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USE OF THE GLOBAL GENE POOL OF LIVESTOCK

Textbook

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The problem of preserving the gene pool of flora and fauna occupies a special place among the global problems of human progress. Kazakhstan has the richest genetic resources of various forms of flora and fauna. The vast expanse of pastures and grazing of the republic (187 million hectares) represents a huge potential for breeding a significant number of species and breeds of farm animals with a global gene pool.

The study of this discipline gives an idea of the role and significance of the global genetic potential for the qualitative transformation of domestic breeds of agricultural animals, the role of domestic and foreign scientists and specialists in the correct choice and application of the global gene pool in specific economic and regional animal breeding areas.

The textbook "Use of the global gene pool of livestock" addresses issues related to the conservation of the gene pool of the animal world, both regional and world scale, describes animal breeds bred in Kazakhstan and foreign countries that are of interest to breeders in raising the breeding, productive and adaptive qualities of animals.

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Introduction

The aim of preserving the gene pool of flora and fauna occupies a special place among the global problems of human development. Kazakhstan has the richest genetic resources of various forms of flora and fauna. The vast pasture area of the republic (187 million hectares) represents a significant potential for breeding farm animals in this area. The country possesses optimal raw material resources, the structural and key element of which are pastures.

The livestock industry of Kazakhstan produces about 43% of the total gross agricultural product, it is one of the main strategic directions of its development and continues to be the main source of employment, nutrition and incomes of the rural population.

As of January 1, 2019, the number of sheep in Kazakhstan amounted to 15 million 129 thousand heads, goats - 2 million 401.5 thousand, camels - 162.4 thousand, horses - 1 million 703.3 thousand, pigs - 923.7 thousand, cattle - 5 million 760.9 thousand heads; birds - 34.4 million heads.

Of the total number, the rate of cattle in farms of the population was 68.8%; households or farms - 23.8%; agricultural enterprises - 7.4%; for sheep - 59.0, 35.7 and 5.3%; goats 75.1, 24.5 and 0.4%; pigs - 56.8, 15.8 and 27.4%; to poultry - 36.8, 0.9 and 62.2%, for horses - 54.5, 39.0 and 6.5%; camels - 58.6; 32.0 and 9.4%.

Due to the extensive experience of livestock breeding and good knowledge of local conditions, the indigenous population of Kazakhstan has managed to create a number of valuable breeds,. In particular, Edilbaev fat-rumped sheep. Sheep have remarkable quality of meat product, local horse breeds (Kushum, Mugalzhar, and Kazakh zhabe) are distinguished by good working capacity and high meat and milk product quality.

In Kazakhstan, there was organized cross-breeding of local breeds with cultured breeds. As a result, herds of red steppe cattle, merino and karakul sheep were created, and kushum, kustanay, and kabinsky meat types of the Kazakh horse breed were created in horse breeding.

Later, the aim of breeding work in the republic was to develop new and improve existing breeds of agricultural animals.

Currently, the gene pool of cattle of the dairy production is represented by 2 domestic breeds and 3 cultured types; meat production - 2 domestic breeds and 1 intrabreed type; sheep breeding - 11 domestic breeds of sheep in various areas of efficiency; horse breeding - 5 breeds and 3 cultured types of horses, pig breeding - one domestic breed. Some breeds and types can be attributed to developing, there are also small and endangered breeds and populations.

There is the problem of preserving the world's diversity of wildlife - plants, animals and microorganisms which are a part of the ecosystems. The term “agricultural biodiversity” refers to the diversity of cultivated plants and domestic animals used by mankind for the production of food products and other goods and services. In a broader sense, the term includes and existing agroecosystems, which largely determine this production. The ability of agroecosystems to maintain and increase their own productivity, to adapt to changing external conditions is a vital component of food security.

In the process of a long history of domestication and evolution, more than 40 types of livestock were created which determine the state of agriculture and livestock production today.

The wide genetic diversity of existing breeds of animals is the result of selection pressures due to environmental factors, controlled breeding and various farming systems. Created over thousands of years variety is the most valuable possession of pet owners. A wide range of genetic diversity of domestic animals is a certain resource of mankind in solving problems associated with possible changes in environmental conditions, threats of diseases, new knowledge and needs of people, changing socio-economic relations.

Successful development of the livestock industry requires the accumulation of genetic resources and their diversity by species and breeds of farm animals. Genetic resources of animals bred in different regions of the world have their own specific characteristics depending on the socio-economic, climatic and fodder conditions of certain breeding areas.

Kazakhstan is no exception here.. The formation of the gene pool of agricultural animals of the republic has been carried out for thousands of years, since the time of the domestication of animals. More conscious selection of animals for productive and adaptive qualities began with the development of nomadic animal cattle-raising. Since the 8th century BC, nomadic tribes in Kazakhstan bred four species of animals — horses, cattle, sheep, goats, and camels. As a result of such selection, productive livestock breeding has developed, in particular, meat and dairy and meat horse breeding, meat sheep breeding and the cattle breeding industry with a longer pasture-feeding season.

Zoo-technical studies to improve the productive qualities of local breeds of animals in Kazakhstan of the last century (20-30 years) were carried out to identify and use the best genotypes of animals of that time in practice. The search for the best options for crossing local breeds of cattle with breeds-improvers from Russia, the Baltic states and European

countries made it possible to accumulate a sufficient genotype of more productive individuals, on the basis of which new domestic breeds of cattle, sheep, goats, pigs, horses and poultry were created.

Breeding work on the creating a higher productive genetic potential in domestic animals was carried out using the best upmarket producers in reproduction, strict selection of pairs according to breeding traits, import from foreign countries of imported individuals with a high genotype and other breeding material (seed, embryos) .

