed of sheep – up to 150 heads, and the sow of Ukrainian steppe pigeon breed – up to 29 heads. Such a number of breeding stock in the above- mentioned breeds has passed the minimum permissible limit for the existence of a population that for horses is 70 mothers, 200 sheep and 200 mothers and 100 mothers. Cows of brown Carpathian breed in subjects of tribal affairs in livestock breeding have not become at all. Undoubtedly, breeds, if desired, can be revived and expanded by the abundance of both natural and artificial reproduction methods. For this purpose, the Bank of

Genetic Resources of the Institute of Animal Breeding and Genetics nd. a. M.V.Zubets of NAAS has created a sufficient supply of semen from the pedigree in a deeply cooled state, and in farms, for certain species of animals, there are still viviparous. Moreover, if sheep breeding and pig breeding by means of artificial insemination can restore one or two lines, then cattle breeding opportunities are considerably larger given the presence of semen in the institute's cryobank. In the system of animal genetic resources management, along with inventory and certification, the definition of breeds necessary for conservation, the development of genetic monitoring systems, the choice of conservation methods, the creation of a network of gene pool farms, kriobank, etc., specially places the establishment and operation of an information system that would be With the global network and ensured the availability of information. Taking into account that its development should start with the establishment in Ukraine of the institution (the main information and selection center of animal husbandry), which would be subordinated to the Ministry of Agrarian Policy of Ukraine and was engaged in the development of methodology and improvement of the current normative base in the field of livestock, and also performed the following functions:

- ✓ accumulation of primary information about animals kept in controlled farms;
- ✓ verification of information on the origin of animals;
- ✓ determination of breeding value of animals and formation of information on the results of animal assessment;
- ✓ formation and maintenance of the registration system of animals.

The automated information center of the center should be in close cooperation with the Unified State Register of Animals, as well as databases of automated information systems used by animal owners to conduct breeding records in the holdings of animals through the exchange files of the established format.

The automated system includes information resource (pedigree data, animal evaluation results, statistical and analytical information), as well as software and hardware complex and telecommunication network, for use of which will be conducted:

- ✓ automated collection of data on breeding animals and storage of these data;
- ✓ automated assessment of breeding animals and storage of the results of such assessment;
- ✓ generate reports and access to data on breeding animals and the results of their evaluation by authorized users of this system.

Processed information on the automated system will be obtained by animal owners, breeding centers, breed associations, state authorities, actors engaged in animal trade, etc. The automated information system, or rather its individual components, is being tested at the network of research facilities of the National Academy of Sciences of Ukraine, which maintains cattle of dairy and meat production areas. As a result of the development of an automated breeding system in dairy and beef cattle breeding, it will be harmonized for other livestock sectors, which will ultimately enable the creation of a national livestock breeding information system that meets international standards and protects the state from a number of negative consequences.

Conclusions. In order to form a domestic system of breeding and preservation of biodiversity of domestic breeds in the process of livestock production, it is necessary to create a centralized automated informational system from tribal affairs that would meet international standards.

The first steps in the formation of the information system in livestock are the establishment of an establishment (the creation of the main information and selection center for livestock industry), the development or adjustment of the regulatory framework in the field of livestock, the creation of a database of animals, animal testing and the formation of massifs of information that will be received by the interested Individuals and organizations.

Keywords: **local native species, gene pool preservation, Bank genetic resources, the presence of semen sires, information database, the automated system in cattle**

BANK OF ANIMAL GENETIC RESOURCES OF INSTITUTE OF ANIMALS BREEDING AND GENETICS ND. A. M.V.ZUBETS OF NAAS SYSTEM OF ANIMAL BIODIVERSITY CONSERVATION OF UKRAINE

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Introduction. Conceptual framework system biodiversity in livestock include a combination of a set of measures aimed at the conservation and repopulation animals - the preservation of genetic diversity in situ in vitro and preservation of genetic diversity through the accumulation of genetic material and its cryopreservation as germ and somatic cells, zygotes, tissues (ex situ in vitro). Gene pool facilities require maintenance system to produce the required number gene pool products, the main criterion of evaluation which is playing the typical breed characteristics and features. The unifying element in the system of biodiversity - a Bank of Animals of genetic resources of the Institute of Animal Breeding and Genetics nd. a. M.V.Zubets of NAAS, which is attributed to objects of national heritage.

Relevance of the creation and operation of the bank animal genetic resources of IABG nd. a. M.V.Zubets of NAAS teeth caused by rapidly narrowing biodiversity in general and the diversity of farm animals in particular. According to the ratified November 29, 1994 the Verkhovna Rada of Ukraine "Convention on Biodiversity" Pan-European strategy and objectives of conservation of biological and landscape diversity Bank animal genetic resources of IABG nd. a. M.V.Zubets of NAAS performs the task of enhancing the role of agriculture in maintaining biodiversity and fostering international cooperation for the conservation of genetic material of small species and endangered species according to the objectives of science and technology program number 37 "The system works in populations and biodiversity conservation of genetic resources of agricultural animals" ("Saving gene pool breeds").

It operates as a scientific and technological structure that provides storage and preservation of national and global gene pool of small, local and endangered species, populations and genotypes of rare farm animals. According to current trends driving the selection and breeding of livestock Ukraine and focusing on the short term, bank of sperm Institute also provides storage and rational use of better breeding material in the framework of breeding programs and improving the genetic potential productivity of animals.

The purpose of this study was to conduct quantitative and qualitative analysis of genetic material stored in the bank of Animal of Genetic Resources of Institute of Animals Breeding and Genetics nd. a. M.V.Zubets of NAAS.

Material and methods of research. A description of the genetic material that is deposited in the bank of animal genetic resources of IABG nd. a. M.V.Zubets of NAAS the results of the inventory on January 1, 2017 and acts of reception and transmission. Analyzed information forms the primary account (1-mol and 1-beef) and certificates of origin bulls.

To characterize the gene pool of animals breeding materials included books of evaluation on the quality sires and progeny data directory bulls allowed to use in the selection process.

Results. Bank Animal of Genetic Resources was formed on the basis of the Republican gene pool bank of sperm, which was established in 1976 under former Ukrainian Research Institute Breeding and Artificial insemination of cattle (now the Institute of Animals Breeding and Genetics nd. a. M.V.Zubets of NAAS.

Forming of animal genetic resources IABG nd. a. M.V.Zubets of NAAS was due to tribal enterprises, which sperm came from almost all regions of Ukraine. Since the gene pool of the National Bank of sperm of animal genetic resources deposited 26.043 thousand sperm doses of 44 bulls who participated in developing Ukrainian Beef breed, and founder of the Ukrainian Beef breed lines. The bank remains Institute of semen sires - the pioneers of related groups sperm are

used to display the Ukarainian Beef breed: 81 Eoiziano, 2317 Eymo, 274 Desant and 382 Eufemio (Chianina), 5203 Juncker, 8574103527 Zheriko (Charolais) and founder of the factory line - 0988 Anchar (Ukrainian Beef). Also, the bank laid sperm factory line Ukrainian Black-and-White Dairy cattle - 897 Elbrus.

Now bank of sperm of Institute holds more than 145.3 thousand sperm doses outstanding bulls 16 dairy and 14 beef breeds in the number of 87.4 thousand doses of 116 sires and 38.6 thousand. Doses from 77 bulls beef breeds which is intended for use directly in selection and breeding work with breeds. To implement the program "Preservation of the gene pool of breeds" in the Bank of animal genetic resources generative cells remain in an amount of 19.5 thousand sperm doses of 27 bulls and four local endangered breeds (Ukrainian Whiteheaded, Lebedyn, Ukrainian Gray and Carpathian Brown). If necessary, use genetic material of these species in gene pool herds in the future will make it possible to recover the lost line.

During 2011- 2013 the specialists studied indicators mobility, dynamic characteristics of movement and survival defrosting bull sperm stored in a bank animals genetic resources of IABG nd. a. M.V.Zubets of NAAS using computer analyzer Sperm Vision company «Minitub» (USA). Indices straight-forward motion and absolute bull sperm survival rate for different shelf life.

The Institute staff conducted molecular genetic evaluation of genotypes bulls for loci QTL (k-Cn, βLG, GH (dairy and cattle breeds) TG, CAPN1 530, MSTN), ISSR-markers using a as being primers for fragments of dinucleotide and trinucleotide microsatellite locus (ACC) 6G, (GAG) 6C, $(AG)_9C$, $(GA)_9C$ and microsatellite markers that are included in the list of recommended ISAG (BM1824, BM2113, INRA023, SPS115, TGLA122, TGLA126, TGLA227, ETH10, ETH225 and ETH3). The information for the studied markers allows you to make more detailed description of the genetic diversity of planted material stored in a bank of genetic resources of animals IABG.

The staff of the Institute and other academic Institutions in the system of the National Academy of Agricultural Sciences, which performs research program NAAS "Saving gene pool breds" continues to work to build a bank of animal genetic resources.

Also, the Institute formed DNA bank of somatic cells and tissues of various farm animals, with appropriate breeding and genetic characteristics of genetic material.

To enhance the role of the bank of Institute of Animals Breeding and Genetics nd. a. M.V.Zubets of NAAS in the management of genetic resources and conservation of biodiversity in the future of its formation should be based on the basis that from commercial breeds of farm animals lay biological material only from their greatest representatives, and for indigenous, local and endangered breeds - representatives from the widest possible range of different genealogical structure that will characterize the entire population.

Conclusions. Formation of the bank and its functioning is not only the accumulation and cryopreservation of genetic material of all kinds of animals, and in ensuring the implementation of scientific programs to maintain the diversity and specificity of gene pool facilities and breeding, biotechnology and other scientific research.

Keywords: **animal genetic resources bank, local and endangered breeds, farm animals, biodiversity, conservation**

THE MAIN REQUIREMENTS FOR THE GENOCATION OF THE GENE-FOUND STAIN IN POVERTY IN THE CONTEXT OF THE ACTIVITY OF THE GENE-FUNDING ECONOMY

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In recent years, farms of different categories of Ukraine, including tribal, are intensively imported pigs from different countries of the world, which destroy domestic pigs. In the middle of the last century, the Global Community Action Plan on Biodiversity Conservation, which has been supported in Ukraine, has been developed by the world community, for the leading role of FAO, to extend the duration of the existence of a breed or domesticated animal population. Practically for all kinds of animals, including domesticated ones, and not only agricultural ones, developed methods of preservation of their gene pool, defined forms and methods of their conservation, calculated funds for the reimbursement of breeding of non-competitive breeds of animals and other measures, but no basic – no effective legislative framework has been developed that would contribute to the conservation of biodiversity in the animal world in Ukraine.

The purpose of the research is to highlight the basic, standardized requirements for the creation and functioning of the gene pool of the herd in pig breeding, breeding methods, increase the number of the main population, the number of lines and families necessary for the conservation, reproduction and rational use of the gene pool of breeds, the conditions of keeping and feeding animals, their Identification, registration, evaluation, confirmation of origin, etc.

Material and research methods. The main requirements for the gene pool herd in pig breeding have been developed through the use of the regulatory framework of the livestock sector in Ukraine, including the Guidelines for the boning of pigs, the Regulations on the procedure for attestation and admission to reproduction of pedigrees for breeding purposes, the Orders of the Ministry of Education of the UIA, the Guidance on conducting immunogenetic studies, DNA - Testing, cytogenetic control, standardized feeding and feeding requirements, and the EU directive on identification and registration of pigs, the management of the breed s books chystoporodnosti animals.

Research results. In pig breeding, the gene pool herd should be formed on the basis of a leading breeding herd of the breed whose main activity is aimed at preserving the gene pool of the breed. Preservation in gene pool herds is subject to pure-bred animals, both main and local, as well as foreign breeds, types and lines of pigs, which are bred and kept on the territory of Ukraine.

The number of main sows in the gene pool should be not less than 100 heads, and the main boars must be at least 10 heads. Each genealogical line or family in the gene pool herd should have 2-3 branches with 2-3 sons or daughters.

The gene pool of the herd in pig breeding should be the leading breeder herd, which is subordinated to 2-3 breeding herds, which purposefully exchange tribal material with it. The basic method of breeding animals in gene pool herds is pure breeding. In some cases, during the implementation of state and sectoral breeding programs in livestock, approved by the Ministry of Agrarian Policy of Ukraine and the National Academy of Agrarian Sciences, the use of introductory crossings is permissible. They relate animals to purebred animals, are recorded in the pedigree book, and also trade in animals of the gene pool of the herd in accordance with the current legislation and the requirements of the European Union.

Selection pressures during the selection of animals in the gene pool should remain at the median level in the flock. Selection of animals in the gene pool of the individual individually, according to intra-group signs. Intra-group selection is carried out using inbreeding of moderate degrees in 2-3 generations with further cross-section.

Estimates of animals at their own productivity in the gene pool of the herd according to the current normative documents. Herbs in gene pool herds are selected according to pedigree,

individual characteristics and pedigree value. Kennels-pedigrees used in the gene pool of the herd, certify and evaluate the quality of the descendants in the conditions of specialized control and testing stations. If among the offspring of the barn more than 50% of the animals have development and productivity indicators at the level of requirements of the first class and below, there are cases of genetic anomalies, and the safety of the livestock is less than 80% - the pedigree is discarded from the herd and the family disposed of this way To prevent its reuse. Indicators of development and productivity of animals in the gene pool are to meet the requirements of the "elite" class for the breed in accordance with the Guidelines for the boning of pigs.

Numbers pigs in the gene pool in accordance with the requirements of the Instructions for boning pigs. Identification and registration in the state automated database - The register of breeding animals is subject to all the main breeds and main sows that are sown or kept in the gene pool of the herd, regardless of the form of ownership and subordination. Identify pigs in the gene pool of the herd according to the results of the confirmation of origin, conducted using modern genetic methods in accordance with the requirements of the current instructions. Animals are identified using two pairs of ear tags of the established sample for identification of pigs during their transfer to the main herd.

For the purpose of long-term storage of tribal (genetic) resources, it is necessary for the National Bank of Genetic Resources to transfer the semen of the kennels of all available gene pool stock lines. From each line it is necessary to store not less than 10 spermodozes, with periodic, once every 2-3 years, replenishment of the bank by material from new or the same parent, provided that they exist. A similar approach should be applied to genetic material from females of different families.

The level of feeding of pigs should ensure the manifestation of their genetic potential. Hold breeding pigs in gene pool herds in accordance with the requirements of state standards. Conclusions To create a gene pool of herds in pig breeding, it is necessary to follow standardized requirements. We believe that the status of a pedigree subject in pig breeding, a "gene pool economy", may be assigned not only to those farms that, according to the "Procedure for the conferment of the appropriate status to breeders in livestock breeding and Technological requirements for selection breeding and breeding work in the field of beekeeping "Have a herd or herds of endangered breeds, types, populations of animals, but also leading breeding herds of all breeds of pigs in Ukraine that meet the above requirements, in order to preserve them. In the pig breeding industry, as well as in other sectors of livestock breeding in Ukraine, the breeds are not officially identified as endangered.

In addition, it is necessary not only to establish requirements for gene pool farms, which are not very easy to implement, but also to provide their state support.

Key words: **gene pool farm, the gene pool of a herd, assessment requirements of animals, number of livestock, breeding methods, proof of origin, the identification of anomalies**

GENETIC RESOURCES OF FARM ANIMALS IN BULGARIA – CONSERVATION AND MANAGEMENT

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During the resent years zootechnical science and practice have paid attention on the preservation, management, and rational use of genetic resources in farm animals. Currently genetic resources conservation and their effective use are the major factor for sustainable development of mankind. The aim of this study is to present the status and opportunities for preservation, use of genetic resources and management capabilities of genetic resources of farm animals. Still there are methods and technologies that can restore the gene pool of extinct breed in country, which is confirmed by the concepts of FAO irreversibility of lost genetic diversity within breeds and populations. Besides genetic factors in the literature are described and non-genetic (anthropogenic) factors behind the erosion and loss of genetic resources in livestock including cattle rearing-like economic, socio-political and demographics factors, climate chang and the associated immediate disaster and accidents: disease outbreaks affecting animals. There have not been developed programmes for conservation of any of the risk breeds. No stimuli are applied to help the population in storage and conservation of such breeds. The objectives of the conservation programmes in breeding farms animals are the conservation of the genetic resources through increasing the size of the population, conservation of the in-breed diversity and drawing the inbreeding to a minimum.

The main stimuli for maintenance and management of the genetic diversity are the subsidies for breeding stock animals. The goals of conservation are maintenance of breeds and lines and in the long-term improvement of breeds through new methods and techniques of contol, applied in selection. Conservation programmes in farm animals have been developed in the country, and have been foreign programmes. Such programmes do not affect the food resource of the country, but help to organized and manage genetic resources. Bulgaria has set out to achieve improvement and conservation genetic resources and genetic diversity and the quality of productivity and determining the breeding activity of the yielded production through improvement of the genetic potential of the animals, the products from the animals have to meet the requirements for food security and they have to have high consumer quality. In the last years significant changes have occurred in the country in the goal-oriented help for the storage of the endangered breeds. The most significant measure is the programme of the Ministry of Agriculture, The Agency for Selection and Reproduction on the Farm Animals, Agency for Conservation Genetic Resources on the Farm Animals.

Keywords: **genetic resources, cattle, pigs, sheep, horse, goat**

BANK OF GENETICAL RECOURCES – BASIS OF CREATION, DEVELOPMENT NEW AND PRESERVATION SMALL LOCAL BREEDS

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The article presents the methods of creation and results of bank genophound functioning during 1976 – 2017 je. The conditions of selection organisation in cattle of the Ukraine during the term 1970 – 1980 je. and necessary of semenbank creation have been accounted. The importance of semenbank in creation new native specialized breeds dairy and beef direction of productivity and preservation genes of local breeds of cattle have been accounted.

The main task of the bank of genetic resources was the creation, prolonged storage of the necessary reserves of sperm, embryos and oocytes of animals with a special genetic value, similar to the world collection of plants at the Institute of Plant Sciences nd. M. I. Vavilov and their effective use in solving the most important breeding tasks:- removal of new breeds, types, lines, radical improvement of existing ones;- conservation of the gene pool and purebred breeding of the outbred type in the closed Populations of gene pool herds of local disappearing and local indigenous breeds, as well as reproducers of specialized breeds established in Ukraine;- Selective use of the gene pool of animals of various species and breeds in the future 25 years or more during the reproduction of pure-breed herds (breeds) that have disappeared, if necessary, on the mother stock of another breed. During the period from 1976 to 2000, 1.7 million spermodoses of outstanding bulls of 22 milk, 12 beef breeds and more than 15 domestic genotypes were placed in the sperm bank. The presence of gene pool stocks of sperm ensured the efficient use of outstanding animals at the breed level as a whole, which became the basis for the accelerated withdrawal of new red and white and black-and-white dairy, Ukrainian beef breeds. The formation of the genealogical structure of the lines, plant types of these rocks was provided exclusively through the gene pool of the sperm bank of the institute. .In the Ukrainian red and white dairy breed, 10 plant lines (Improver, Supreme, Hanover, Mayerdeil, Regal, Inhancer, Kavaer, Dinamnik, Nagit, Dayrimen) were derived, in the Ukrainian beef line - Euphemio line, Eoiziano; in the black and white dairy - the line of the Sudina. The gene reserves of semen of these ancestors of the lines are stored in the sperm bank for more than 20 years for use in prospective breeding.

Scientists of the sperm bank determined the optimal number of sperm dosages for each breeding formation that needs to be preserved. To lay the line it is necessary to have 5,0 thousand spermodoses from its ancestor and 2,0 thousand of his best sons. From all bulls of local breeds is laid for a long preservation of 1,0 thousand spermodozes. The technology of deep freezing of sperm of other animal species (stallions, pigs) was worked out; the possibility of influencing certain factors on sperm in the course of their long-term storage was studied. It was found that, the duration of preservation of the gene pool stocks of semen of bulls from the selected breeds is determined by the level of their breeding value on a specific useful basis.

Keywords: **breed, sires, genophound, semen, semenbank of genophound**.

WHY WE NEED INDIGENOUS BREEDS?

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Introduction. Modern economical challenges demand to find new ways of profitability increasing. Animal breeding is not an exception. The most widely used method is animal production increasing. Rather frequently such increasing is fulfilled through crossing of indigenous breeds with commercial breeds: the adaptation of latter goes easier and the production of the first one become higher. This method became rather popular during last decades, despite of some scientists' warnings on impossibility of arithmetic counting of blood shares at biologic objects.

Aim of the work was a try to prove the benefits of indigenous breeds of Ukraine from different points of view: cultural, ecological, health protective and others.

Materials and methods. Analytical, axiomatic, hypothesis-deductive, empirical, synthetic, elementary-theoretical, of induction, summarizing and of isolated abstraction methods.

Results. Valuable traits were sorted due to possibility of satisfaction of modern society's major challenges.

Tasty food. There are a lot of different proofs, concerning special qualities of local breeds products. In Ukraine it concerns, first of all, tasty broth from Grey Ukrainian breed meat. There was trial, in which Grey Ukrainian amongst outstanding French, Italian, English beef breeds took part (24 samples totally). Experts preferred Grey Ukrainian broth (blind trial). Milk of these cows is tasty and fatty too.

Safe food. It is clear, that milk and meat of ill animals contains pathogenic bacteria. Unconditional guarantee of safe milk could be done only at the case of local breeds use, which are resistant to main antropozoonosis (common for humans and animals).

Quality food. Higher quality of local breeds products is undeniable, as producers, trying to make production each time more profitable with different methods (especially in pig-breeding) often use biosimulators (probiotics, antibiotics, hormonal, tissue preparations, ferments, microelements, vitamins), which allow to strength physiological, including metabolic, processes in organism, to increase growth energy, production output, to improve food conversion. But pigs, which get such additives, do not have enough time to form completely till slaughter (muscle and adipose tissue). It resulted in reduction of meat quality and economical efficiency of its processing.

Unique genes. We should remember, that loss of genes, which code valuable traits, particularly, disease-resistance, can lead to future loss of huge animal massive**.** Let's remember case with BSE break in England in 1994: English slaughtered 5 mln. of adult cattle and 1 mln. of calves. Scientists suppose, that people ate products from about 700 th. of animals, which had hidden form of disease (first signs can manifest themselves in 8-10 years after contamination). Only in England up to 80 th. of people fall ill. Indigenous breeds are resistant to this disease (especially Grey Hungarian and Grey Ukrainian).

Unpredictability of future demands. Now consumer needs diversified food with different tastes and there are a lot of signs, that this demand will be increasing. Availability of such products will be excluded at the case of mono-breed existence**.**

Ecological component. Last time there are a lot of information on turning of ecosystems to destruction or complete altering after withdrawing from it one or other breed or species.

Example of such harmonious interaction is met in India. In marshlands of island Chilka there is widespread buffalo Chilka. Its dung and urine support zooplankton, which feeds fish in lakes, which feed people and animals near lakes. Buffaloes Murrah and crossbreds Murrah-Chilka are less adapted to wet conditions and absence of unsalted water for drinking, that causes their inability to adapt at the system.

One more example of organic interaction of unprofitable breeds and environment is Ronaldsey sheep with its high ability to adsorb copper and salt tolerance, which caused its exclusive ability to eat seaweed and is important factor of balance supporting at the place of its growth.

World's farm animals (especially of unprofitable breeds) are rather widely used for ecological services. Particularly, some of Podolic group breed, to which Grey Ukrainian belongs, is succefully used for pasture balance supporting, grazing perennial bushes (f.e. eleagnus species). Animals with more demandable feed intake can ignore plants, which can suppress other useful plants growth under lack of control conditions. In The State of World's Animal Genetic Resources for Food and Agriculture, FAO (2007) is marked, that in Cote d'Ivoire domestic cattle using at open areas reduces application of herbicides.

Slovenia reports, that small livestock, which is grazing at overgrown shrub land, clears this land and in such way reduces the possibility of fire outbreaks (Holstein will not be grazing at shrub land).

Esthetic pleasure. It seems, that esthetic pleasure can not be viewed on importance in one row with genetic factors and food quality, but it is rather important economic constituent. P.Hoyt revealed, that only in 1998 about 9 mln. people watched whales, spending for this $9 billions. When creating parks with Grey Ukrainian one shouldn't doubt, that there would be a lot of willing ones to look at noble animals with lyra-shaped horns and red calves from grey parents. Pale-grey Lebedyn cows with long lashes and calm sight could be popular as well.

It should be said, that in Korea Republic Burien goats was not popular only because of their appearance (they were not black), though they had higher gains. Only after black Australian goats importing situation was changed.

Country heritage. That is very important component if the country would like to be special and prosperous.

Reduction of production expenses. This point is rather important under market conditions. Local breeds gravely reduce expenses, taking into account their stress- and disease- resistance and undemanding nature.

Rather high level of variability, despite of long time breeding at limited space conditions. The highest variability level is found in local breeds. Despite of prolonged breeding in closed and rather limited in number populations, they saved high variability, unlike Holstein, which is rather inbreeded, despite of wide use in the world.

Hidden genetic load. Comparative evaluation of hidden genetic load level was done and it found, that genetic load in gene pool of Ukrainian dairy and beef cattle is approximately 3-5 %, while in gene pool of commercial breeds of western selection it ranges from 10 to15 %.

The most affecting example of intensive spreading of molecular diseases in the gene pool of commercial breeds and their forcing elimination is the example of lethal gene (BLAD) immigration into gene pool of different breeds. That's only one of several examples-consequences of unsuccessful not-checked crossing with imported breeds.

One more example of unsuccessful dissemination of genes at the populations is the case with Poni Farm Arlinda Cheef, which is considered to be one of the most prolific bull in all history of Holstein breeding. Chromosomes of legendary bull, born in 1962 counts for almost 14 percent in the genome of current Holstein population of USA. Genetic mutation, which traces to this bull is considered to be responsible for 500,000 spontaneous aborts of Holstein cattle worldwide.

Conclusions. Indigenous breeds bear considerable variability reserve, high cultural, esthetic and ecological value and at least that's why they uniquely should be stored for future generations.

Keywords: **indigenous breeds, biodiversity conservation, production quality, constitution strength**

THE INFLUENCE OF CERTAIN GENOTYPIC FACTORS ON THE DURATION AND EFFICIENCY OF HOLSTEIN LIFETIME USAGE

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Extending the duration of economic use of cows and enhance their productivity was and is now an important component of genetic improvement in many countries. The duration and effectiveness of lifetime usage of animals closely related not only to economic efficiency, but also to the selection process, since for both the production and breeding the most valuable animals are those who have these two combined successfully features. Therefore, the aim of our research was to study the effect of different linear affiliation of Holstein cows on the duration and effectiveness of their lifetime productivity, identify the best variants of interline and intrinsically linear selection of parental pairs. Studies conducted on the materials of primary breeding accounting in herds in Vinnytsia, Rivne, Cherkasy, Kirovohrad and Kyiv regions. Retrospective analysis of life expectancy and efficiency of the use of cows was performed by Yu. P. Polupana method. (2010). The analysis involved information about economic use and lifetime productivity of 2902 cows, while all animals were taken into account, first calving of which was in 1996-2008 and who left the herd after finishing the first lactation with duration at least a minimum of 240 days.

It was found that in terms of duration and effectiveness of productive use indices of daughters from different bulls were different. By the life duration, productive use, number of lactations in life and the best lifetime performance were the daughters of bull Rok 373840409, and worse – Dzhokus 113080315. Rok 373840409, Lord 661287, E. Samb 3035115974, Bg. Rodeo 27642626161 and V. Astronomer 2160431 turned to be improvers by these features.

The best by duration of economic usage and by lifetime productivity were animals of Treyt lines 1629391, Valiant 1650414 and Eleveysh 1491007 and cows whose mothers belonged to line R. Sayteyshn 267150 and R. Sovrin 198998. Worse than the aforementioned indices were cows of J. Besn line 5694028588 and animals whose mothers came from a line of Adem 26781.

Identify the best variants to combine parental pairs with interline and intrinsically linear selection may contribute to lengthening the duration of productive use of cows and increase their lifetime productivity. Analysis of interline selection of animals showed that the most successful combination was when cows belonged to Bell lines, and bulls – to Eleveyshn line. Animals from this combination had the longest used in the herd (4,43 lactations) and they had the highest lifetime productivity (38671 kg of milk). The second position by studied parameters got cows from the combination of Starbuck-Eleveyshn (3,77 lactations and 28150 kg of milk). Long term usage and high lifetime productivity is well combined by animal from the cross of Eleveyshn-Bell lines (3,53 lactations and 22906 kg of milk). In addition, animals from cross of Valiant-Bell lines characterized by higher figures of usage duration and animals from the cross of Starbuck-Bell lines, Starbuck-Chif and Valiant-Bell had high lifetime yield. The most unsuccessful were all combinations when the mother belonged to line of Adem. Animals from these crosses were used in herds in less than 2 lactations, and their lifetime yield was 11584-13341 kg.

By intrinsically linear selection in terms of duration and effectiveness of lifetime usage animals from Eleveyshn line were the best. The duration of use of these animals was 3 lactations and their lifetime yield – 24176 kg.

The highest degree of impact on the studied parameters of duration and effectiveness of lifetime usage had animals with origin by the father – 51,6-55,2 %. The impact of the father line, depending on the index, was within 16,7-18,0 %, the mother line – 10,3-11,4 %.

Keywords: **cows, breed, line, selection, duration of productive usage, lifetime productivity, impact**

FORMATION OF ECONOMIC UTILITIES OF DAIRY CATCH DEPENDING ON ORIGIN OF THE FATHER, LINE AND RELATED GROUP

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The level of intergroup differentiation in terms of the main economically useful traits. The most is determined by the influence of genetic factors, of which the father's origins and linearity are essential.

Material and methods of research. The study was carried out based on the materials of the primary pedigree registration in the herd of the leading breeding plants for breeding Ukrainian red and black-and-white dairy breeds of cattle, OOO "Agrofirma "Svitanok" in the Donetsk region. The number of the firstborns we analyzed amounted to 515. In general, the matrix of observations was compiled containing information on 1271 animals for 448 variables (signs).

Results. In order to assess the effectiveness of the use of these selection groups in the herd, a comparative analysis of group averages for the main breeding characteristics was carried out. The significant difference in the number of bulls used in the herd of the bull breeding farm was taken into account, taking into account the characteristics of the daughters. Through the age of the first calving, the difference between the best and worst groups of half-sisters reached 159 ± 0.1 days or 20.3% (P <0.001), the reproductive capacity - 0,109 ± 0,017 or 11,3% (P <0,001), I milk for 305 days of the first lactation - 1616 ± 169.2 kg or 24.8% (P <0.001), the second - 1229 ± 57.2 kg or 18, 0% (P <0.001), the third - 1899 ± 426, 8 kg or 27.9% (P <0.001). On the content of fat in milk, the intergroup difference reached 0.41 ± 0.039% (P <0.001) of the first, 0.18 ± 0.053% (P <0.001) - for the second and 0.09 ± 0.020% (P <0.05) - (P <0.001), 0.11 ± 0.050% (P <0.001), and 0.11 ± 0.039% (P <0.1), respectively. The most abundant is Offspring used in recent years by the bulls Jupiter 27640964506 (64 daughters), Campino 112825601 (84 daughters) and Kadisko 579904182 (65 daughters). It is noteworthy that in comparison with the above the milk production for 305 days of the first lactation was in the daughters of the bulls Erik 348025783 (6508 ± 259.7 kg) and Jansker 345199616 (6497 ± 184.6 kg). The daughters of the bull S.S.Khoma 399264 KKG-1314 (4.06 ± 0.050%) differed in the high fat content of milk with comparatively low milk yields. Analysis of the exteriors of cows of daughters of different bulls attests to a certain degree of intergroup differentiation in these characters of the cows in question. The largest and tallest are the daughters of the bulls of the Holstein breed and the golshtinized type. According to some measurements, cows of golshtinized type do not even achieve standards for cows of fatty type, which are much lower. The daughters of the bull of the Holstein breed Erica 248025783, being large and tall among the cows of the groups under analysis, satisfied the standard Southern intrapore type of the Ukrainian black-ripened milk breed only by measuring the breadth of the chest (42.5 ± 0.75 cm). The daughters of the bulls SSHouma 399264 KKG-1314 and Dragomir 113021400 almost satisfied the standard of the gholshtinized type of the Ukrainian red dairy breed only in the area of the pastern (18.6 ± 0.17 and 18.5 ± 0.13 cm). Intergroup differentiation of half-sisters after the father, in many cases proved to be significant and highly reliable. Bulls that were used in the herd belong to the lines and related groups of Ukrainian red and black-and-white dairy breeds with the numerical advantage of breeding groups of golshtinized type. Among the compared groups, the largest number of daughters were the producers of the Validian 1650414 group (166 head), Starbuck 352790 (114 goals), Chifa 1427381 (92 votes) and Kevelye 1620273 (83 votes). The highest milk productivity for the first and subsequent lactation with uniform growth was found in the cows of related groups of Holstein-type Maple 1430145, Olivishna 1491007, Starbak 352790 and Kevelie 1620273. The cows of the related groups Eliveyshna 1491007 and Kevelie 1620273 are the fastest-growing among the cows of the registered lines and related groups. Low among the cows of the registered lines and related groups, the cows of the fat-milk type of the related group by bay window 17021 differed in milk productivity.