Currently, many domestic breeds of cattle, horses, sheep are used outside of Kazakhstan as improvers. Thus, in Russia, scientists from the Research Institute of Animal Husbandry of the Siberian Branch of the Russian Academy of Agricultural Sciences created the Mogoytuysky type of beef cattle of the Kazakh white-headed breed. Horses of Mugalzhar, Kushum and Kazakh breeds like zhabe are used as improvers in the Sakha Republic and areas of productive horse breeding in Siberia. Kazakh breeds of meat and meat production are also successfully used abroad.

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Chapter 7. Poultry Breeds and Their Genetic Potential

General characteristics of modern breeds of poultry, their national economic importance. Factors affecting the development of this branch of animal husbandry. Breeds of birds raised in Kazakhstan, their brief description.

Chapter 8. Expansion of the global gene pool, and the organization of its involvement for the qualitative development of animal husbandry in Kazakhstan.

This topic provides for the study of animal breeds bred in the near and far abroad, with similar adaptive qualities to the climatic and fodder conditions of Kazakhstan, and the possibility of using their gene pool to enhance the productive qualities of domestic animals.

Chapter 1. Breeds and genetic potential of sheep and goats in Kazakhstan

The ancestors of modern sheep and goats appeared 2.5 million years ago in the early Pleistocene from antelope-like ancestors. The domestication of these animals took place in 9-10 year BC in Asia. Sheep is the first animal mentioned in the Bible. By the time of domestication, it is a more ancient domestic animal than a dog (Moroz, 2005). Sheep breeding and wool production originated in Central Asia 10,000 years ago, as soon as people learned that sheep can produce two vital products — food and clothing (Frost, 2005). Therefore, sheep can be considered as one of the first assistants to man, and spinning and knitting wool were among the first developed crafts. In addition to the fact that sheep were among the first domesticated animals, they were animals that humanity greatly appreciated. They provided not only wool for clothing, but also skins for primitive people who sheltered them and gave them warmth, as well as meat and milk (2005). In Greece, sheep were treated with a great respect. They were given personal names, and the shepherds proudly called their favorites. Having only loincloths, in winter they covered sheep with skins to protect their wool from bad weather (Moroz, 2005). When Rome was at its peak, its rich, sophisticated citizens boasted about their achievements in producing the finest wool in the world. The Romans built a worsted factory at Winchester in England in about 50 year. Sheep were treated with great care and even covered with blankets for giving the wool shine. The wool was often combed and oiled, and often soaked with wine. Excessive livestock usually killed at two years of age, because the Romans believed that the wool had the best condition during this period. A special toga (loose outerwear which important Roman persons wore when they appeared in public.) was made of woolen fabrics (Moroz, 2005). Domestic sheep have appeared in almost all nations in ancient history, spreading across the globe with the growth of civilization. For many centuries, sheep breeders have made tremendous efforts in their search for methods to increase the quantity and quality of their wool (Moroz, 2005).

1.1 Global sheep breeding.

Sheep breeding has the richest history which shows that among domestic productive animals, sheep breeding is the most numerous (Moroz, 2005). This is due to their range, which extends from the Arctic Circle to the Cape of Tierra del Fuego in the south of Argentina (where almost a third of the stock of meat-wool sheep of this country is concentrated) and southern regions of Chile.

Meanwhile, sheep are common in the plains of Russia, Central Asia, Australia, New Zealand, India, Africa, America and European countries, they live in many deserts, and also occur on the plateau of the most significant mountain ranges. Therefore, in many countries of the world sheep breeding is a very important branch of livestock productivity, and in Australia, New Zealand, Argentina, China, and in a number of other countries, it largely determines the economy of agriculture.

According to FAO, there are more than 1 billion sheep in the world of different types of productivity and breed. They are bred in more than 150 countries, and the gene pool is represented by more than 600 breeds and genetically separate breed groups - from animals with uniform thin and semi-thin wool to non-woolly, from short tail to long-tailed and fat tail breeds, from specialized breeds of one type of product to breeds of triple productivity.

World sheep breeding has a rich history of the breeding process. Differentiation of wool, types and breed variations of sheep began in ancient times. The centuries-long selection of animals with the most useful qualities for humans and the diversity of human needs in different types of products contributed to the formation of a large number of breeds. However, the information about the presence of different variations of fine-fleeced sheep are available only from the period of development of the Spanish merino sheep breeding (XVI-XVII centuries), and semi-fine-fleeced ones from the beginning of the development of the English sheep breeding of this direction of productivity (mid XVIII and early XIX century), when a number of breeds of early meat-woolly sheep with uniform wool. Even less information is available about the rough-haired breeding.

The world's richest gene pool of sheep breeds is constantly changing in quantitative and qualitative terms. It has been established that over the past 60 years, the global gene pool has been replenished with more than 120 new breeds of various directions of productivity. At the same time, only since 1930 about 20 sheep breeds completely disappeared and about 50 can be attributed to the endangered, which do not include small breeds.

Qualitative changes in species resources (gene pool) are mainly due to the process of intensification of agriculture. In conditions of intensive farming, breeding of traditional sheep breeds, specialized only in the production of wool or meat, is economically unjustifiable. Therefore, it is not by chance that at the present stage the breeding process is mainly in the direction of creating breeds characterized by high combined wool and meat productivity. Increased meat productivity, as a rule, is achieved by increasing the fertility of sheep.

In recent years, FAO has been launched a project in various countries around the world to study, regenerate and preserve endangered and small breeds, which are not only of great scientific, but also of great practical importance in increasing the efficiency of usage of breed resources in various environmental conditions to provide people with various products.