Conclusion. The phenotypic variability of the selected economically useful traits of herd cows is

largely determined by the influence of genetic factors, which makes it possible to expect a very significant effectiveness and efficiency of breeding in the herd. The origin of the father results in 7-61%, and belonging to the line or related group of 3-51% of the total phenotypic variability of the characteristics considered.

Key words: **bull-sires, cow, line, related group, milk productivity, reproductive ability, exterior**

EFFICIENCY OF SELECTION BY EXTERIOR TYPE IN THE BREEDING HERDS DAIRY BREEDS

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The need to study constitutional-exterior features of dairy cattle is due, of course, established in many studies to their positive connectivity with performance and lasting economic use. The vast majority of scientists-breeders thinks, that breeding cattle by technological features should determine the basic direction of work in farming on the threshold of XXI century.

Based from the above, the aim of the research was to evaluate the productive and technological features cattle of dairy breeds combined with linear estimation from the body type. The study focused on linear estimation of cattle dairy breeds by the type of body structure and study their impact on economically useful traits – don't have any doubts.

The study was conducted in pedigree cattle breeding farms of Holstein, Ukrainian black- and red-white dairy breeds in stock of 1300 cows. Linear evaluation of cows by external type carried from the method of Hmelnychyi L.M. developed by employees of Institute to breeding and animal genetics. Comparative evaluation of animals for productive characteristics held within the breeding herds and genealogical groups. In the course of the work done was applied genealogical, population, genetics and mathematical methods Study of frequency heritability, variability, estimation of genotype of animals and other classical research methods. A statistical analysis result of research was conducted on algorithms N.A. Plohinskyi.

Cows first calves Ukrainian red- and black-white dairy breeds are characterized by the following measurements articles: the height at the withers and sacrum 132.7&132,2 and 141,1 & 140,8 cm, with well-developed breasts in depth (72.0 and 71.5 cm), width (44.6 and 43.1 cm) and girth (189.9 and 187.9 cm), with extensive backwards in tubers of Ilium (51.3 and 50.9 cm) and in buttocks (34.6 and 35.2 cm). Spit length of rump was 52.5 and 51.8 cm, and body length - 162.4 and 161.2 cm. First-born Holstein breed exceeded peers Ukrainian dairy breeds by the withers height on (1.4 and 1.9 cm) and a sacrum (1.2 and 1.5 cm), by breast depth 1.1 and 1.6 cm, but they are inferior on the basis of the width of the breast, especially in comparison with cattle Ukrainian red-white milk breed (1.8 cm). Holstein animals differed broader backwards in tubers of Ilium (0.3 and 0.7 cm), in the hipbone (0.3 and 0.4 cm) and in buttocks (by 2.0 and 1.1 cm), and longer by 1.2 and 2.4 cm trunk, by chest girth of 2.4 and 4.4 cm.

Large coefficients of variation measurements describing the distance from the bottom of the udder to hock (Cv = 33,2 - 42,3%), between the front (Cv = 24,2 - 28,1%), back (Cv = 33,3 - 53,9%) and side teat (Cv = 19,1 - 27,0%) indicate the level of not consolidation studied animal herds on these characteristics. Comparative characteristics of the firstborn cow's udder Ukrainian red- and black-white dairy breeds shows, that animal's udder great and makes for girth - 132.4 and 135.3 cm, length - 38.7 and 40.0 cm and width - 29.9 and 32.3 cm with advantage of reliable peers Ukrainian black-white dairy cattle for the circumference of 2.9 cm (TD = 2.41), length - 1.3 cm (td = 1,74) and width - 2.4 cm (td = 4,56). Most of the morphological features of the udder is in the positive connection with the largest yield per lactation. These include the circumference (r = 0,430 and 0.335) length (r = 0,376 and 0.353), width (r = 0,347 and 0.232) and depth of the front quarters (r = 0,160 and 0.166).

The estimated population of the first-calves is characterized by rather high rates, then ranging within 1.85 - 1.90 kg / min. exceeding the maximum target standards for Ukrainian dairy breeds 0.05 - 0.10 kg / min. During the breeding to improve dairy breeds is important to know and take into account the relationship between the magnitude and intensity of milking yield. When examined the effect of daily yield on the intensity of milk found, that the highest daily yield, the more intense cow milk off. This high correlation coefficients (r = 0,438 - 0,511) in large samples with high

reliability (td = 6.11 – 7.87). Share heredity influence the total variability measurements articles of udder varies widely. Most udder traits are positive in relation to the size of yield and total yield of milk fat. A high level of heritability coefficients udder morphological characteristics sufficient for efficient breeding of dairy cattle and there was a positive correlation between the main floors of the udder and the largest yield provide breeding aimed at improvement.

Keywords: **milk type, udder, correlation, heredity factor, morphological indicators, exterior**

COMBINATIONAL ABILITY OF SPECIALIZED BREEDS AND TYPES OF PIGS IN INDUSTRIAL CROSSBREEDING

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For several decades, widespread industrial crossing different breeds of pigs. However, intensive importation foreign breeding of pig and use foreign technologies, a prerequisite for improving meat and slaughter quality of livestock. Success in solving this problem depends on identifying the best combinations of parental pairs with a comprehensive study of regularities succession and the descendants of preferred breeding traits are determined by genes and polymer characterized by a wide range of variability influenced by environmental conditions. In terms of industrial use of the most successful combinations of lines, genotypes, even a slight increase productivity, ensure, ultimately, significant economic effects.

The aim of our study was to evaluate the general (GCA) and specific (SCA) combining ability fattening and meat quality of pigs and calves landed determine the best options for combinations of parental pairs when crossed.

Studies were conducted in conditions of industrial technology at without belt dependent concentrations type of feeding and regulated microclimate on the basis of LLB "Mayak-Agro" Cherkassy region. Groups breeder was formed by unique origin, age, physiological condition, body weight. Assessment fattening, meat quality, physical and chemical properties of meat and fat conducted by conventional methods Polivoda AM and else. The morphological composition of carcasses studied by diking corps. The chemical composition and physical properties of meat were determined by conventional methods in condition of biotechnology laboratories Cherkassy National University. B. Khmelnitsky.

In the first stage crossed sows of Ukrainian large white breed (UVB) with boars Landrace (LA) English selection, and received from them hybrids (hybrids F1) sires with specialized meat breeds: Pietrain (P) British breeding red white girdle (RWG) and Duroc Ukrainian selection “Steppes” (DUSS). It is established that the use of these industrial crossbreeding schemes leading to improved slaughter yield of 4.4 - 8.4% in the carcasses of local groups. Severity of heterosis for slaughter relies was in the range of 0.16 to 1.88%. Combining breeds LA and UVB has increased the length of the carcasses in hybrids by 2.5 cm (P> 0.95) at the lowest standard deviation - 0.14 cm. At the same time, crossing two-hybrids local pig breeds of boars’ P led rather to reduce the carcasses length compared to the original parental forms 2.6 cm (P> 0.95). Regarding mass index posterior third corps tends to increase it to 11.3 - 12.5 kg accurate advantage of using Landrace breeds (P> 0.95) and pietrain (P> 0.999). The fact that the carcasses obtained from pigs combination 1/4UVB x 1/4LA x 1/2P, were significantly shorter and had the largest area "muscle eye" is quite natural and due to the influence of breeds belonging boars. The efficacy of the combination of maternal two-breeds form hybrids with UVB × LA boars pietrain and red white girdle, confirmed the calculated values of general and specific combining ability. When using boars breed red white girdle highest positive effect of general combining ability was observed in terms of area "muscle eye" (4.94) meeting of body (0.93) slaughter yield (0.35). In addition, the use of the scheme for industrial crossing red white girdle helped reduce fat content in carcass and thick bacon (- 1.41 - 0.64). Increasing the length of the carcass at slaughter hogs promoted the use of Duroc Ukrainian selection “Steppes” (1.32) and Landrace (1.08).

Boars used breeds influenced fattening and greasy meat quality of offspring with different force. Its value depended on the individual animal and breeds consolidation for the identified - from negative 8.49 to positive 6.71% age achieve live weight of 100 kg and from minus 9.34 to positive 6.34% in the average daily increments. Differential power of selective effects on offspring among individual species ranged from (- 9.34) to (+6,71)% (P> 0,999).

Given the importance of meat quality indicators as signs core products finals pig should always check the structural elements of Ukrainian large white breed on the matching ability. This lets use the best combination to improve performance and avoid unwanted flocks crossbreeds combinations.

Keywords: **hybridization, combinative ability, strength of influence, meat quality, pigs**

ALGORITHM FOR ESTIMATING OF BREEDING VALUE OF HORSES OF BELARUSIAN HARNESS, RUSSIAN DRAFT AND RUSSIAN TROTTER BREEDS

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Algorithms for evaluation of breeding (genetic) values of Belarusian Harness, Russian Draft and Russian Trotter breeds of horses by quantitative traits of own performance (development, expert evaluation of selected traits) of horses and progeny were developed. The theoretical basis for establishment of breeding value of horses by quantitative traits are the linear statistical models, based on which the breeding value is expressed by deviation of trait value of the evaluated animals from the average determined for the breed in our country.

The practical significance of the developed system is to improve reliability of horses evaluation and accelerate it for 2–3 years.

Keywords: **breeding value, horses, special traits, ratios, traits hereditability**

EFFICIENCY OF PRODUCTION ACTIVITIES OF EXPERIMENTAL BASE OF INSTITUTE OF ANIMAL BREEDING AND GENETICS ND. A. M.V.ZUBETS NAAS

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The state of economic and financial activity of the state enterprises experimental farms "Niva" and "Khrystynivske" of Institute of Animal Breeding and Genetics n.a. M.V.Zubets (Cherkasy region) has explored. It is proved that during 2012-2016 y notable successes in crop and livestock production were achieved through the introduction of innovations. In particular, grain, sunflower, forage crops yields grew respectively on 15,7, 4,3, 18,8 t / ha, the productivity of cows Ukrainian red and white dairy breed increased on 754 kg. The rate of increase of income was respectively 238 % despite the disparity in prices of produced and sold products and of material and technical resources. Stable and sustained financial condition allows rapidly upgrade the production facilities of experimental farms. During 2010-2014 y capital investments have made on more than UAH 10 mln. The state enterprises experimental farms "Niva" and "Khrystynivske" had been paying wages to employees and taxes and duties to the state and local budgets timely.

On the basis of their financial capabilities the state enterprises experimental farms "Niva" and "Khrystynivske" of Institute of Animal Breeding and Genetics n.a. M.V.Zubets have been supporting the social and economic living conditions of the countryside households. Each year, funds are allocated for maintenance of schools, kindergartens, domestic (rural) roads. The farms provide financial assistance to the pensioners - former employees, to the liquidators of the Chernobyl accident, soldiers participating ATO for children with disabilities etc.

Keywords: **state enterprise, experimental farm, dairy cattle, productivity, net income**

INNOVATIVE TECHNOLOGY OF PRODUCTION OF HIGH-PROTEIN FEED ADDITIVES FROM HYDROLYZED FEATHER RAW MATERIALS AND BLOOD IN LLC "COMPLEX AGROMARS"

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The article covers the innovative technology of high protein feed additives production from hydrolyzed feather raw materials and blood. In recent years production and use of animal origin feed additives in Ukraine has harshly decreased due to the quantity reduction of cattle in our country and as a result of pigs' African plague disease. Earlier, the researchers from Institute of Animal Breeding and Genetics nd. a. M.V.Zubets of National Academy of Agrarian Science of Ukraine together with specialists from SPE "Biokor-Agro" (village Hryhorivka, Obukhov district, Kyiv region) have developed small-sized technology of production combined energy protein feed additives from nonfood fish processing and poultry slaughtering wastes.

The production of protein feed from feather raw material has its feature. Feathers and fluff refer to keratin raw stuff. The chemical compound of keratin raw materials is a natural protein concentrate, but in the natural state keratin feather substance is not soluble in water and cannot be digest in animals' body because of availability disulfide bonds of type -S-S- between polypeptide chains in the protein molecule. Therefore, the proteins of the keratin feather raw materials become water soluble and digestible only after being hydrolyzed, as a result of disulfide bonds break.

The purpose of work – to study modern innovative technologies of production feed additives from nonfood poultry processing wastes in LLC "Complex Agromars» (Vyshgorod district of Kyiv region)

Due to the reduction in livestock numbers and their processing, the animal origin feed production has recently harshly decreased in our country and the price of imported fodder is extremely high. At the same time, Ukraine has gained intensive development in the poultry industry, particularly in growing the broiler chickens and processing their meat at the large poultry farms of industrial type. Herewith, a substantial amount of non-food wastes from poultry products processing (gastrointestinal tract, bone frame in the case of deep processing of carcasses, dead poultry, blood, feather raw materials etc.), is not used for fodder purposes in many poultry farms. Furthermore, in order to get rid of wastes from poultry and livestock products processing, and instead of organizing high protein feed additives production from them, were developed technologies of destruction them by burning, that cannot be considered as a reasonable solution to this problem. All this is not only the reason of significant losses of valuable high-protein raw material for animal origin fodder, but also leads to environmental pollution. Therefore, in the conditions of a shortage of animal origin fodder, the use of non-food poultry products processing wastes is not only a great resource saving value, but simultaneously solves some environmental problems.

At present in LLC "Complex Agromars" almost all poultry products processing wastes are used in production high protein feed additives. The company has organized a non-waste production that enables not only to provide poultry needs with valuable own production feed additives, but also to prevent environmental pollution and improve local ecology. For this purpose, on the "Complex

Agromars" has been constructed a plant of processing poultry slaughtering wastes into high protein feed additives of animal origin. On the factory of processing poultry slaughtering wastes were mounted and are now successfully working three technological lines of feed additives production: technological line of raw feather materials and blood, technological line of soft wastes(mainly from the intestinal) and technological line of feed additives production from dead poultry and hatching waste production. Innovative technology has been developed and installed by «Haarslev Industries» company, branches of which are located in Denmark, Germany and other countries.

So, in LLC "Complex Agromars" of Vyshgorod district of Kyiv region at the plant of processing non-food poultry products wastes for feed purposes has been developed and mounted continuously operating innovative modern technological line of combined high protein feed additives from hydrolyzed feather raw materials and blood production, that not only improves ration balancing and completes poultry feed, but also significantly increases the environmental safety.

Keywords: **high-protein feed additives, feather raw materials, hydrolysis, blood**

THE LIVE WEIGHT GROWTH OF BULLS OF DIFFERENT BREEDS
THE LIVE WEIGHT GROWTH OF BULLS OF DIFFERENT BREEDS

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The studies of the dynamics results of body weight, absolute and daily average, relative increases averaging bulls of Ukrainian black-and-white and Ukrainian red-and-white dairy cattle.

Researches are conducted in the conditions of POSP «Napadivske» Kalyinivka district of the Vinnytsya area after materials of primary pedigree account. In an economy use the whole-year of the same type feeding. In the structure of ration 40% make the concentrated sterns and also high-quality silage and soilage. Average daily increases of bulls for period of age to realization for a slaughter made over 1000 grammes. The dynamics of growth of living mass, absolute, average daily and relative increases of bulls, is analysed Ukrainian black-and-white and Ukrainian red-and-white dairy cattle. Living mass and weight gain researches of age to 12-monthly age with an interval in 3 months after the generally accepted methods.

Materials of researches are worked out the methods of mathematical statistics with the use of programmatic package of Statistica 8.0.

Living mass of bulls of the second group at birth made 36,3 kg, that anymore on 0,8 kg by comparison to new-born bulls of the first group. In all next periods living mass of animals of the second group was greater as compared to the animals of the same age of the first. In 3 months advantage made 1,7 kg, in 6 months – 4,6 kg (P>0,95), in 9 months – 8,8 kg (P>0,95), in 12 months – 12,5 kg (P>0,99).