A huge amount of materials on breeding new breeds through the application of the most varied variants of complex reproductive interbreeding has been accumulated. In addition, a great work of experimental material and practical experience has been accumulated on the rational use of the world's genetic resources in improving existing breeds and in industry-related interbreeding in order to increase production and improve product quality.

The Romanov breed is a valuable gene pool of sheep breeding in the world. It is widely used to improve the productive qualities of many foreign breeds of sheep.

The uniqueness and value of this indigenous breed of sheep is that its main economically useful qualities - fertility, polyestricity, meat productivity, sheepskin-fur coat products are brought to the highest level and are of great national economic importance.

In addition to the valuable qualities, Romanov sheep have a number of disadvantages, the main of which is the reduced resistance to pulmonary and other diseases. Depending on the level of feeding and care, the incidence rate varies from 25 to 61%, and in the conditions of large farms and complexes, these figures vary and sometimes rise even higher. This is one of the reasons for the fact that at present, the number of sheep of the Romanov breed has declined sharply, and the question of preserving the gene pool of this unique domestic breed was raised.

Higher level of productivity, fertility, resistance are characterized by animals: a strong type of physique;body type; strong balanced type of behavior; stress resistant.

Estimation of sheep by the productivity and resistance of their offspring are the most effective methods while selecting breeds of

Romanov sheep for increase in productivity and resistance to pulmonary and other diseases. Animals belonging to types 3, 25, and 450 are distinguished by higher resistance. Selection of rams and long-livers queens, the progeny of which, like the parents themselves, are characterized by high productivity and resistance to diseases. The selection of females for the length, width and girth of the udder, which are more milky, positively associated with the viability of their offspring

In breeding for multiple births, the most important is the womb: having a multiple brood during the first lambing at the age of 4 years and older; which are plus-options for live weight (an average of 60 kg or more); belonging to types 3, 450, 600.

The selection of queens to increase the number of births by type of birth is not effective. This conclusion is the result of both our research and many other authors. The reasons are:

first, the fact that multiple brood is a genetically programmed trait in the hereditary code of Romanov sheep;

second, the female sheep born in the number of 3 or more, in the antenatal period, have a certain deficiency, which is not fully compensated for even after birth, which may be related to the incomplete realization of the multiple brood potential of these animals.

The study of the productive and biological features of Romanov sheep and a cross between them and Finnish landraces while breeding in the same feeding and housing conditions, showed the expediency of this method of crossing:

-cross of Romanov sheep with Finnish landrace retains the type and main exterior-physique features of the animals of the parent breed;

- hybrids were characterized by higher rates of live weight, cutting wool, feeding and meat qualities. Fertility per 100 queens on the first lambing in purebred animals was 225%, in hybrids - 200-225%;

-Romanov sheepskins have stronger skin, in hybrid sheep - a higher heat-shielding qualities. The viability of hybrids is 6.3-10.4% higher compared to Romanov peers.

The high genetic potential multiple brood of Romanov sheep is of great interest in the industrial crossing system for increasing the production of mutton. At the first stage of crossing Romanov sheep, it is advisable to use half-blooded animals, and at the final stage - three-bred. The pairing of half-blooded queens with sheep of meat breeds (the final stage) ensures a high level of production, due to the multiplicity of half-blooded queens and higher slaughter rates of their offspring in comparison with double-breed peers.

The gene pool of Romanov sheep is an important reserve for the creation of new herds, types of multiple sheep of different directions of productivity. With the use of the high potential of the multiplicity of the Romanov sheep, they created: a multiple karakukul in Ukraine, a multiple prolific half-breeded sheep in Belarus, a multiple-bearded sheep in Kazakhstan, etc.

Kazakh arkharomerinos

Breed of fine wool sheep of meat-wool productivity direction bred by a unique method in the Kazakh SSR in 1934-50. The only breed of sheep in the world, derived by interspecific hybridization. Novokavkaz merino breed were inseminated by seed of the killed wild argali; 1st generation of crossbred rams were crossed with prekos and ramboulié breeds. Hybrids of the 3rd generation bred "in themselves." Sheep breed of Kazakh Arkharomerinos are big, strong physique, strong bones, well-developed physique. They are well adapted to mountain conditions, use high-mountain pastures, and they easily move along sharply crossed relief.

The weight of rams is 90 - 115 kg, the queens are 55 - 65 kg. The wool trimmed from rams is 7 - 8 kg, from the queens 3.2 - 3.5 kg Wool is mostly of the 64th quality, length is 7 - 10 cm. Pure wool yield 50 - 55 % Fecundity 110 - 120 lambs per 100 queens. Kazakh arkharomerinos is used for crossing with coarse-haired sheep. Breeding areas of the breed: Almaty, East Kazakhstan, earlier and in the Pavlodar region.

Sheep breeding.

The classification of sheep based on the characteristics of the direction of productivity. Breeds of sheep breeding in our country are divided into fine-wool, semi-fine-wool, semi-coarse and coarse.

Fine-wool breeds are divided into wool, wool-meat and meat-wool directions. All of them give uniform thin wool of 60-80 quality.

The fine-wool sheep of the woolly direction include the breeds such as: Stavropol, Grozny, Azerbaijani mountain merino and others.

Altai, North Caucasian merino, Transbaikalian and others belong to wool-meat breeds.

Meat-wool breeds include the Kazakh fine-fleeced, Kyrgyz fine-fleeced, etc.

Soviet merino is a wool breed of sheep with 64-quality uniform wool. The wool is white. The weight of queens is 45 - 50 kg, of rams 70 - 80 kg. Average wool yield from rams is 8 - 10 kg, from queens 5 - 6 kg. Wool length is 7 - 11 cm, fiber yield 37 - 40%.