Difference of absolute increases of bulls of the second group above the bulls of the same age of the first of age to to 3-monthly age made 0,8 kg in behalf of animals of the second group. In a period 3-6 months a difference is after this index between the first and second groups made 2,9 kg in behalf of the last. In periods 6-9 and reliable advantage of animals of the second group is 9-12 months set above the bulls of the same age of the first on 4,1 kg (P>0,95) and 3,7 kg (P>0,95) accordingly. In a period of age to 18-monthly age absolute increases of bulls of the second group were greater by comparison to bulls first on 12,5 kg (R>0,99).

Average daily increases of bulls of the second group of age to 3-monthly age made 763,0 grammes, that anymore on 8,9 grammes by comparison to bulls of the first group. In periods 3-6 months the average daily increases of animals of the second group prevailed the bulls of the same age of the first on 32,6 grammes. In a period 6-9 months the average daily increases of animals of the second group were made by 1045,9 grammes, that for certain anymore on 45,9 grammes (P>0,95) by comparison to the bulls of the same age of the first. Maximal increases of bulls were in a period 9-12 months and made 1210,4 grammes in the animals of the second group and 1168,9 grammes – for the bulls of the same age of the first, that for certain anymore on 41,5 grammes (P>0,95). In a period of age to 12-monthly age the average daily increases of bulls of the second group were made by 970,6 grammes, that was for certain anymore on 31,8 grammes (R>0,99) by comparison to the bulls of the same age of the first group.

Relative increases of bulls of both groups were high. From birth to 3-monthly age greater increases had bulls of the first group – 97,8%, and in periods 3-6, 6-9 and 9-12 months greater were increases of bulls of the same age of the second group – 56,4; 40,1 and 32,4% accordingly. For all probed periods of reliable advantage it is not discovered between the compared groups.

It is set researches, that at the identical terms of feeding and maintenance more rapid bulls grow Ukrainian red-and-white dairy cattle. In all age-old periods they prevailed the bulls of the same age of the Ukrainian black-and-white dairy cattle, in a that number, beginning from 9-monthly age, advantage was reliable (P>0,95–0,99). Average daily increases of bulls of two breeds were the least in a period of age to to 3-monthly age – 754,1-763,0 grammes, and most in a period 9-12 months – 1168,9–1210,4 grammes.

Keywords: **bulls, growth, body weight, weight gain, breeds**

FEATURES BREEDING WORK IN PIG

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Summarizes the methods of selection process of the genetic improvement of pigs in a historical perspective, taking into account their biological and economic-useful traits in breeding in different growing conditions. An orientation of activity of subjects of breeding business in ensuring the intensification of pig production.

Keywords: **pig breeding, breed, breeding, productivity, quality, economy**

BULLS AND THEIR IMPACT ON THE ECONOMIC USEFUL SIGNS COWS DAUGHTERS OF POLYESTER FATHER

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Among the most important parts of improving breeding Ukrainian Red Dairy breed is not the most important place belongs to the intensive use of bull-sires with high breeding value, which is determined by the capacity daughters.

Materials and methods of research. Studies conducted on materials zotehnichnoho primary accounting and breeding breeding farm "Zarya" Kherson region for the period 2010-2012. The object of the research was the daughter of the Ukrainian Red dairy bulls, Holstein (red and white suit), Angler and Red Steppe breeds. Studied cows milk production estimated by yields for the full complete (minimum of 240 days) lactation, content and output of milk fat and protein for 305 days and at higher daily milk yield.

Results. The study revealed a significant level of intergroup differentiation and specificity for milk production, reproductive ability, soundings and indices of body structure cows daughters of different bulls. Specifically found that the highest milk yield inherent daughters bull V.Din Et Reda 5661918, which is almost twice prevailed worst analogues daughters Radar 4439 respectively 2484 kg of milk, 93.0 kg of milk fat and milk protein 66.9 kg. The highest daily yield characteristic daughters H.Ch.Herri 5839897, and the lowest - for daughters Radar 4439. The difference in this case was 9.4 kg of milk. Inter-group differentiation on fat and protein in milk is low and under 0.12 and 0.22% by live weight - 14 kg.

The difference between the grounds daughters play different bulls more clearly expressed and 232 days is the age of first calving for the daughters Zenit 1113 and at a rate of 0.201 reproductive capacity for daughters H.Ch.Herri 5839897. It should be noted that although the daughters Zenit 1113 and were the youngest among firstborn both had the lowest rate of reproductive capacity after the first calving.

Research has found that the highest measurements of height at withers and depth of chest inherent daughters bull Sharpe 9713, prevailing daughters Zenit 1113 respectively by 5.8 and 2.9 cm. For indirect soundings chest width body length and chest girth advantage daughter had Grybka 696, and the largest width in maklakah typical for daughters of Napoleon 1647. Inter-differentiation daughters by different bulls metacarpus circumference small and is just 0.4 cm, due what difference the index kostystosti as insignificant and is only 1%.

Conclusions. Found significant levels of intergroup differentiation and specificity studied groups of cows his father napivsester the main qualitative and quantitative characteristics of milk productivity, exterior, reproductive capacity and live weight.

Keyword: **red dairy cattle, bull, napsali for father, milk productivity, reproductive ability, measurements, build indexes**

PRODUCTIVITY OF GOLSHTINS OF VARIOUS ECOLOGICAL GENETIC GENERATION AND UKRAINIAN BLACK-AND-WHITE DAIRY BREEDS IN IN THE CONDITIONS OF THE STEPPE ZONE OF UKRAINE

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The productivity of cows of Holstein and Ukrainian black-and-white dairy breeds in the conditions of the steppe zone of Ukraine was studied. Estimation of breeding changes using the available gene pool. The directions of further pedigree work with the domestic breed.

Keywords: **breed, heifers, cows, productivity, evaluation, selection**

INFLUENCE BODY MEASUREMENTS COWS UKRAINIAN BLACK-AND-WHITE DAIRY BREED AFTER THE FIRST CALVING ON THE FORMATION OF FURTHER MILK PRODUCTIVITI

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The productivity cow dairy breed largely depends on the careful evaluation and selection of animals by milk production and the type of exterior. The estimation of animals by measuring of body plays an important role in plant-breeding work in the process of further improvement of the newly formed Ukrainian dairy breeds by the type. It's because exterior is one of the main signs of breeding dairy cattle together with indicators of milk production, reproductive ability and productive longevity.

The aim of research was to investigate the formation of milk productivity of cows black and white dairy cattle based on their body measurements after the first calving.

The research was done on animals Ukrainian black-and-white dairy breed in the «Milk River» farm in the Sokal and Brody offices breeding reproducers «Breeder» Lviv region and plant-breeding «Yamnytsya» Ivano-Frankivsk region.

The body measurements of first calving cows (height at withers and depth of chest, breast width, chest girth, scythe body length, the width of the pelvic bones and metacarpus circumference cow) and milk productivity (the milk yield, fat content in milk and milk fat) cows first, second, third
and better lactation were studied by the materials zoo technical accounting. The force of influence on performance metrics was calculated by Single-factor disperse analysis method. The results of research were treated by variational statistics by G.F. Lakin.

Established that the milk yield of cows Ukrainian black-and-white dairy cattle depends on body measurements after the first calving. The cows Ukrainian black-and-white dairy breed in Western Ukraine that after the first calving had a height at the withers 134-136,9 cm, depth of chest – 76 cm or more, chest width – 47 cm or more, chest girth by shoulder blades – 196-203,9 cm, scythe body length – 160-164,9 cm, the width of the pelvic bones – 53 cm and metacarpus circumference cow –19-20,4 cm, are the most productive.

Animals with these measurements of the body most of the largest number of yield milk and milk fat had probable advantage over cows with other indicators of these measurements. By the fat
content in milk by the first, second, third and better lactation there was no significant difference between animals with different body measurements after the first calving in most cases.

Among the studied parameters milk productivity of cows and measurements of their bodies after first calving we found varying strength and direction of correlation. The correlation coefficients between body measurements firstborns and yield milk by the first, second, third and better lactation were positive and depended on measurements and lactation ranged from +0,297 to +0,478.

Between such measurements of firstborns, as the height at the withers, the depth of chest, width of chest, chest girth in blades, the width of the pelvic bones and with fat content in milk for the first, second, third and better lactation correlation coefficients were though low, but positive, and dependently on measurements and lactation were within +0,026 – +0,109. The correlation coefficients between the oblique body length after the first calving cows and fat content in milk were negative (-0,045 – -0,005) and between metacarpus circumference and fat ranged from negative to positive values (-0,038 – +0,017).

The correlation coefficients between measurements body in firstborn and milk fat yield in the first, second, third and better lactation were positive and dependently on measurements and lactation ranged from +0,288 to +0,473.

The likely positive correlation coefficient between soundings article body and yield milk and milk fat yield indicates that selection of cows by exterior will ensure the effectiveness of selection by milk productivity.

The impact of body measurements cows after first calving on the milk yield value dependently on lactation yield was 7,6-22,9 %, on the yield of milk fat – 7,1-22,9 %. The greatest influence on these indicators were height at the withers, the depth of the chest, chest girth shoulder blades and scythe body length, somewhat lower impact had breast width and the width of the pelvic bones and lowest – metacarpus circumference.

The impact of body measurements cows after first calving on the fat content in milk was negligible and, dependently on measurements and lactation ranged from 0,1 to 1,6 %.

Keywords: **breed, cows, milk productivity, exterior, correlation coefficient**

BREEDING VALUE OF BULLS OF WORLD GENE POOL OF BROWN SWISS BREED

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It was found that the highest breeding value for milk production featured the bulls have the daughters of Italian origin. The German sires have the best meat qualities according to fitness-indicators, the best was a group of Swiss Brown bulls. In general, the highest value of total breeding value index had subsidiaries sires offsprings of Italian origin.

The obtained results of impact forces of genotypic factors on the level sires of breeding values allowed us to conclude that their effect on the researched highly significant effect features that charac terized the breeding value were within 2,4–16,7%. The coefficients of phenotypic factors potency proved the credible and decisive influence on the birth year of bull on some indixes of breeding val ues. Thus the index of total breeding value depended on who was born at 39.6%, the index of breeding values for milk production – by 44.0%, while the indixes for meat breeding value and performance for fitness indicators – only 6.9% and 4.4% respectively.

Keywords: **Brown Swiss Breed, breeding value, genotype factors, phenotypic factors, impact strength**

CHARACTERISTICS OF THE PRODUCTIVITY OF THE MOLDOVAN TYPE OF TSIGAY SHEEP

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The studies were conducted from 2012 up to 2016 years in the Agricultural Production and Consumption Cooperative for the production of seeds "Elita-Alexanderfield" of the Cahul district and at theTechnological Experimental Station "Maximovka" in the District AneniiNoi on a number of sheep of different sex-age groups of the Moldavian type of Tsigay sheep ..

Growth and development of lambs were studied with the way of individual weighing of young animals at weaning at 3-3.5 month and 6-7 month in accordance with generally accepted methods and on the basis of "Recommendations on the technology of production of sheep breeding in the Republic of Moldova". The class assessment of young animals was carried at 12-13 months of age in accordance with the "Instruction forbonitization of sheep semitone-root breeds with elements of breeding work." Also were taken into account individual cuttings and live weight of adult livestock before the breeding campaign, productive indicators of breeding sheep selected in the selection grouprams, ewes, repair lambs and (she) lambs.

During theinvestigated periodin both farmshugged6,579 heads of ewes and were obtained7010 lambs. Fecundity of ewes was 106.6%, in the number of twinswere born 862 lambs or 12.3%.

At the age of 3 - 3,5 months were evaluated 1743 of lambs and 2517 of (she)lambs. The lambs had a living weight of 24.45 kg with a wool length of 6.18 cm andat the(she) lambs, respectively, 21.85 kg and 5.99 cm. At lambs , the live weight was with 2.6 kg higher and the wool length 0.19 cm in relation to(she) lambs ($P \leq 0.001$).

From theevaluated 1743lambs, to the 3-5 points with a high energy of growth are attributed 697 (39.9%) of the heads and for (she) lambs 1729, which is 68.7%. The live weight of sheep in the range from 25.94 kg to 31.38 kg and at (she) lambs 21.51 - 26.29 kg. Young animals that received 3-5 points are recommended tobe grown for herd repair andimplementation of other peasant and farm households.

When assessing at 12-13 months of age for lambs to classelitebelong 402 heads or 96.9%. The live weight was 49.05 kg, the wool cut was 4, 84 kg with the length of the staple 12.66 cm. The percentage of elite(she) lambs was lower in comparison with the lambs and was45.6%, and the productivity index was 40.59 kg, 4.09 kg and 12.5 cm.

When assessing the productivity of the sheep of the main flock for wool cut and live weight, it was revealed that the live weight of the rams in theinvestigated two farms is the same at 70.97 and 70.91 kg. According to the ewes, the living mass in theTechnological Experimental Station "Maximovka" is 52.45 ± 0.22 kg, and in the Agricultural Production and Consumption Cooperative for the production of seeds "Elita-Alexanderfield" 53.22 ± 0.08, which is higher by 0.77 kg ($P \leq 0.001$). Among the rams, the wool cuttings in the TES Maksimovkawere 6.18 ± 0.23 kg, which is higherin relation to the obtained results in the APCC "ElitaAlexanderfeld"5.21 ± 0.05 by 0.97 kg, according to the ewes respectively 3.96 ± 0.03 kg, 3.41 ± 0.01 kg and 0.55 kg. For both sex-age groups, the difference is significant $P \leq 0.001$.

In selective groups, the intensity of selection obtained from rams was 41.8%; , ewes 70.5%; repair lambs 65.8% andrepair(she) lambs 15.1%.

Differentiation of selection , that is, the difference of the productivity of the animals of the breeding group and in the whole in the herd, at the rams for the live weight 7.77 kg and wool cut 1.65 kg, atewesrespectively 2.99 and 1.38 kg,at the repair lambs 2,26 and 1,38 kg at and the repair (she) lambs 6,50 and 1,19 kg.

Keywords: **sheep, lambs, wool, live weight, yolk, fertility**

ECONOMIC-BIOLOGICAL SIGNS OF PIGS OF PAE "DZVENACHE"

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The evaluation of the state of heterospecific resistance is conducted, stress stableness, reproductive ability and productivity of pigs of two breeds (large black, n = 30; large white breed. n = 19) in 2013-2016 in PAE "Dzvenache" Kyiv area. In the moment of researches common amount of sows of large white breed - 75, large black breed - 50 chairmen. The population of utricle of pigs of large white breed belonged to 2 lines, large black breed - 4 lines. In both breeds it is distinguished for 5 families.

Reproductive ability of sows was estimated from data of опоросів, for the use of data of primary zootechnic account on a form 2-sw. Age of separation of piglets in an economy - 60 days. Haematological researches conducted after the generally accepted methods. Determined the amount of leucocytes of blood, phagocytal activity of leucocytes and intensity of phagocytosis. Blood was taken away for repair piggy-wiggies from an ear vein in age 8 months in the morning to feeding (experienced animals). In quality to the preservative used "Trilon-B". For the evaluation of a stress status of animals used a eosinophilic test.

In the experienced groups of animals studied the productivity and reproductive ability. From 30 animals of large black breed, haematological researches were conducted in which, a 21 chairman was used in a herd; 30 % animals were culled on different reasons. From 19 animals of large white breed, haematological researches were conducted in which, 12 chairmen were used in a herd. There was draft out 37 % animals, among what 68% with the mionectic indexes of heterospecific resistance (appraised as stress sensitive).

As a result of complex evaluation of heterospecific resistance of pigs of large white and large black breed in PAE "Dzvenache" is set: an amount of leucocytes the investigational animals of large white breed had within the limits of 7,5 - 16,4 thousands, and for the pigs of large black breed this index was within the limits of 8,2 - 15,6 thousand cages in 1 ml to blood, the amount of eosinophilic granulocytes for the animals of large white breed 1107,2±130 cell/ml presented on the average., and for the animals of large black breed - 610,7±85,7 cell/ml an amount of red corpuscles, for the pigs of large white breed, was within the limits of 4,8 - 6,7 million cages, and for the pigs of large black breed 5,8 - 6,4 million cages in 1 ml of blood. Phagocytal activity (PhA) the investigated animals of large white breed had within the limits of 49 - 54%, and for the animals of large black breed within the limits of 40 - 62%, intensity of phagocytosis (IPh) for the animals of large white breed on the average presented 4,5 odes., and for the animals of large black breed 5,5 odes.

Thus, on the indexes of heterospecific firmness of organism of pig of large black breed prevailed the persons of the same age of large white breed. A difference is highly reliable for PhA ($P<0,001$), IPh ($P<0,001$), a reliable difference is also educed after the amount of eosinophilic granulocytes in 1 ml of blood ($P<0,01$).