Breeding of this breed of sheep is concentrated in the North Caucasus, Ukraine, in the Volga region. The breed was obtained as a result

of a long-term improvement of the local sheep of the North Caucasus, originating from fine-fleeced Mazaev and Novokavkaz merino.

Askanian breed of wool and meat direction was developed by M. Ivanov in 1926 - 1935 in Askania-Nova by crossing local merinos with the American rambula for the individual selection of animals by their origin, physique, exterior, productivity and quality of offspring**.** This breed has no equal among the fine-fleeced. The average weight of queens is 60 - 65 kg, rams - 105 - 115 kg. Wool yield from females is on average 6 kg, from rams - 10 - 12 kg. Record wool yield, 31.7 kg, was obtained from ram No. 8267 on the "Krasnyi Chaban" Farm of the Kherson region. Wool is of 60 - 64th quality, length is 8 - 11 cm, fiber yield is 40 - 45%.

Askanian breed is concentrated in Ukraine, in the Volga region and other regions.

Caucasian breed of wool and meat direction, bred in 1923-1936 in the Bolshevik and Ipatovsky breeding plants of the Stavropol Territory by selecting local fine-fleeced Novokavkaz and Mazaev type sheep and crossing them with the American rambulae rams. The weight of rams is 90–100 kg, the females is 55–60 kg. Wool yield from rams is 10–11 kg, from queens is 5.8–6.5 kg with a length of 7–8 cm. The yield of pure fiber is 38–42%. Widely distributed in the North Caucasus, in the Rostov region, in the Volga region.

Prekos is a meat-wool breed. Bred in France, since the 20s of the 19th century it is bred in our country. The weight of females is 55–60 kg, of rams - 80–100 kg Weight of the best queens is 110 kg, rams - 152 kg. Wool yield from rams is 5.5–7.0 kg, from queens is 3.5–4.0 kg. Quick, well fed.

Semi-fine breeds: Kuibyshev, Tsigai, Gorky, Georgian, Latvian dark-headed and others. They get a uniform semi-thin wool of 58–32th quality from the sheep of these breeds. They have good meat qualities.

The Kuibyshev breed was bred in 1935–1949 by reproductive crossing of local Cherkasy coarse-haired sheep with sheep of the Romney-march breed and later breeding of "in itself" hybrids, with careful selection. The animals of this breed are large: females are 65–70 kg, rams are 100–110 kg (record - 164 kg). Semi-thin white wool of 46–56 quality, 12–24 cm long, yield is about 4.0–4.5 kg from queens and 5.5–6.0 kg from rams (13.0 kg record). The yield of pure fiber is 55–60%. This breed is concentrated in the Kuibyshev, Ulyanovsk regions and in the Tatar ASSR.

Tsigaysky breed is widespread in the south of Ukraine, in the Volga region, in Kazakhstan.

The weight of the queens is 50 kg, rams - 80–90 kg. Wool is white, 56–46 quality, 8–10 cm long, yield from the queens is 3–4 kg,
and 5.0–6.0 kg from rams. Technical cloths are made from the wool of the Tsigai sheep, and fur products are made of sheepskins. Coarse-haired breeds are divided into fur-coat, dairy, meat-grease, meat-wool-milk and meat-wool. The wool of these sheep breeds is heterogeneous and coarse. But each of these breeds gives specific products.

Romanov fur-sheep are bred in Yaroslavl, Ivanovo and Vologda regions. They are distinguished by high fecundity. They give 2–3 and even 5 lambs per lambing. And at slaughter at the age of 7–8 months, they give meat and fur sheepskin from which Romanov fur coats and sheepskin coats are sewn. Breeding work in sheep breeding has its own characteristics. The main breeding method is purebred. In some cases, the inflow of blood is allowed with the mandatory preservation of physical and productive qualities inherent from the parent breed.

In breeding farms, individual records of the origin, breeding, productivity indicators of sheep and queen bones of the breeding group, their offspring are kept. For elite queens, individual selection is practiced with the assessment of their offspring.

In herds, where the main task is to obtain the greatest possible quantity and better quality of wool, meat and other products, pure breeding is used. If purebred animals do not meet the requirements, then crossbreeding with rams of the same direction of productivity is used in order to increase the quantity and improve the quality of the main product - wool. Individual records of weight and yield in these herds are carried out only in groups of rams and the best queens.

Sexual activity in most breeds of sheep occurs in autumn. During this period, artificial insemination of queens is carried out with the seed of the best sheep of the breeds. The time of lambing is winter and early spring. Lambs are grown under the queens. They are weaned at the age of 3-4 months, but no later than 1.5–2 months before the insemination season.

Karakul sheep breed

The Karakul breed has become widespread and has been bred in more than fifty countries in Asia, Africa, Europe and America. The number of Karakul sheep and their hybrids in the world is more than 30 million heads, and the production of astrakhan fur reaches 9–10 million pieces.

The main products of karakul sheep are the lambskin, which received the name "astrakhan fur" in the fur industry and trade. Lambskin breeding is an important branch of animal husbandry. Its main purpose is the production of skins (lambskin) from lambs killed in the first days after birth. The Karakul sheep breed gives the best lambskin in the world (astrakhan). Due to its unsurpassed beauty and originality, lightness and durability in wearing, astrakhan fur is in great demand in all continents of the world. In addition, wool, meat, milk and sheepskins are obtained from Karakul sheep. Heterogeneous wool, consisting of downy, transitional fibers, is used to make cloth and other grades of fabrics in carpet and felt production. Milk is an additional product obtained from the queens, whose offspring is killed on lambskin. Meat products are obtained from the slaughter of culled old queens and sheep with poor quality of lambskin grown for 7-8 months.