After the eosinophilic test of 56% animals of large white breed were taken to stress stableness, and among the investigated pigs of large black breed, stress stableness animals it was on 12% anymore ($P<0,01$).

The polycarpousness of sows of large white breed was on the average 10,6±0,14 piglets on опорос, and in the sows of large black breed - 9,5±0,40 piglets on опорос, however, for the sows of large white breed, on 1.8% anymore it was stillborn piglets, that comports with literary data about the high reproduced ability of pigs of large black breed.

Among the animals of large white breed it is educed 44% of stress sensitive individuals. From data of analysis of variance force of influence of a stress status on mortinatality presented 38%. ($\eta 2x= 0,38$; $P< 0,05$).

Stored of young animals in a suction period the sows of large black breed had higher on 1,8 % than for the sows of large white breed. It we explained by that the animals of large black breed are

more proof to stress and have higher indexes of heterospecific resistance. This fact is confirmed by previous researches .

After the index of living mass the new-born piglets of large white breed (1,72±0,23) prevailed the persons of the same age of large black breed (1,43±0,31 (P<0,001)). In age 60 days the substantial is set, statistically reliable, difference after living mass between the piglets of two breeds, so the piglets of large white breed (18,2±0,33) prevailed the persons of the same age of large black breed (16,8 ±0,23) on 1,4 kg (P<0,001).

The educed economic-biological features of pigs of two breeds in the conditions of one economy specify on perspective of large black breed in relation to stored to the sapling/pl and diminishing to departure of piglets in an early period of ontogenesis. At the same time a large white breed prevails after polycarpousness. Thus, in the conditions of economy of PAE "Dzvenache" it is expedient to conduct the interbreed crossing with the purpose of fixing of valuable internalss of educed in breeds and providing of sufficient level of profitability.

Keywords: **pigs, large white breed, large black breed, heterospecific resistance, stress stableness, productivity, stored to young animals**

AGE AND SEX FEATURES THE INDICATORS OF THE NATURAL NONSPECIFIC RESISTANCE OF GUTSUL BREED HORSES

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Horses of Gutsul horse breed are native breed for Gutsul region of Eastern Carpathians. Skilled human using performance-keeping livestock of farm animals influence primarily on to the adaptive and protective properties of the body of farm animals.

The study aimed to research the age and sex characteristics of natural resistance of Gutsul breed horses will promote the formation of measures to improve animal productivity, and will promote for all-round understanding of the unique breed postembryonic during ontogeny.

The studies aim was to investigate age dynamics of non-specific resistance of the organism Gutsul breed horses of different sexes.

The study was conducted during the 2013-2017 years. The blood samples (n = 96) of healthy horses (n = 28) Gutsul breed were analyzed. Material for the study was given from horses that were in proper diet and kept under the same conditions of Pre-Carpathians.

The horses age and sex categories were formed as follows: foals 6 months (just weaned), 1 year, 1.5 years; mares and stallions aged 2 and 3 years; mares (blank), horses (before coupling period), geldings aged 6, 9, 12.

To study the resistance of animals in whole blood such parameters were determined: protein fractions, amount of total protein of serum of blood, bactericidal activity of serum of blood (BASB), lysocym activity of serum of blood (LASB) index of completed phagocytosis (ICP).

Analysis of non-specific resistance of the organism in the classic cluster for these studies (total protein, protein fractions, BASB, LASB, ICP) found that Gutsul breed horses are well adapted to living conditions in the territory Pre-Carpathians in all chosen by our time. The value of the studied parameters depended on the age and sex of the individual from whom the samples.

To the onset of puberty horses the content of total protein increased its value. In all age categories the content of total protein was higher in stallions. Later, with age, although the total protein was increasing, but it was not significant when comparing the results for each gender in particular.

Protein fractions of Gutsul breed horses recorded that the foals had the highest relative content of albumin, the lowest - γ-globulins. With age, albumin content changed in waves, but the albumin / globulin ratio remained high in the 12-year-old individuals with almost identical values for particles and geldings and mares, but indexes of ratio were significantly higher for stallions.

The relative content of γ-globulin fraction of horses of different sexes increased with age, and in mares, starting year and a year and half of age, content γ-globulin was significantly higher than the rates the content of the fractions in the blood stallions appropriate age. Differences of γ-globulin fractions between mares and geldings were statistically unreliable.

The dynamics of age changes BASB and LASB set like jump improving of these indicators from 6 months to a year and a year and half old and continue their stabilization occurred at 85-91-89% for BASB and 25-31-27% for LASB to mares, stallions, geldings, respectively.

The indexes of ICP were already high at 6 months of age (0,84-0,9 st.un.). The level of adult the indexes of ICP out in the first year of life (for 0,87-0,93-0,89 st.un. for mare-stallions and geldings, according to).

Thus, both humoral and cellular resistance performance is not constant. These indexes changed according to physiological status. In stallions, compared with mares, almost all ages favor and ICP indicators were higher. The content of γ-globulins were lower, while in females, respectively, recorded an opposite picture. Most indicators of natural resistance of the

organism geldings were lower than stallions, showing the same trend, similar to the body of female horses.

Keywords: **Gutsul breed of horse, serum of blood, protein fraction, bactericidal activity lisocym activity, index completed of phagocytosis**

INHERITANCE OF SELECTIVE FEATURES BY OFFSPRING OF BULL-SIRES OF HOLSTEIN BREED

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Assessment of the nature of inheritance of combined features by the offspring obtained from the result of the use of Holstein bulls-sires in creating highly herd of Ukrainian Red Dairy, Ukrainian red-spotted milk and Ukrainian black and white dairy breeds was conducted by the method of combined attributes, using level of display of average values "A" (the amount of butterfat in the first lactation) and KVZ (coefficient reproductive capacity) and a combination of variations in the direction of plus (1) and minus (2) from the optimum differentiated cows into four groups: 1-1, 1-2, 2-1, 2-2.

As a result of our research it was found that the orientation of parental genetic conditions of the levels of dairy and reproductive ability is manifested in the specificity of group structure daughters received from bull-parents of different categories (-+, ++). The largest percentage characterized for thet group in which the combination of trends in deviations from optimum by discounted signs similar to the same combination of genetic determinational bull-father. From bull categories, such as ++, corresponding to the group "1-1", received more daughters with similar trend of combined sign of "A" and KVZ (41-58%). Thus, a combination of trends in deviations from optimum for the combined signs are similar to the combination of trend of parental genetic program, confirming the better of influence the Holstein breed bulls.

A similar regularity of inheritance of milk and reproductive ability of offspring derived from different sires are observed in the daughters generation. High levels of milk and reproductive ability (group 1-1) inherits most of daughters (40%) if the parent category in bull-father breeding value "++". From sires of categories "-+" and "+-" which is responsible to the groups "2-1" and "1-2", received more daughters with the same trend development of features combined "A" and KVZ - 35% and 50%.

On improving influence of individual bulls-sires on signs pointed to data of the total specific weight cows-daughters in group components (1-1)+(1-2) and (1-1)+(2-1). If the value is more than 50%, according to the laws of heredity transfer, then to the signs influences parent, increasing its development. Thus the bulls may impair the development of symptoms, provided that the total specific weight of cows-daughters components in group components (1-1)+(1-2) and (1-1)+(2-1) are less 50%.

Thus, the combination of trends of parental genetic program influence to the change in the basic characteristics in phenotype daughters. In the offspring manifested high levels of milk and reproductive ability (group 1-1), if the breeder has a category «Rb ++» and low milk yield and high rate KVZ (group 2-1), if the bull-father has a category «Rb–+».

Keywords: **breed, bull-sires, cows, offspring, lactation, productivity, combined features, inheritance**

MONITORING OF THE SIMMENTAL BREED IN UKRAINE

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Entry. The genesis of the Simmental breed of milk and meat direction of productivity in Ukraine lasted from imports of foreign (Swiss, Austrian) cattle and the creating of a large array of domestic breeding with a large number of genealogical groups (about 80 lines), to the conversion of the best to speeding up in the domestic Ukrainian Red-and-White Dairy breed dairy productivity.

A long process of selection (about one and a half century) has created essentially a new combined Simmental productivity. The array that was created, and that since the mid 90's of the 15 regions and under 39,2 % of the total population of all breeds were characterized by a harmonious structure of the body, strong and dense constitution by well developed muscles. The average live weight of cows of the best breeding plants was 603 kg according to level of milk production of over 5000 kg.

The goal of the research was to analyze the breeding stock for the breeding and productive qualities, which ensures systematic monitoring of status and trends of breed processes in population of Simmental breed in Ukraine.

Materials and methods of research. Investigations were carried out on breeding stock Simmental 19-herds of 12 regions of Ukraine as of 1 January 2016. For a comprehensive evaluation used data from the population, the productivity of dairy cows (305 days of the last completed lactation), exterior, reproduction, rearing, presence and condition of cows with high performance and genealogical structure.

The results of the research. The driving factor of progress of region breeds is the number of breeding animals in the active population. According to the State registry of subjects of breeding business in animal husbandry the share of Simmental breed in Ukraine on January 1, 2016 the number is 3.1 %, including cows 3.43 percent. So, according to our data selection work with the Simmental breed in Ukraine is carried out in two breeding farms, and 18 breeding reproducers, and their breeding stock has 7840 goals.

The average age 4300 Simmental cows in the calving is 3,6 ± 0,30. The distribution of the calving showed a tendency, according to which there is a gradual decrease in the proportion of cows starting with the fresh cows to the fifth calving by 9% and rapid to 10 and older (19.6 %). In breeding nucleus was allocated 1,403 cows, representing 32.6% of the number of the females.

It was examined udder shape 900 fresh cows, of which 60% are similar to bath and 40% similar to a cup of milk at an average intensity of 1,90 ± 0,027 kg / min. The intensity of milk output for 45% of the fresh cows is at the level of 1.8 ... of 2.19 kg/min and 21% of fresh cows – above 2,20 kg/min. The type of body structure cows 3913 - 40% were rated "excellent" and only 1% "satisfactory" in 1059 fresh cows corresponding values are 38 and 1%.

The genealogical structure of the Simmental breed in Ukraine is represented by two breeds, actually Simmental and Holstein red . Holstein red has 8 lines, among which the most numerous are the Starbuck 352790 (423 goal.) and Chifa 1427381 (323 goal.) for pairing was involved 18 of the bulls in 11 herds with a total population of 1046 of goals, including the 406 cows.

Among the lines Simmental only 9.6% of broodstock take seven domestic breeding lines, which are concentrated mainly in the farms of Vinnytsia, Khmelnytsky and Kharkiv regions.

Conclusions. Monitoring the condition in the population Simmental in Ukraine and the development of economically useful traits of breeding stock confirmed the general trend of reducing the number. So, if in the early of the 2000s the proportion of Simmental cattle was 5.3%, whereas in 2015 it decreased by 1.8% to 3.5%. Milk yield of cows in the the average is 5373 kg, 3.86% fat content and 3.17% protein in milk by live weight of 579 kg. The average age of disposals is 3.7 cows calving. The main causes of disposal of cows is low productivity and reproductive ability accounting for 54%, the average age of 3.7 calvings. The genealogical structure is

represented by lines Simmental (domestic and foreign selection) and Holstein breeds. The share of domestic Simmental breed lines in Ukraine is not more than 10 %.

Keywords: **Simmental breed, milk productivity, monitoring, record, genealogical structure**

RESEARCH OF THE QUALITATIVE COMPOSITION OF MILK OF COWS OF UKRAINIAN BROWN DAIRY BREED

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The aim of the research – is to study the qualitative composition of milk of cows of Ukrainian brown dairy breed in terms of households and in the context of genealogical descent.

Method. Research conducted under the conditions of the State Enterprise "Pilot Farm of the Institute of Agriculture of Northern East of NAAS» in Sumy region, Enterprize of Additional Liability “Mayak” in Trostyanetc region, State Enterprise "Pilot Farm Agricultural Firm “Nadiya” of the Institute of Agriculture of Northern East of NAAS» in Romny region. Milk production was assessed by monthly milking control with sampling of milk. Quality indicators measured in the laboratory of the former Sumy State Breeding Center on the equipment of Bentley. We investigated the percentage of fat, percentage of protein, including casein, percentage of dry matter, skimmed residue, contents of somatic cells. Biometric processing of results was carried out by the conventional method (Plohynskoho M.O., 1969), using software Statistica 6.0.

The results of the research. Studies have been conducted on the content of fat, protein, casein, lactose and somatic cell count in cow milk. Established difference of qualitative composition of milk of cows depending on the households and on the genealogical origin of the animals.

Analysis of our studies indicate that the level of quality indicators of milk production of animals of Ukrainian brown dairy breeds in different farms is significantly different. All the main indicators of quality prevailed in animals of Enterprize of Additional Liability “Mayak”.

For the fat content of milk cows of Distinkshna line 159523 were dominated. They though not significantly, but dominated the animals of Eleganta 148551 and Laddi 125640 lines for 0.16% and 0.19% respectively. The substantial significant difference of the content of lactose in the milk of cows of different lines is not set. Animals of Distinkshna line 159523 significantly superior cows of Eleganta 148551 and Laddi 125640 lines for the protein, for 0,24% ($P < 0,05$) and 0,32% ($P < 0,05$) respectively. For the casein content they were significantly superior then Laddi 125640 line cows – on 0,24% ($P < 0,05$). For the dry matter content and skimmed milk residue animals of Distinkshna line 159523 also have the advantage.

Conclusions. As a result of studies found that the level of quality indicators of milk production in animals of Ukrainian brown dairy breed in different farms is significantly different. So fat content in milk varies 3,43–3,98%; protein content – 3,10–3,55%; casein content – 2,83–3,31%; dry matter content – 12,4–13,1%, fat-free dry milk residue – 8,95–9,13%.

The dependence of milk quality indicators based on linear descent. For the main indices are preferred animals of Distinkshna line 159523.

Keywords: **breed, milk productivity, protein content, fat content, casein, lactose**

THE HISTORY OF THE FORMATION OF ETHOLOGY AS SCIENCE ON BEHAVIOR OF ANIMALS

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The science of behavior in the search for objective laws and attempts to develop concepts that could explain normal and abnormal behavior, has gone through several stages of development - reflex, biheviorialnyy, ethological. These steps taken oppose each other, but we believe that each of them is the basis for further development.

In Ukraine, the famous ethologist was Professor of Kharkiv University Karazin AP Krapivny. His works are devoted to interspecies relations animals and bioecological aspects zoopsychology philosophical, mathematical analysis of complex behavior of animals. Kyiv National University. Shevchenko animal behavior and regulatory mechanisms mizhtvarynnyh relations actively exploring Podobaylo AV and VA Gorobchyshyna.

The current stage is characterized not only by the lack of a unified theory in ethology, but also the availability of interdisciplinary connections, especially with comparative psychology and neurophysiology. Modern ethology phase lasts quite a long time, and it sometimes distinguish different stages. A number of famous ethologist believe that since the mid 80s of last century ethology entered a new stage of its development - the stage of the so-called "broad ethology." It is characterized, in their opinion, no discipline regarding the consolidation of a theory of private conduct and interaction based on the existence of one ethological approach. Anthropologists, although limited to the study of primates, made a significant contribution to the development of modern science of animal behavior at all.

An important contribution to science made by psychiatrists, specialists in social psychology, veterinary doctors and employees of zoos and sanctuaries.

The ultimate goal of the study of animal behavior that determines the practical role of ethology, behavior management believe (L. Baskin). Theoretical bases of behavior management: the theory of hierarchical social behavior of animals exposed mechanisms ritualization (demonstrative behavior that prevents aggression), communication systems, mechanisms for organizing your social behavior. However, the right to use the patterns found for the modernization and industrial livestock farming is not possible. We have to solve many specific issues related to specific species, his reaction to domestication (domestication of animals) and welfare. It found a significant number of rather similar problems related laws and domestication synanthropization (adaptation of organisms to exist near the person), their impact on the environment and animal behavior

The development of animal husbandry is by creating new options for interaction of organisms with new physical and biological conditions. Excluding the effect of limiting factors, one introduces animals into new ecological niches. However, we are seeing with only weak changes in norms of reaction types. In most cases we are talking about the use of the existing range of standards reactions. Changing behaviors people use natural mechanisms to ensure lability behavior: simple recombination of elements within the complex, developing new responses to stimuli. Translating animals in the new environment, every time we have to review all aspects of their integrated behavior, creating the need for adequate reaction and eliminating unsuitable to the new conditions.