The most valuable qualities of sheep wool are known from ancient times: it has lightness, durability, it is well painted, spun, and also harden; The last quality is not available to any of the synthetic fibers. Meat, fat and milk are important for the nutritional status of the population, especially in the republics of Central Asia and the South Caucasus. A lot of milk is used to produce high-quality cheese and feta cheese.

Modern medicine has come to the conclusion that the biological value of mutton and sheep milk is especially favorable for human health, it provides human’s body with essential nutrients. A distinctive feature of lamb is that its fat contains relatively small amounts of cholesterol. Some scientists believe that atherosclerosis is in the less prevalence in the regions where sheep farming is a traditional occupation. It was also established that the consumption of mutton increases the resistance of tooth enamel to

caries, and also it is a prophylactic against diabetes, age-related changes and other ailments.

A valuable quality of sheep is their ability to use the cheapest feed. Out of 800 species of plants growing on natural pastures, sheep eat more than 400, whereas cattle - 150, horses - 90. Sheep are mobile and hardy, they can make large transitions and use the vegetation of steppe, desert and mountain pastures. Due to their mobility and endurance, sheep are capable of rapidly changing pastures if necessary. At the same time, they quite easily get used to green fodder growing on lands withdrawn from economic use, inconvenience, on the slopes of mountains and hills, which, because of their steepness, are inaccessible to other types of livestock. Poor vegetation, water scarcity, continental climate with sharp fluctuations in temperature and humidity not only according to the seasons of the year, but also within 24 hours make it difficult to develop other branches of animal husbandry in such areas except sheep breeding. It includes many areas of the North Caucasus, Altai, the Lower Volga region, Transbaikalia, where sheep on pastures are kept almost all year round.; except sheep breeding. These include many areas of the North Caucasus, Altai, the Lower Volga region, Transbaikal, where sheep on pastures are kept almost all year round.

Rich experience, practical knowledge and hard work of shepherds have played a big role in sheep breeding in the North Caucasus, southern Ukraine, Siberia, Kazakhstan, Transbaikal. This industry has many features, which makes the work of the shepherd much more complicated and diverse in comparison with the work of livestock breeders of other specialties - pigsmen, cattlemen, grooms, etc.

Breeding sheep is a business that promotes the health of the whole family and provides it with valuable food, wool and hides. In order for this business to bring income to the owners, to pay itself off, to become not only useful, but also profitable, you need to lead it, armed with relevant knowledge of the biological originality and habits of the sheep, the characteristics of their development and continuation of the genus, the conditions of feeding and housing, the possibilities of using the products obtained.

Whilt breeding sheep, you should always be aware that they are herd animals. Therefore, it is not recommended to grow them one by one. The property of sheep that is especially convenient for owners is the ability to keep them together with any other pets, which allows the owner to use the available corral for cattle, tools, feed and pastures with the greatest efficiency. The main organs of sense: hearing, sight, smell are well

developed in sheep, their higher nervous activity is poorly developed. In these animals, only the simplest conditioned reflexes are necessary for their elementary control on pastures and sheepfolds. The host should also remember that sheep are sensitive to many stress factors. They are skittish: a sharp cry, the noise can cause fear and hustle in them, which should be remembered when caring for them. It is not a good idea to conduct frequent inspections, processing, weighing of animals. Sheep of all breeds are kept in groups. While breeding Karakul sheep, pasture-stall maintenance is used, in which natural forage lands are used. Here, most of the year, the sheep are on pastures and only in winter (2-3 months or more) they are kept indoors.

Edilbayev sheep breed

Among the fat-tailed coarse-haired sheep of the meat direction, the Edilbaev breed of sheep has a good value. Because of early maturity and meat productivity, it can compete with the outstanding early maturing English sheep of meat-wool breed.

Edilbaev sheep breed possess good adaptive qualities to dwelling in all breeding areas for sheep breeding in Kazakhstan and Russia. One of the founders of the Soviet zootechnical science, academician M. Ivanov, expressed his attitude to a fat-tailed sheep in the following words: “a fat-tailed sheep has no competitors for itself and cannot be replaced by any

other breed". This should be attributed, first of all, to the edilbayev sheep, which originates as a result of natural selection, being a real masterpiece of the selection. A very valuable biological feature of these sheep is that they are characterized by high precocity at a young age and make good use of pastures in the conditions of desert, semi-desert and dry-steppe zones in different seasons of the year. Edilbayev sheep steadily give their economic and useful traits over to their offspring, both when breeding purebred and when crossed with other fat-tailed sheep ...

The Edilbayev sheep breed was created by the selection at the end of the 19th century on semi-desert and steppe pastures between the Urals and the Volga (Kazakhstan). It was created by crossing Kazakh fat-tailed sheep with large Astrakhan coarse wool sheep. In the process of selection for breeding the most adapted to the natural-climatic conditions of nomadic sheep breeding sheep were selected.

Edilbayev sheep tolerate the harsh winter cold and summer drought, easily make large transitions and, by their morpho-physiological physique, have the ability to get fat on a poor pasture forage. These features of edilbayev sheep are based on the historically established system of sheep breeding in pre-revolutionary Kazakhstan, when the nomadic way of life was practiced with extensive use of seasonal pastures.

Edilbaev sheep are characterized by a strong physique and a well-developed fat tail. Rams and queens are hornless. Height at withers is 75–84 cm, oblique body length is 77–82 cm, chest circumference is 97–106cm. Weight of rams is 110–120 kg, the best are 150–160 kg; queens are 65–70 kg, the best are 90–100 kg. Sheep are distinguished by greater growth energy and precocity. The body weight of the rams at birth is 6.0 kg of queens is 5.2–5.3 kg, in 1.5 years it is 80 and 65 kg. While slaughtering the carcass of 4-month-old sheep weighs 20–24 kg, and the fat tail is 3– 4 kg. According to the data of the former Temir experimental station of Kazakhstan, the weight of Edilbaev lambs at good pasture conditions at the age of 1 month reaches 17.7 kg, at 2 months. - 28.7 kg, in 3 months. - 35.8 kg, in 4 months. - 42.4 kg and at 6 months. - 43.5 kg. The daily gain for 100 days was on average 195 g, and the maximum - up to 253 g. All these data indicate a very high maturity of sheep of this breed. The mass of carcasses of fattened adult animal reaches 40–45 kg, fat tail is 12–14 kg. Slaughter yield of meat and fat is 50–55%. The Edilbaev breed of sheep is notable for its high wool productivity, and by this sign they are superior to other fat tail sheep with a rough coat. The average shear of sheep's wool is 3–3.5 kg, the largest is up to 5.0 kg, the rams' is 2.3–2.6 kg. The coat is heterogeneous. Brittle hair is found in wool only in a small part of animals.

According to the laboratory, the fluff fineness is 18.0 microns, transitional hair is 33.1 microns, awn is 59.5 microns. The main color of the Edilbaev sheep is black and red, as well as brown. Studies have found that animals with different colors are characterized by unequal productivity. For example, it was proved that ram with a black color has a higher cut of wool by 7.5–11.8%, weight by 2.2–6.9% and better slaughter qualities than sheep with a red color. Brown sheep are also characterized by the same high productivity indicators. The fertility of queens of the Edilbaev sheep breed is low - 110–120%. The milk yield of sheep is quite high. According to the data of the former Temir experimental station, the queen of this breed produces an average of 150–155 liters of milk with fluctuations from 124.8 to 184.3 liters. Edilbaev's marketed milk is used to prepare dairy products: Ayran (sour milk), irimchik (cheese), kurt (hard cheese) and butter. The average fat content of milk is 5.8% with fluctuations from 3 to 9%.

For the systematic replenishment of the group of producers with high-quality sheep, an increase in the herd of genetically valuable highly productive animals, consolidation and further improvement of the outstanding economically useful traits inherent in the best producers and ensuring continuous progress of the herd, it is necessary to organize breeding along the lines.

The creation of lines of highly productive Edilbaev sheep occurs simultaneously during the formation of a selection group. Since the range of variability of quantitative and qualitative characters of Edilbaev sheep is large enough, the breeding group should consist of highly productive animals with different combinations of individual economically useful characters. Using the data of correlations between different physically productive characters of animals of the breeding group, it is necessary to outline the main directions for being in a herd of two or three lines. Groups of animals in the amount of 60-80 animals are formed from the elite ewes selected in the breeding group, according to the breeding cards and the results of the visual inspection for compliance with the requirements of the planned lines. Edilbaev sheep-producers should be used as the founders of the lines. They are distinguished by one or several of the most valuable economically useful traits: large weight, early maturity, well-defined meat forms, size and shape of fat tail, quality and color of wool. The presence in the herd of sheep-producers with outstanding qualities in the intended type, shows the basis for the allocation of one of them in the ancestors of the line. The ram, which turned out to be an outstanding producer, gave highly productive offspring, becomes the founder of the line. The successors of the lines are selected first from among the sons, and subsequently from

among the grandchildren, great-grandchildren and other descendants of the ancestor. Subsequent work with the line is based on mating animals with moderate and distant degrees of kinship, as well as unrelated ewes that meet the requirements of the line standard. In the future, breeding work with linear animals should be aimed at enhancing the specific properties of lines in a complex of economically useful traits. Particular attention is paid to the increase in the number of animals of linear groups that have more valuable qualities than the ancestor and their consolidation in the offspring through skillful selection, intensive use of rams with record levels.

Selection of pedigree of Edilbayv sheep is carried out on the basis of assessing the qualities of animals by individually scoring and taking into account productivity (early maturity, weight, shearing and quality of wool, fertility, milk production, etc.), the origin of the sheep, the quality of their offspring.

Depending on the goals and objectives of the breeding work, the appraisal of the Edilbaev sheep can be individual (full or abbreviated).

Adult sheep-producers (main, reserve and probes) are subject to a full individual assessment, all litter received from the queens of the selection group and rams checked by the quality of the offspring, all pedigree sheep intended for repairing their own herd and selling to other farms.

The final grading of the Edilbaev sheep is carried out after feeding at the age of 18 months, measuring the weight, checking quality from the total shearing of spring and autumn wool, while elite sheep are marked with one pluck at the end of the right ear, first class with one, second class with two plucks on bottom edge. “Defected” sheet have the end of the right ear cut off. It can be seen that the class of animals is determined on the basis of a comprehensive assessment of the size, development and constitution of the animal, body shape and severity of meat qualities, weight, shearing and wool class.

From these measures it follows that the selection of rams according to their own productivity is very important, since an animal with high productivity has well-defined most important signs and properties. Given the high heritability of many important traits, there is a reason to believe that a ram characterized by high economically useful traits will be a valuable producer in the future as well. This important breeding technique is based on the fact that, under equal conditions of feeding and keeping, the best genotypes are among the best phenotypes.

Very valuable Edilbaev sheep with high productivity and good breeding advantages must be formed into separate flocks, and there should be created improved conditions for feeding and keeping them.

An analysis of the data obtained from an individual description of young Edilbaev sheep aged 4–5 months shows as the basis for a comparative judgment of the results of the previous selection or assessment of sheep-producers by the quality of offspring.