In general, we can talk about a special field of research - Applied Ethology, in front of which are the following problems:

1. Creation of an integrated model of behavior animals in artificial environments. Development ethological aspects neoevolyutsiyi (domestication and synanthropization).

2. Delimitation variability coherent behavior and its elements in species important to the economy and development of methods of purposeful formation behavior.

3. Study and use patterns of behavior in vitro livestock facilities, livestock grazing and intensive industrial economy.

Conclusion

The evolution of ideas about the "mind" of animals and establishment of basic concepts of thinking (mental activity) animals and its effect was found in various areas of behavior over time. At all stages of the development of science questions the presence of mind in animals, its degree of development and role of psychology and behavior were mixed.

The current stage of development of ethology characterized not only by the lack of a unified theory, but also the availability of connections, especially from comparative psychology and neurophysiology.

Great contribution to the major trends of experimental and comparative approaches to the study of higher mental functions such animals have researchers like Pavlov.

Keywords: **intelligence, instinct, genetics of behavior, behavior, higher nervous activity**

THE LIFETIME OF COWS UKRAINIAN RED-AND-WHITE DAIRY BREED DEPENDING ON THE LINEAR TRAITS ESTIMATION

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Studies conducted in the herd for breeding Ukrainian Red-and-White Dairy breed (n=250). Evaluation of exterior-type heifers were conducted by the method of linear classification according to the latest recommendations of the ICAR at the age of 2-4 months after calving. Such descriptive traits, that characterize the body structure of cows – chest width, body depth, angularity, the fatness, the position and rump width had been studied.

The results of studies showed reliable influence of the score level of exterior descriptive traits on the lifetime of cows. The degree of variability of relationship between these traits depended on the score level and specific point of the body structure.

The effect of the chest width on the lifetime of cows has curvilinear variability. Longer lifespan have been identified in animals in 3-5 scores for the development of this trait and was 2452-2505 days. With the increase from the average value in 5 scores, the lifetime of cows decreased from 2351 (6 scores), to 2041 days (9 scores).

Comparing group of animals valued in 5 score with groups in 6-9 scores revealed a reliable variance in favor of the former, which ranged from 184 ($P<0,05$), to 464 days ($P<0,001$).

Studies of the effect of body depth on lifetime showed that the longest periods of longevity inherent in animals evaluated the development of trait in 6-9 scores, with the highest value of 2531 days estimated in 8 scores.

Cows with excessive angularity and maximum lifespan (2455-2503 days) had higher scores (7-9). A significant decrease is observed when reducing the score for this trait starting from 6 scores (-193 days; $P<0,001$) to 1 score (-648 days; $P<0,001$) in comparison with the best result in 8 scores.

The relationship between the assessment for condition of rump angle and lifespan of cows has a curvilinear nature. Animals with an optimal rating of the trait in 5 scores had a high lifetime in 2517 days, whereas with the increase and decrease of scores, the number of cows days of life decreased. The difference in life expectancy between cows valued at 5 scores with groups of animals assessed in 6-9 scores ranges from 12 to 284 days with a reliable variance only compared with 8 and 9 scores ($P<0,05$). Compared with groups of animals estimated by 1-4 scores, the variability of variance was 100-509 days with reliability compared with 1 and 2 scores ($P<0,01$).

The lifetime of cows is in straight dependence on the score level for trait chest width. Cows with the highest estimate for the development of trait in 9 scores was used for 462 days longer compared to animals with 1 score ($P<0,01$). Among the evaluated population, the greatest number of cows (n=88) estimated in 7 scores, next (n=56) in 6. In general, the vast number of cows (n=189), or 75,6% are for the development of this trait above the average, i.e. is characterized by a rather wide rump.

The highest average lifetime of animals in 5 scores for fatness is on average – 2523 days. A sufficient lifetime of cows valued 1 to 4 scores with variability 2276-2459 days inferior for animals in 5 scores on 64-247 days with a significant difference between the groups estimated in 1 and 3 scores ($P<0,05$). A significant reduction in lifetime observed in cows with body condition score in 7-9. They are significantly worse in comparison with groups of animals with 5 scores, for a high reliable difference 282-566 days ($P<0,001$).

A significant effect on the development of linear type traits was installed on longevity of cows Ukrainian Red-and-White Dairy breed. Each of the estimated descriptive traits influence on life expectancy of cows with different variability within grading scores in accordance with desirable development. Selection of Dairy cattle for desirable development of exterior type traits by results of linear classification will enhance the duration use of cows.

Keywords: **Ukrainian Red-and-White Dairy breed, linear type traits, lifetime**

CHROMOSOMAL ABNORMALITIES SHEEP

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Successful and creative plant-breeding work in a stock-raising is based on the estimation of genetic potential of separate breeds, herds and individuals, that is impossible without thorough genetic- populations knowledge. Knowledge of features of caryotype gives an opportunity objectively to estimate the breeds of animals taking into account their population-cytogenetic features, that assists more complete idea about the evolution of breeds.

However such important agricultural object, as a domestic sheep, remains cytogenetic poorly studied, especially in a population-cytogenetic aspect.In literature different breeds have small information about frequency and spectrum of the inherited anomalies and populations of sheep. Most chromosomal and genic anomalies of sheep in general not research, although for practice of plant-breeding work necessary knowledge of reasons of their appearance.

Caryotype of sheep is presented by 54 chromosomes, from them 26 pairs of autsom and one pair of sexual chromosomes (XX or XУ). Three pairs of large metacentric and 23 pairs of acrocentric chromosomes of different size enter in the complement of autsom.

For sheep as well as for other animals characteristic chromosomal polymorphism as a numerical varying of chromosomes in caryotype (aneuploidi and poliploidi), morphological aberations and associations of separate chromosomes.

Chromosomal anomalies of sheep are reason of forming of nonviable gamet, that results in death of embryos on the early stages, and, as a result, to the considerable economic losses in economies. The facts of chromosomal aberation educed for sheep testify to the necessity of cytogenetic control of tribal animals, especially rams, with the aim of exposure of animals-transmitters of undesirable changes in caryotype and exception of them from a plant-breeding process.

Keywords: **sheep aries, chromosomes, aberations, karyotype, instability**

ASSOCIATION OF POLYMORPHISM OF THE BETA-LACTOGLOBULIN GENE FROM MILK PRODUCTION OF COWS OF THE BELARUSIAN BLACK-MOTLEY BREED

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In cows of the Belarusian black-motley breed using PCR-RFLP method set gene polymorphism of beta-lactoglobulin. Identified genotypes LGB^{AA}, LGB^{AB} and LGB^{BB}. Calculated frequency of alleles and genotypes in the gene beta-lactoglobulin. Studied milk productivity (yield of milk, fat and protein content of the milk, the amount of milk fat and milk protein) in animals with different genotypes of beta-lactoglobulin. Established the superiority of the cows with genotype LGB^{BB} the main indicators of milk production.

Keywords: **beta-lactoglobulin gene, a genotype, milk productivity, the belarusian black-motley breed**

CONDITIONALITY OF PRODUCTIVE LONGEVITY AND LIFELONG PRODUCTIVITY OF COWS OF BLACK-WHITE BREED BY GENETIC FACTORS

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Objective: to study the dependence of productive longevity of cows of black and motley breed on genetically determined factors - linearity and bloodiness in Holstein breed.

Methods: zootechnical, biological, statistical.

The materials of the studies were pedigree cards of cows and bulls, bull catalogs, zootechnical reports on pedigree work with the herd, the cattle base of the Grodno region, and also registers of rearing and rearing of the litter.

To study the effect on the longevity of cows and their lifelong productivity of the "linear accessory" factor, all animals that were eliminated in 2006-2014 were divided into groups according to the lines: Adema 25437, Annas Adema 30587, Vis Eidial 933122, Montvik Chiftein 95679, Nico 31652 , Pabst Governera 882933, Reflection Sovering 198998, S. Sensation 1267271, Hiltes Adema 37910.

Depending on the bloodiness of the Holstein breed, the animals were divided into four groups: I - up to 25% of Holstein genes, II- 25,0 – 49,9% of the genes of the Holstein genus, III - Holstein blood 50% and more, IV - purebred black-motley cows.

Indicators of milk productivity (life-time milk yield (kg) and lifetime yield of milk fat (kg), milk yield for 1 day of lactation (kg), total duration of the lactation period (days) were studied in the experimental animals, and the duration of economic use (lactations).

Main results. The results obtained during the statistical processing of data indicate that the cows belonging to the Pabst Governera line 882933 differed in the longest period of economic use among the abandoned animals. Duration of use in animals of this line was 8.43 lactations, which is more than for cows of other lines at 1,72-6,67 lactation. It should be noted that cows belonging to the Adem 25437 lines (6,71 lactations) and S. Sensation 1267271 (5,49 lactations) were also characterized by a rather long period of economic use.

Due to the long period of use of the cow, the Pabst Governera line 882933 had the highest indicator of lifelong milk yield – 51535,58 kg of milk and the yield of milk fat – 1914,03. But as for milk for one day of lactation, here the leadership belonged to individuals belonging to the line Vis Eidial 933122 and amounted to 21,19 kg of milk per day. Also, a fairly high indicator of milk yield for one day of lactation was observed in animals belonging to the line Montvik Chiftain 95679 – 21,02 kg of milk.

As a result of the research it was found that the largest term of economic use was characterized by low-breed hybrids with Holstein breed (up to 25%) – 3,63 lactations. This group of animals exceeded the individuals of the remaining groups by 0,21-0,76 lactations. It is worth noting that purebred black-motley individuals also differed by a long period of productive use – 3,42 lactations.

Conclusions. Analysis of the impact on productive longevity and indicators of lifetime productivity of the "linearity" factor among abandoned animals in the "Progress-Vertelishki" made it possible to establish the existence of significant differences in the duration of economic use of cows of different linear affiliation. Cows of the Pabst Governera line 882933 – 8,43 lactations, 51535,58 kg of milk and 1914,03 kg of milk fat were distinguished by the greatest period of productive longevity, and also by the highest milk yield and milk fat content. It was established that the crossing of black and white cattle with Holstein breed positively influenced the productive longevity of animals, but on condition that the blood on the improving rock did not exceed 25%. Low-breed hybrids with Holstein breed exceeded the animals of other groups by the duration of their economic use by 0,21-0,76 lactations. Thus, we recommend breeding cows of black and motley breeds in the "Progress-Vertelishki", taking into account the impact on productive longevity and milk productivity of such factors as linearity and bloodiness in Holstein breed.

Keywords: **genotype, productive longevity, dairy productivity, Belarusian black-white breed, lines**

GENETICS CHARACTERS INTRAPEDIGRYS TYPES OF CARPATHIAN BREED BEES

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Introduction. Today we observed of tendency to reduction of honey bee population in the world what according to honey gathering. For example, in Ukraine, according to statistical data for 7 inhabitants of Poltava region accounts for 1 bee familie, compared with that of 300 years ago, it reached within 3 bee families per citizen. Science and practice open many secrets according biology of bees, allowing bee efficient manage vital functions for humans. But despite the opening of beekeeping is the only farm animal that over 100 years has not been the intervention of human hands to create a new breeds of honeybees. Genetic intensify the search in the field of beekeeping conditions in Ukraine needs to initiate breeding program as planned waste zoning and aspects of reproduction of bees.

The aime of research: determining the characteristics of four intrapedigrees types in the Carpathian bee breed using the methods of population and molecular genetics.

Materials and Methods: Sampling was performed from top five lines: Sinevir, Rakhiv, Vuchkivskyy and Hoverla bee colonies were taken 10 bee worker. For molecular genetic analysis used 20 insects of each Carpathian bees breed type with observance of the principle of representativeness. DNA extraction performed from homogenate tissues using the standard commercial kit «DNA Sorb B», «Amplisense», this some modifications [1] during sample preparation. Reaction mix purification from bees wax leading this octane. The structure of the primers used for genotyping of bees and their code designations are: OPA-1(3'- CAG GCC CTT C -5'); OPA-4 (3'- AAT CGG GCT G -5'); B15 (3'- GGA GGG TGT T -5'); S1 (3'- AGC AGC AGC AGC AGC AGC C-5'). The program amplification of RAPD - primers: 1 cycle: 940 - 3min .; 2-35 cycle: 940 - 1 min., 360 - 30s., 720 - 1hv.36 cycle (final elongation): 720 - 10 min. The program amplification with primers S1: 1 cycle of 94 ° C - 4min 2 - 31 cycle: 57 ° C - 2 minutes; 72 ° C - 4min; 94 ° C - 1 minute, 32 cycle: 57 ° C - 3 minutes; 72 ° C - 7 minutes. Electrophoretic separation of amplified sections performed in 2% agarose gel in Tris borate buffer conditions. Size of amplification products control was carried out using molecular weight marker 1 kb - Ledder plus («Fermentas», Vilnius, Latvia). Processing of the profiles was performed in a standard computer program GELSTAT [4]. Genetic distances were calculated in terms of genetic similarity indices obtained GELSTAT program as follows:

$$Dxy = - \ln I$$

Building a kladohramm performed according to the values of genetic distances TREE program and MEGA 4 [5; 6]. Statistical analysis of amplicon frequencies, heterozygosity, linage similarity, etc., performed by Fisher's algorithm [7].

Results and discussion. Molecular genetic studies on four primers made it possible to analyze 95 DNA fragments of different lengths, matching the same number of anonymous genetic loci of the genome of bees. Apply primer in RAPD - 15 made it possible to identify 18 amplification products in a range of molecular sizes from 410 to 1000 b. p. It noted that the DNA fragment size 410 b.p. 100% met all the members of Carpathian bees breed and described one genetic monomorfic locus. DNA size band 445 b. p. elektrophoregramme was found in only 20% of bees Vuchkivskiy type in the absence of individuals in other populations. Statistical comparisons (Fisher's criterion) frequency distribution of DNA fragments obtained with primer in -15 revealed a significant number of types of identification markers intrapedigrees of Carpathian bees. The largest number of DNA - fragments set for Vuchkivsksy type whose size is reached within the following limits: 1000, 630, 580 and 485b.p. DNA fragment of 1000 b.p. general was absent in bees Rakhiv type and Synevir, and its frequency in the population of Representatives Hoverla was 0.600 ($p < 0.001$). As individuals, the members of such Synevir, observed no amplicon size 630 b. p. A fragment of a molecular weight of 710 b. p. observed with a frequency of 0.600 to 0.400 bees and type Rahiv, Goverla and 0,100 individuals in such Vuchkivskyy ($p < 0,05$; $p < 0,01$), respectively. Bees type Rahiv, Goverla and can be identified among other types of Carpathian breed presence significantly higher frequency amplification product whose size is 655, 515 b. p., 830 b. p, 530 b. p., respectively. Statistical analysis of the frequency distribution of the products of amplification bees four types derived from molecular genetic analysis of four primers in PCR was performed to identify the most characteristic identification of DNA fragments bees each of type [8]. Based on these characteristics were constructed genetic formula intrapedigrys types of Carpathian breed. According genetic formulas the highest number of specific DNA - fragments characterized by bees for types of Sinevir and Vuchkivskyy, that the overwhelming number of such markers has been found Sinevir system ISSR-S1 (four amplicons) and for the type of system was Vuchkivskyy informative method of RAPD B-15 primer (six DNA fragments). Type Rahiv different from the others by the presence of six DNA markers, such as bees of Hoverla characterized only four specific genetic loci.

For the main parameters of population parameters highest level of genetic diversity characterized types Goverla and Rahiv because in terms of total heterozygosity significantly different from the type of bees from Sinevir and Vuchkivskyy values of 0.362 and 0.354, respectively ($p < 0,01$; $p < 0,001$). Moreover, the type of bees Hoverla observed the largest number of polymorphic loci - 54.9%, with a minimum of meaning in a population of individuals Sinevir type, and the lowest value of intrapedigrys similarity (number of DNA fragments in the same study group) were observed for a sample of bees type Rakhiv (0.665, $p < 0.001$).

Determining the genetic distances between breeds in genealogical structure can be used as a methodical approach predicting the effectiveness of a combination of

lines and types for heterosis effect on purebred descendants basis.The maximum value of genetic distance algorithm M. Ney was established between the types Synevir and Rakhiv (0.435), slightly less than this value typical of the combination VUChK - Synevir (0.426) and VUChK - Rakhiv (0.423). The smallest genetic distance calculated between individuals and types Hoverla – Vuchkivskyy, which indicates their high genetic relationship and the undesirability of crossing the representatives of these types together. Application of unweighted pair-group clustering based on the calculated distances made it possible to analyze the nature of the genetic relationships between intrapedigrys types of Carpathian breed in graphic terms.