Goat gene pool

The first domestication of goats occurred 9 thousand years ago in Asia Minor, and today their global population is more than 700 million heads. The long evolution has made these animals truly unique; they are smart, clean, unpretentious, early maturation, with good growth energy and excellent adaptability to stall-pasture keeping. So, from all types of growing plants, goats eat - 58% of the existing greenery, while cattle - 31%, and sheep - 50%. At the same time, goat farming is non-waste, they provide the necessary food and raw materials for production: milk, meat, fluff, wool, hides, and even manure, recognized as the best fertilizer for the land. Goat milk is highly valuable because it is hypoallergenic, bactericidal, rich in antioxidants, minerals and vitamins (there are 1.5 times more ascorbic acid in it than in cow's milk, 2 times more vitamin A, 3 times more nicotinic acid (vitamin PP)), and thanks to small fat globules, it is easily absorbed even by infants. In fresh goat milk there are: immunoglobulin, lactoferrin, lactoperexidase, lysozyme. Doctors recommend goat milk to people with stomach diseases, eczema, asthma, arthritis, migraines, metabolic disorders, and also for the prevention of liver obesity and rickets. The meat of goats is also useful, the presence of a high amount of amino acids and a minimum amount of cholesterol allows you to maintain youth and prevent cardiovascular disease. Goat fluff and wool are in demand in the textile, knitwear industry. Skins of goats are indispensable in the leather industry, because they make the best leathers for model shoes and leather haberdashery - suede, husky, varnish, chevro, morocco and goat chrome, and skins with fluff are used to simulate fur of fur animals.

In modern science, there are several classifications of goats based on zoological and production characteristics, but the most practical is to consider the breeds of these animals by their economic productivity: dairy, meat, wool, and milk-meat-wool (mixed).

About 300 different breeds and types of goats are bred in the world. In the direction of productivity, which is obtained from various breeds and pedigree groups, goats are divided into: downy breeds and breed groups; coarse-haired; Wool milk direction.

Wool goat breeds were improved due to the appearance of down-knitting fishing and the demand for goat down products. Mass selection was carried out in the direction of increasing the down productivity of goats, improving their quality and fleece weight, as well as breeding animals with the most valuable population of color - gray, dark gray and black suits of various colors. There are animals of red, motley and, rarely white color.

Fluff is obtained by combing, the mass of which varies depending on the breed, weight, feeding conditions and keeping animals. The annual fleece of goats' down varies from 400 to 1600 g, she-goats from 250 to 1500 g. The hair cut after the hair curls ranges from 240 to 450 g. The thinnest down comes from goats at the age of one year, by the age of two it becomes coarse. By the age of five, the process of coarsening of fluff stops.

So, in Orenburg, goats' fluff is mainly 14 microns at the age of one year, in a two-year-old - 18 microns. The ratio of spine and down hairs in crossbreeds is similar to the Romanov sheepskin. On one fiber of the spine in it there are an average of six down fibers with fluctuations from 1: 2 to 1:10. In the sheepskin of the Romanov breed of sheep, in most cases there is from 1: 4 to 1:10 with fluctuations from 1: 2 to 1:25. Goats under the age of one year give the best fur in quality, size and density of wool.

The weight of goats in the down direction of productivity ranges from 60 to 110 kg, queens from 40 to 60 kg. The goats are milked during the last two months of lactation, receiving 10 - 45 kg of marketed milk for the 4th and 5th months of lactation, individuals give up to 190 kg of milk during this time.

The most common breeds of goats are Orenburg, Don, Gorno-Altai, Kyrgyz, Bashkir, Angora.

Coarse-breed goats are bred in regions with sparse rocky pastures. The biological feature of goats is widely used to grass wormwood and hodgepodge pastures, shrubs, rocky and steep slopes which are inaccessible to sheep. In winter ice, animals are fed with hay, straw, and sometimes concentrates, depending on the presence of feed in the farm.

For lambing, they choose places protected from the winds, and with the presence of a watering place. Newborn goats are kept in special wagons, and later - in round trellised pens up to 60 - 100 heads in the pen. Coarse goats are bred for milk, wool (fluff), meat, leather and fur.

The weight of the goats-producers ranges from 50 to 70 kg, of queens from 30 to 45 kg. The coat of local coarse-haired breeds is heterogeneous and consists of fluff and core fibers. Shedding and regrowth are associated with the season of the year. By the cold season, the

undercoat is growing, by the summer heat it sheds and is replaced by a rough awn. In terms of the ratio of down and awn, the fluctuations in various breeds are significant, the amount of down varies from 7 to 37%, and the rest from 63 to 93%. Bouffant fluff is from 30 to 160 g, wool cut is from 300 to 600 g

The milk productivity of coarse goats depends on the lactation period, which lasts 5-6 months, and the average daily milk yield. On average, for lactation, milk yield ranges from 90 to 160 liters of milk. Goats that brought twins give 10 - 15% more milk than which bring one goat.

Goats of wool breeds are one of the most ancient breeds of farm animals, the history of the formation of some is lost, like the history of the Arabian horse, the Karakul and Merino sheep.

The Angora breed is one of the world famous goat breeds.

It is believed that the birthplace of the Angora breed is the steppe part of Central Turkey. It got its name from the city of Ankara. There is an opinion about the importation of Angora goats many centuries ago to Turkey from the plateaus of Altai and the Pamirs, and already in Turkey, the wool qualities of goats gradually improved.

Angora goats are bred because of their valuable shiny coat. The average cut of wool from goats is 3-5 kg. The highest wool productivity is observed in animals aged 3-5 years, the highest quality of wool is given by animals aged 1-2 years. About a quarter of the world's wool is produced in Turkey.

Angora goats do not tolerate heat and are even more sensitive to hot, humid climates. They do not withstand wet pastures. Adverse conditions of detention and feeding lead to mortality from pulmonary, colds and gastrointestinal diseases. The mortality of young animals ranges from 25 to 40%. A moderate dry climate and improved conditions are desirable for keeping Angora goats.