According dendrogram representatives Synevir types and Rahiv presented by individual branches, indicating their genetic identity. The Goverla and Vuchkivskyy type of bees and united in a common underklaster, due not only to the minimum calculated measure of genetic distance between data types, but confirmed the historical part of the establishment pedigree group Hoverla, based line mares are exactly the type Vuchkivskyy and lost insect genealogical group of Kolochavskiy type.

Conclusion Determining genetic specificity linage types of Carpathian breed bees allowed to obtain the following results: 1) chosen for the study of molecular genetic markers is sufficiently informative for determining the unique, specific features of each breed group and the identification of any sample Carpathian bees with the opportunity to consider linage certain type; 2) received genetic formula of Carpathian bees linage types are proof of the impact of breeding activities and can form the basis the protection of intellectual property of their authors; 3) used molecular genetic markers may serve as a forecasting tool optimal compatibility of linage types to obtain heterosis effect in their offspring.

The prospect of the research of this area is to select as a methodological tool for measuring genetic polymorphism Carpathian breed more accurate, reproducible and standardized markers, locus-specific micro satellite analysis, STR, research of structural genes single nucleotide polymorphism, SNP analysis, accumulation and formation the databases to assess the state of development, management and preservation unique of Carpathian bees gene pool.

Keywords: **Carpathian breed bees, DNA-profiles, amplicons, PCR, identification marker**

KARYOTYPE VARIABILITY OF THE COWS OF UKRAINIAN RED-AND-WHITE DAIRY CATTLE BREED WITH VARIED REPRODUCTIVE ABILITY

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The results of the cytogenetic study of cows of Ukrainian red-bream dairy breeds with different reproductive ability are presented in the article. Breeding reproductive ability of cows is often and, as a rule, they include an increase in the duration of the service period, the occurrence of violations of embryonic development, stillbirth and miscarriages. Investigation of karyotype and thorough analysis of hereditary information of the herd population of herds will help to establish and eliminate the cause of reproductive failure of cows. The purpose of the study is to study the karyotype variability of cows with normal and violated reproductive qualities. The material for the research was the results of an individual assessment of the animals of the Ukrainian red-shingled breed of the DP DH "Khrystynivske" on the basis of zootechnical records and experimental cytogenetic data. To analyze the data of zootechnical accounting, the software package SUMS "Intesel Orsek" was used. Laboratory studies were conducted at the Laboratory of Biotechnology at the Institute of Animal Breeding and Genetics named after MV. Tooth The cultivation of lymphocytes, the preparation of cytogenetic drugs, the classification and recording of aberrations of chromosomes were carried out according to generally accepted techniques. The analysis of metaphase cells included cytogenetic parameters: the proportion of aneuploid and polyploid cells, the frequency of cells with structural aberrations of the chromosomes. For the cytogenetic study, based on the materials of the zootechnical account, three groups of cows have been formed, depending on their reproductive ability: I group, number 17, consists of animals with impaired reproductive ability. To II group included 33 cows, service period of which is not less than 150 days; Group III - 25 cows with a service period of 51-90 days. The study of blood lymphocytes of cows with different reproductive ability revealed a difference in the level of chromosomal instability. The results of the studies showed that in the karyotypes of animals with impaired reproductive ability, a significantly higher frequency of cells with aneuploid and polyploid chromosome sets, as well as cells with chromosomal aberrations was found to be significantly higher than that of cows with normal reproductive functions. It was established that a significantly larger proportion of cells with aneuploidy occurs in the karyotype of animals of group I, that is, in animals with a disturbed reproductive ability - 10.5 ± 2.38%. In cows of group II, the frequency of cells with aneuploid number of chromosomes in blood cells decreased to 6.3 ± 1.45%. Less than twice the cows in this group and the frequency of cells with the polyploid chromosome set (from 1,0 ± 0,01 to 0,45 ± 0,16) and 15% with structural aberrations of the chromosomes (from 14,82 ± 2,87 up to 12.5 ± 2.87). In cows of group III (with normal reproductive ability), cells with aneuploid chromosomal set were found to be 2.3 times less than in cows with reproductive capacity (Group I) (P> 0.999). In the karyotypes of cows that were examined, no constitutional alterations of the chromosomes, including translocations of the Robertson type, were revealed. In animals of group I, the frequency of chromosomal aberrations was one third higher than that of animals of groups II and III. The difference in frequencies between the higher and lower group values of this indicator was 4.15%. It has been established that in all groups of investigated animals there is a positive correlation between the service period and the main cytogenetic parameters. The highest positive correlation values (r = 0.70; r = 0.50; r = 0.44) are established between the duration of the service period and the frequency of structural aberrations,

service period and polyploidy, service period and aneuploidy respectively in cows of the second group , In which the service period lasted 150 days or more. In cows of group I, the highest positive correlation (r = 0.48) is established between the duration of the service period and aneuploidy. For the third group, defined by us as a control, the positive relationship (r = 0.55) between the service period and aneuploidy is also established. Thus, the correlations established between the level of karyotype instability and one of the characteristics of reproductive ability (service period) indicate that the levels of karyotype instability in cows to a sufficient degree can characterize their reproductive qualities. The results of the studies show that the higher frequency of abnormal cells is found mainly in cows with broken reproductive functions. Consequently, we can conclude that for assessing the individual qualities of dairy cows, indicators of karyotype instability should be used as a criterion for evaluating the reproductive qualities of cows.

Keywords: **cytogenetic research, chromosomes, aberrations, reproductive ability of cows, service period**

GENEBANK ANALYSIS: SINGLE NUCLEOTIDE POLYMORPHISMS OF ANIMALS MITOCHONDRIAL GENOME UKRAINIAN GRAY AND UKRAINIAN WHITEHEAD CATTLE BREEDS

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Examination of variation in mitochondrial DNA (mtDNA) control region sequences has been pivotal in the elucidation of bovine phylogeography. Initial studies have demonstrated a deep bifurcation in bovine mtDNA phylogeny, which indicates a predomestic divergence between the two major taxa of cattle, humped zebu (Bos indicus) and humpless taurine (Bos taurus). Subsequent genetic investigations have yielded further inference regarding origins within the B. taurus lineage. B. taurus mtDNA sequences fall into one of five ancestral star-like haplotypic clusters, which are geographically distributed. Just one of these clusters, T3, predominates in Western Europe. Symmetrically, diversity within Africa is composed almost exclusively of members of a separate haplotypic cluster, T1, which is rarely detected elsewhere. The almost mutually exclusive geographic distribution of these two haplotypic clusters allows geographical exceptions to be securely identified as secondary introductions.

We investigated a comparative analysis of mitochondrial genome sequences for different breeds of cattle (Bos taurus, Bos indicus) with global genetic bank. Mitochondrial DNA sequences from bovine animals (Bos taurus) breeds Ukrainian Whitehead and Ukrainian Gray freely available on the global genetic bank (http://www.ncbi.nlm.nih.gov/Genebank/). Local alignment of sequences for mitochondrial genome of different cattle breeds was performed using the program MEGA 4.0. For the detection of nucleotide replacements used mitochondrial DNA sequence of Bos taurus Hereford breed (Anderson S. at al., 1982) as a reference (accession number V00645).

Here we report the analysis results of testing for 9 genotypes Ukrainian Gray mitochondrial DNA sequences showed that one animal (GQ129208) has haplotype Bos indicus, other belongs to haplogroup T1 with European origin mtDNA. Analysis of single nucleotide replacement in one of the hypervariable regions mtDNA (position number 16019-16339) shows, that among 10 submitted genotypes of Ukrainian Whitehead the 3 of them (FJ014303, FJ014298, FJ014294) relating to T1a mtDNA haplogroup of African origin, which characterized by replacement of T to C at position 16255. Also have been two animals (FJ014301, FJ014295) with single nucleotide replacements with relatives to Bos indicus mtDNA haplogroup.

We performed alignment with reference sequences (Bos_taurus_v00654.1) and comparative nucleotide sequences analysis of another hypervariable D-loop (position number 1-240) mtDNA with 5 Ukrainian Whitehead genotypes and 5 Ukrainian Gray genotypes represented in genetics bank. Among the Ukrainian Whitehead genotypes (FJ014298, FJ014297, FJ014296, FJ014295, FJ014294) all were polymorphic that characterizes large differentiation these animals for maternal and describe deep heterogeneous parent population of studied group. We determined one animal with genotype FJ014295 was significantly different by the number of segregation sites. The analyzed sequences (FJ014290, FJ014289, FJ014288, FJ014287, FJ014286) of 5 Ukrainian Gray genotypes showed no polymorphism in hypervariable D-loop (position number 1-240) mtDNA.

The mtDNA analysis of different species of animals allowed to distribute their mtDNA belonging to European, African and Asian haplogroups. The technique, which allows to differentiate the animals represented by their belonging to the respective haplogroups. The process that gave rise to different genotypes in one lineage is clearly of fundamental importance in understanding intraspecific mitochondrial polymorphism and evolution in mammals.

Comprehensive study genetic material provide more opportunities to optimize costs in-situ conservation of different cattle breeds, to optimize methods and techniques which used in ex-situ conservation programmes of National gene bank of animal genetic resources.

Keywords: **cattle, Ukrainian Whitehead, Ukrainian Gray, mtDNA, haplogroup, SNP**

GENETIC STRUCTURE OF HORSES POPULATION FOR THE GENES OF SCID AND HYPP

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Objective: identification of carrier animals of the hereditary anomaly SCID and HYPP of the population of horses bred on breeding horse farms of the Republic of Belarus.

Methods: genetic, biological. DNA diagnosis of genotypes in the gene severe combined immunodeficiency (SCID) and hyperkaliemic periodic paralysis (HYPP) was performed using polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) in the research laboratory «DNA Technology» of educational establishment «Grodno State Agrarian University». We tested 50 horses of different breeds, kept on different breeding horse farms of Belarus. DNA was isolated from buccal epithelium by perchlorate method with double purification (according to the method of Zinovieva). A study of the genetic structure of the horse population for hereditary anomalies of severe combined immunodeficiency and hyperkalemic periodic paralysis was performed using modern equipment. Amplification was carried out using the C1000 Touch thermal cycler (BioRad, USA). The visualization of the gel was carried out using the gel-documenting system Gel Doc XR + (Bio- Rad, USA).

Main results. The use of modern methods for the genetic diagnosis of hereditary diseases of agricultural animals not only at birth to exclude from the process of reproduction of animal carriers of hereditary anomalies, but also reduces funding for their maintenance and cultivation. In the studies we used the PCR method based on the use of specific oligonucleotides with which the amplification of the necessary fragment of the 163 gene occurs in healthy individuals and 158 in the mutation carriers, which makes it possible to identify the hereditary SCID disease. We tested 50 animals of the upper and Arabian breeds, as well as horses with an admixture of Arabian blood, among which no carriers of the hereditary anomaly were found. In studies, the PCR-RFLP analysis method was used, based on the use of distinctive primers due to which the necessary fragment of the gene is amplified, which makes it possible to identify the hereditary HYPP disease. Amplified fragments were subjected to the action of restriction enzymes, with the help of which it is possible to determine the genotype of the animal under study. We tested 50 animals of the upper and Arabian breeds, as well as horses with an admixture of Arabian blood, among which no carriers of the hereditary anomaly were found.

Conclusions. Severe combined immunodeficiency (SCID) is an autosomal recessive disease that occurs in humans, mice, horses and dogs. Carriers of this hereditary disease are born without visible anomalies, but after 2 weeks they become ill from any infection and die, since they can not develop an antigen-specific immune response. Hyperkaliemic periodic paralysis (HYPP) is an autosomal dominant disease

that occurs in horses at the age of 2, when the animal begins, is strengthened to exercise. Symptoms of this disease are weakness of the muscles, periodic spasms, paralysis, which can lead to death. Presumably, there were no carriers of severe combined immunodeficiency in the Republic of Belarus, since breeding farms for breeding horses did not use biological material of Arabian and local breeds of horses for insemination. With subsequent importation of Arabian horses, as well as breeds that have an admixture of Arab blood, it is necessary to conduct DNA testing for the presence of severe combined immunodeficiency (SCID). According to the results of the conducted studies to identify the hereditary disease of hyperkalemic periodic paralysis (HYPP) in the horse population, no carriers were found, as well as sick animals. Presumably, there were no carriers of this disease on the territory of the republic, as evidenced by parallel studies conducted in other European countries, where no carrier or sick animal was found. This suggests that the disease was localized during the time, and also did not leave the territory of the American continent.

Keywords: **gene SCID, gene HYPP, the arabian breed, thoroughbred horse , genetic diagnosis, mutation, immunodeficiency**

EFFICIENCY OF INTRAUTERINE INSEMINATION IN BREEDING SOWS

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Improving of fertility indicators and reproductive qualities of sows during artificial insemination in farms of different specializations is very topical issue. The introduction of artificial insemination of sows on breeding farms by the spermdoses of optimum volume, by the frozen-thawed and sex sperm requires the introduction of innovative reproductive technologies.

The use of economical methods of artificial insemination of sows using a minimum number of sperm in a small volume of spermdose in order to achieve high rates of fertility and prolificacy was proven in numerous experiments of the authors.

Significantly reduced spermdose may be sufficient if the sperm enters deep enough into the uterus. Vitality of sperm does not depend on the size of spermdose, but the best place for sperm to survive one oviducts where they keep the fertilizing capacity from 9 to 27 hours. So deep intrauterine insemination of sows improves conditions for sperm survival

The aim was to study the feasibility and justification for widespread implementation in to production on breeding farms of intrauterine insemination of sows morder to increase their fertilization and prolificacy and to save the boar sperm with the highest index of breeding values.

Experiments were conducted in terms of selection and genetic center of Agrofirm "Mig-Service-Agro" in Mykolaiv region. In the experiment used 65 sows of live weight of 280-320 kg wiht 2-4 farrowing were. Sows in sexual hunting were showed once daily in the morning using a boar-prober. Artificial insemination was performed twice: the first time - in the afternoon and at 14-16 p.m. The second time – in the morning of the next day at 9-10 am. For artificial insemination of sows were ed using experimental spermodes with volume of 40 ml which contained 1.5 billion of a Active sperm. For the dilution of sperm was used Durasperm - KRUUSE (Denmark) the period of sperm perpetuation is 5-7 days. To enter the were semen used catheters Magaplus S, (Spain) for intrauterine insemination of sows.

Analysis shows that the period from weaning to insemination has significant difference comparing sows of large White breed with Landrace breed ($p < 0.001$), with genotype sows F1 ($p < 0.01$) and sows of the Duroc breed ($p < 0.05$).

For all selected 65 sows duration of suckling period, was estimated which averaged 32.2 days and the average time from weaning of pigs to their sexual inclination and the first intrauterine insemination 6.8 days that meets the physiological norm.

After intrauterine insemination of sows of then 48 farrowed, which wich made for 73.9%. including live 5 emergency farrow were obtained, representing 10.4% of all amount. Percentage of farrow is considered physiologically normal – 80%, or more of total insemined sows. The very low percentage of farrow 53.3% had of sows F1, and the highest percentage was found by sows of the Duroc breed – 85.7%. Pregnency of sows were received just 17, which made 26.1% and highest percentage – 46.7% was set by sows F1.

Analysis of the pregnancy sows shows that on average it is 116.2 days was the longest – 117.1 days was set in Landrace breed sows and the short est 115.5 days in Large White breed, but the difference is not significant.

571 pigs were received, including live 451 head, which is 78.9%. The largest percentage of including live piglets obtained from sows F1 – 82.5%, and the lowest in Landrace breeds – 77.0% and Large White – 77.3%.

Exit of all piglets per sow without emergency farrowings is 12.2, including live – 9,8. The highest yield were obtained piglets from sows F1 – 13.1, including live – 10.9, the lowest yield of sows of the Duroc breed – 10.6, including live 9.1, which has significant difference compared with the control (IDPs) and other breeds.

After intrauterine insemination 8 sows showed cyclic deregulation in 20-25 days, ie repeated sexual hunt took place on average 22.3 days. These sows were inseminated by not fractional way, they

farrowed and an average litter just 13.1 piglets per sow, including live - 11.3 was obtained. Repeating after intrauterine insemination on 45-48-49 day in the sexual hunt came about three sows for artificial insemination by not fractional method 3 farrowed and was obtained output – 13.3 piglets, including live – 11.7.

It should be noted that the best sow Large White breed №12 after intrauterine insemination bore 16 pigs, including live 11, sow of Landrace breed №1556 – 18 pigs, including live 12, Duroc №5888 – 13 pigs, including live 11, sow F1 №167 – 20 pigs, including live 14 pigs.

Breeding requires more careful handling with major sows taking into account their breeding value and cost, that's why we believe that there is no need to risk causing injury genitals with intrauterine insemination if a sufficient number of spermdoses of boars-sires exist.

Keywords: **breeding sows, intrauterine catheters, spermodoses, reproductive ability, boars-sires**

USE ADAPTOGENS TO INCREASE THE RESISTANCE AND VASSOS-RIVALINO CAPACITY OF COWS IN THE AREA OF RADIOACTIVE CONTAMINATION IN THE CONDITIONS OF KYIV POLESIE

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Increased resistance to adverse factors, including the radiation – an important factor in maintaining the health and productivity of animals in remote period after the accident. Therefore it is important to develop tools and methods to enhance natural resistance and immune status of the animals kept in contaminated areas.

At the moment not enough information on the impact of adaptogens on natural resistance and reproductive ability of farm animals in the chronic effect of small doses of radiation and especially with regard to territorial characteristics. The purpose of research was to study the possibility of using adaptogens to improve resistance and reproductive ability of cows in the area of radioactive contamination in remote period after the accident in terms of Kiev Polissya.

Research adaptogens action on the state of natural resistance and reproductive ability of cattle in the remote period after the accident was studied in stock of dairy cows in the Agricultural production cooperative «Mriya» Ivankivsky district Kyiv region (third zone of radioactive contamination). According to the principle par-analogues was formed groups of cows Ukrainian black and white dairy cattle (62 heads). In the experiment studied radiological features welfare of cows, their overall performance and physiological state resistance.

As used adaptogens: eleutherococcus, and trivit tetravit.

Efficacy was assessed by drugs hematologic indices Independence period. Monitored the course of generations, postnatal period, as the udder. To reveal hidden pathological processes conducted laboratory tests of milk sexual heat slime, postnatal excretion. Determination of radioactive contamination of water, feed conducted by generally accepted methods. Biometric data processing, obtained during the investigations carried out by M.A. Plohynskym and using the computer program Microsoft Excel 2010.

In the Agricultural production cooperative «Mriya» Loose cows kept on deep litter of straw. Soil contamination 82,2 ± 10,14 kBq / m^2. Total activity diet of 3450 Bq / day. In analyzing the morphological blood parameters of cows, found that the number of red blood cells and white blood cells in the control and experimental groups within physiological norms.

In the leukocyte formula cows all groups, certain types of leukocytes, with the exception of young forms of neutrophils, were within physiological norms or at their lower limit. Number of young neutrophils constitute 2,0-5,3% After applying Eleutherococcus young eosinophils decreased by 50.9% tetravit - by 58.8%; tryvitu - were left unchanged. "Shift left" core neutrophils can be seen as a manifestation of lack of usefulness of the hematopoietic system. This kind of physiological miyelopoyezu irritation that is caused by a violation of neurohumoral regulations in the body.

In the analysis of biochemical blood parameters of cows, cows significant differences in the experimental and control groups is not installed. Indicators were at the lower border of physiological norm, carotene was lower third of the index rules.

When used Eleutherococcus Independence period was 88,3 ± 2,03, tryvitu-85,4 ± 6,20, tetravit – 55,8 ± 7,87 days. The difference between control and experimental groups was, respectively, 4.7, 24.1 and 38 days. That application tryvitu and tetravit Independence period decreased to 1-1,8 sexual cycle.

All animals as experimental and control groups provided obstetric aid. Reproductive system disease diagnosed in all groups, the application of adaptogens their number decreased by 10-20%.

Conclusions. The use of adaptogens positive impact on the performance of natural resistance and reproductive ability of cows.

Based on the research we can conclude that the use of adaptogens enhances natural resistance performance, and improved reproductive capacity of animals.

Keywords: **resistance, radiation, reproductive ability**

ANATOMICAL STRUCTURE OF INTERNAL GENITAL ORGANS ZAANEN BREE

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Goal. Goat breeding is a promising branch of animal husbandry, which is rapidly developing. The scientific literature has little information about the essential features and differences in the structure of the genital apparatus of goats. With the increase in the number of livestock and selection work in goat breeding, knowledge of the characteristics of the reproductive system is of great importance. Due to lack of knowledge of the structure of the reproductive organs of small cattle, the effectiveness of artificial insemination decreases and inefficient sperm of producers is used, since the complex structure of the cervix of the goat is an obstacle in the artificial introduction of sperm. Therefore, considering the need for further introduction of the method of artificial insemination into practice of goat breeding, the study of the peculiarities of the structure of the internal genital organs of goats is timely and necessary.

Materials and methods. The study of anatomical features of the structure of the internal genital organs of goats was carried out on animals of the Zaanen breed, imported into the village. Galaiki Tarashchansky district of the Kiev region from Latvia. The material for study was the genitals obtained from goats aged 6-7 years. After the slaughter and bleeding, the genitals were separated into goats. They were then placed in an enameled cuvette and measured with a measuring tape, ruler and caliper. The linear dimensions of the ovaries, the diameter and length of the uterine horns according to the large curvature, the length of the uterine body, the length and diameter of the cervix, the number and structural features of the folds of its mucous membrane, the amount of caruncle, their height and diameter were measured.

As mentioned earlier, the development of anatomical and physiological basis for artificial insemination of small ruminant animals was carried out mainly on sheep. Therefore, we compared the size of the ovaries, oviducts and uterus in goats of the Zaanen breed of Latvian selection and, according to the literature, the results of studies of similar sheep organs were analyzed.

As a result of the studies of the morphological parameters of the genitalia of the goats, the following data were obtained: the mass of the left ovary – 0,6 ± 0,06 g, the right – 1,1 ± 0,04 g: the length of the left ovary – 2,0 ± 0,06 Cm, the length of the right – 2,3 ± 0,04 cm. The length of the left oviduct was – 14,2 ± 0,16 cm, and the right – 14,4 ± 0,15 cm. Accordingly, the length of the left horn of the uterus was – 13,7 ± 0,63 cm, the right – 12.2 ± 0,75 cm. The diameter of the left horn of the uterus is – 2.3 ± 0,07 cm, the right horn of the uterus is – 2,8 ± 0,08 cm.

The morphological parameters of the unpaired genitals of goats were as follows:

The length of the uterus body was – 1,8 ± 0,15 cm, the cervix was – 5,9 ± 0,29 cm, the cervix diameter was – 1,8 ± 0,08 cm; the number of folds in the cervix is – 4,7 ± 0,50. The height of the caruncle is – 0,5 ± 0,06 cm, their diameter is – 0,7 ± 0,10 cm, the amount of caruncle is – 96,5 ± 1,70, the area of the caruncle is on average – 0,4 ± 0,10 cm^2.

Conclusions. As a result of the carried out researches the anatomical and morphometric characteristics of internal sexual organs of goats are given. These data make it possible to expand and supplement knowledge on the morphology of the reproductive system of farm animals, which must be taken into account in artificial insemination of goats. The data obtained by us are somewhat different from the results of the studies of other authors, but do not contradict them.

Keywords: **goats, genitals, uterus, ovaries, size, mass**

DEVELOPMENT AND FERTILITY OF HEIFERS UNDER DIFFERENT SCHEMES WATERING OF WHOLE MILK

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The purpose of the research was to study the effects of feeding different amounts of whole milk and the feeding of high quality feed on the development of heifers and their reproductive capacity and productivity of cows. The research was carried out at farm property "Chayka" (branch "Lisne" and "Chemer") on heifers of the Ukrainian black-and-white milk breed and "Shupiki" and "Agrarian Investment Union" (AIU) on the heifers of the Ukrainian red-and-white milk breed. Three schemes were used for drawing whole milk to calves. In the "Lisne" pumped 260 kg of milk for 65 days; "Chemer" – 310 kg for 45 days; "Shupiki" and "AIU" – 360 kg for 90 days.

When conducting experiments, it was found that the average live weight of calves in 3 months. The age was 100,97 + 0,893 kg; in 6 months – 166.17 + 1,794 kg; in 9 months – 239.23 + 2.831 kg, in 12 months – 308,60 + 3,648 kg in 15 months – 371,50 + 5,008 kg. There was no special difference in the live weight of calves, drinking 310 and 360 kg of milk.

Average daily gain of heifers were, in the main, within 660-895 g. in 3 months. The age of somewhat higher was the live weight of calves, who drank a large amount of whole milk. Through a clinical examination of calves and weighing, it was found that, on average, up to 80 kg live weight had 5.2% calves, from 81 to 100 kg 43.5%, and more than 100 kg – 51.3%. At the age of 3 months. A greater number of calves (52.8–69.1%) had a live weight of over 100 kg, and lagged in growth from 2.4 to 9.8%. More lag (9.2%) was in the group of calves, drinking 260 kg of milk ($P > 0.999$).

In the experiments, the development and productivity of the daughters of the separate bulls of the Holstein breed of red-and-white suit was studied. Somewhat larger live weight had a heifer under the nickname "Lukka" at birth (39.2 kg) and within 3–15 months. Dairy productivity was higher among the daughters of the bug "Kantsler" (for 305 days of the first lactation 7438.7 kg). The duration of the service period on average was 142.7 days.

On the chickens of 2014–2015 births at the state enterprise "Chemer" (Ukrainian black-and-white milk breed) and "Shupiki" (Ukrainian red-and-white milk breed) found that puberty occurs in 24–30% calves at the age of 9–10 months. Among the 700 goals. Stewed heifers were detected 6.4% with abnormalities of genital organs.

In the study of fertilization of well-developed heifers 13–16 months. Age (459 with a live weight of 365–380 kg), it was found that the average fertility from the first insemination was 73.6%. It was better to have younger heifers (83–89%) with high live weight for fertilization. Total from 13 to 16 months. 84.3% of heifers were impregnated with age, and the rest were later.

In the experiments, the milk productivity of cows of the Ukrainian black-and-white milk breed (512 lactas) and Ukrainian red-and-white milk breeds (406 lactations) was analyzed. Indicators indicate satisfactory milk productivity of cows for the first two lactations (over 7.5 thousand kg) under different schemes for giving to calves of milk.

Conclusions:

1. Feeding calves from 260 to 360 kg of whole milk and feeding the premature feed or full-grain granules provides their normal development in 90,2–97,6% of calves with daily increments of 660–895 g. The heifers which drank 310–360 kg milk smaller increments were observed in some calves of all groups after the milking period (from three to six months).

2. The average fertility index of heifers from the first insemination is 73.6%. The best results are observed in heifers 13-15 months. Age for live weight 365–380 kg.

3. The conditions of growing and feeding the experimental heifers in the milk and after-milk periods provide a relatively satisfactory milk yield (on average more than 7.5 thousand kg) of cows.

Keywords: **heifers, development, live weight, whole milk, fertility, productivity**

CYTOMORPHOLOGICAL RESEARCH OTSYT-CUMULUS COMPLEXES RABBIT FROM WITH OVARIAN AT DIFFERENT STAGES OF THE ESTROUS CYCLE

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The analysis of the research results revealed that the largest number (86.4%) of oocytes suitable for further development outside the body can be obtained with ovarian follicular phase of growth. It should be noted that statistically significant difference was observed between the groups OCC rabbit derived from ovaries at different phases of the estrous cycle by the number oocytes unsuitable for further cultivation. Thus, the phase of the ovarian follicular growth of gametes was obtained only 13.6% of ovarian and with signs of ovulation and the luteal phase, 35.4% and 31.4% respectively.

When comparing the results of the analysis of cytogenetic preparations oocytes from ovaries removed rabbit at different stages of the estrous cycle, found that regardless of the phase of the estrous cycle Yachnik mostly larger number of oocytes were under dyploteny. The largest number of gametes with diffuse chromatin at the stage dyploteny (37.3%) received from the stage ovarian follicular growth. At the stage of fibrillar dyploteny increasing number of gametes was removed from ovarian luteal phase of the estrous cycle. In step dyploteny visible bivalent were more likely gametes obtained from stage ovarian follicular growth (18,1%, $p < 0,05$). The highest percentage of oocytes degeneration chromatin was observed in the group removed from the ovaries to the rabbit lyutealniy phase (21.6%).

Keywords: **oocyte-cumulus complexes (OCC), rabbits, ovaries, follicles, chromatin**

INFLUENCE OF NANOPARTICLES OF ULTRAFINE SILICA ON MORPHOLOGY AND INTRACYTOPLASMIC LOCALIZATION OF LIPID DROPLETS IN PORCINE OOCYTES

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Based on the visualization by the fluorescent probe (Nile red) of intracellular lipids in porcine oocytes that have finished growth phase in vivo or in vitro morphology and distribution of lipid drops in oocytes before and after cultivation with nanoparticles of ultrafine silica (0.001% of UFS) have been characterized. In the cultivation of oocytes with UFS the level of oocytes that have finished growth phase in vitro with lipid droplets in the form of granules and diffuse type of distribution increases in comparison with the above-indicated markers in the oocytes of the other studied groups. The results of the experiments make it possible to interpret the obtained data on the form of lipids in the form of granules, as a form that determines the high potencies of oocytes for further development and assume that the transformation of granules into clusters during cultivation is considered as a predictor of subsequent destructive changes in the oocyte.

Keywords: **porcine oocytes, lipid droplets, Nile red, BCB-test, ultrafine silica**

THE QUESTION OF IMPROVEMENT TECHNOLOGY TRANSPLANTATION OF CRYOPRESERVED EMBRYOS CATTLE

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Introduction. Now embryo transplantation technique widely used in breeding programs breeding centers in developed countries to accelerate genetic and technological progress. But in recent years have not observed significant progress in the success of engraftment of cryopreserved embryos, which for most households is 30 to 50 %, only the best breeding centers rises to 55 – 60 %. This suggests that, on the one hand, half of the outstanding animal genetic resources lost during the TE, and on the other that the successful spread of this method of reproduction in practice methodology for recipients in need of improvement.

Purpose – to compare the effectiveness of two teaching approaches to prepare heifers recipient for transplantation of cryopreserved embryos.

Materials and methods of research. The study was conducted at the point of transplantation of embryos JV "AF" Petrodolynske" (Odessa region.). The company has a breeding herd Ukrainian Red dairy cattle (600 cows) with an average productivity of 5.0 thousand kg. In March 2016 this sector the works transplant 64 embryos Angler breed German selection (firm «SPERMEX GmbH»). Embryos were obtained from 18 cows genetically valuable donor sperm using 12 producers.

According to the technological requirements, two groups were formed heifers recipients that met accepted standards for the age and development. These groups were used two alternative methods of training recipients to TE. Control of clinical and morphological and functional parameters of reproduction heifers in preparation, synchronization, TE and definition of pregnancy carried out a comprehensive visual refleksolohichnym clinical palpation method of diagnosis. Heifers controls to synchronize induced hormonal cycle subjected to processing in accordance with the protocol Ovsynch, as used in the experimental group we developed probiotic-cyclic scheme (the drug "Multybakterin veterinary Bs + La», which includes strains of microorganisms Bacillus subtilis and Laktobacillus acidophilus).

Results. Transplantation of thawed embryos Angler breed heifers was carried out only with the presence of morphologically typical of corpora lutea (positive recipients). Within 2 months spent visual refleksolohichnyy control animal behavior, and in 60 days - rectal examination pregnancy. The results of the studies found significantly higher (at 71,9 %) yield positive recipients daily routine TE than Ovsynch protocol, as well as the experimental group engraftment thawed embryos above 10 %.

Consequently, the use of probiotic protection promoted regeneration and recovery of genital tract mucosal heifers. It is proved that the development of functional entities ovarian and endometrial status have a close physiological relationship thus resulted in the formation of normal microflora dysbiosis and elimination of the state was the harmonization of sexual recurrence of experimental animals.

Consequently, effective TE in the economy in 3 – 3,5 years will be introduced in the heifers group herd milk production from 9 to 10 000 kg, which, in turn, become potential donors of embryos based economy.

Conclusions. The results showed that in industrial dairy complex advanced probiotic-cycle method of preparation of heifers to the THAT (using probiotic protect mucous membranes and the use of prostaglandins in accordance with the functional state of the ovaries) was more effective than the conventional scheme of hormonal stimulation as during synchronization cycle, and the level of engraftment embryos.

Keywords: **heifers-recipients, cryopreserved embryos, transplantation, synchronization, ovaries, corpus luteum, prostaglandins, probiotics, normofloryzatsiya, Lactobacillus acidophilus, Bacillus subtilis.**