The color of the coat is white, according to the type it belongs to semi-fine and semi-coarse wool, according to the fineness to 44 - 46 quality.

The mass of goats at the age of 4 - 4.5 is 52 - 70 kg, queens - 31 - 50 kg.

The milk yield ranges from 55 to 116 kg.

The absorption crossing of local coarse-haired breeds with Angora goats is widely used. From the second or third generation, hybrids are bred “in themselves”, achieving selection and selection of obtaining uniform high-quality wool.

Goats of the milk direction of productivity are bred in order to obtain milk, meat, and skin. Outstanding breeds of goats with milk productivity are goats of Saanen, Toggenbur, Nubian and Anglo-Nubian breeds bred in the XVIII - XIX centuries.

Their coat consists of a short spine without noticeable downy undercoat, the color is white. The goats are hornless, there are earrings on the neck, the head is light and dry, the body is long, the legs are strong, the udder is large, pear-shaped. Fertility per 100 queens is 180 - 250 kids. The duration of lactation is 10 to 11 months. During this period, they receive 600 - 700 kg of milk, and from the best animals - up to 1000 kg with a fat content of 3.8 - 4.5%. Record milk yield for lactation is 3499 kg

The Russian white breed of goats was formed due to the centuries-old popular selection of the best native indigenous people of the North-West and Central regions of Russia and their crossbreeding with imported Swiss or European dairy breeds. This breed is unpretentious in content, hardy and adapted to Russian climatic conditions, and therefore it is the most numerous in our country. The main breeding areas of the Russian white goat breed are the territories of the central and northwestern regions of Russia, where its approximate number is more than 1 million heads.

The suit of goats is mostly white, but there are black, red and gray animals of Russian white. Their coat is medium or short, with a 15% fluff content, which allows (through combing) to receive up to 200 g of fluff annually. The constitution of the breed is strong, correct for the dairy type, with well-developedd joints. Animals are low, barrel-shaped, with voluminous breasts, slightly drooping croup and directly set limbs. The head is light, slightly elongated, hornless or with large sickle-shaped horns, small erect ears and a beard (rare in queens and dense in goats). The udder is round or pear-shaped with well-defined strong nipples, slightly directed forward.

Goats of the Russian white breed have high fertility, reaching on average up to 240 kids per 100 queens, 2-3 kids per one lamb. At the age of 7 months, goats gain 25–32 kg of live weight, and queens - 20–28 kg. Adult goats weigh 55–70 kg, and females 38–50 kg. Meat productivity is low, but the goat skin is valuable from which first-class skin is produced.

Milk productivity is 350 - 800 liters with a fat content of 4.5 - 5.0% for 8 months of lactation, but under exceptional conditions, the indicators increase. The maximum milk yield of Russian white goat was 1000 kg of milk.

While cross-breeding with the local individuals, the Russian white goat breed genetically transferred its productive qualities to the bred offspring: Gorky, Valdai, Yaroslavl, Ryazan, etc. Therefore, this breed is recommended to be used to improve and consolidate important economic traits.

Burskaya breed. The native land of the Burskaya goat breed is South Africa, but today they are spread around the world. Animals of this breed

are hardy, calm, have maximum disease resistance and excellent adaptation to the hot climate. They are unpretentious in maintenance and are capable of good feeding even on meager pastures unsuitable for cattle. Burskaya goat breed is characterized by excellent growth rate and excellent taste of goat meat. The color is usually white with a red-brown head, markings on the neck and sometimes part of the tail. But there are black, brown and fawn colors. The constitution is dense, meat type. The head is large with a forehead extended forward and a curved profile; ears are smooth, hanging; horns are massive, of moderate length. The neck is tight; shoulders are wide, chest is wide, back is straight, wide; limbs are strong with well-developed hooves. The udder can have not two, but four nipples.

The fertile period of Burskaya goats begins from 5 months, with year-round reproduction and a perfectly developed maternal instinct. The first lamb gives one kid, and the next two. The average milk yield does not exceed 2.5 kg of milk, which is completely consumed by the kids. 3-month-old goats from the best goats-producers easily reach 35 kg of live weight, and 5-month-old goats - 60 kg. The average daily weight gain of young animalsis about 500 g. The weight of adult goats is from 110 to 150 kg, and queens from 90 to 100 kg.

The Burskaya goat breed is actively used for breeding with other animals, usually, with the Nubian or Angora breeds.

Zaanensky or Zaanentalsky breed. Zaanensky or Zaanentalsky goat breed became known in the middle of the XIX century, after its presentation at the Paris World Exhibition. The homeland of these plentiful dairy and largest goats is the Swiss valley of the Zane River. The Zaanensky breed was imported into Russia from Switzerland, Germany and other European countries, from 1905 to 1912. The following batches of animals were purchased only after 1980 in Australia, Switzerland and the United States. Zaanensky goats are hardy, unpretentious, early ripening, fertile and adapt well in various climatic conditions.

The color is white, but there are white-yellowish animals with black spots on the scalp or udder. The wool consists of short outer fibers, there is practically no downy undercoat, therefore this breed of goats should not be cut. By the type of constitution, goats are dense, with a strong skeleton and a sufficiently developed muscular system. The body is wide, long, with correctly set, strong limbs; the head is dry, hornless, of medium size; ears are thin, in the form of a horn, sometimes slightly saggy; the neck is tight; voluminous chest. The udder is large, spherical or pear-shaped, with strong, slightly forward nipples. Altitude measurement in adult queens shows 74–78 cm, and in goats - 82–88 cm

The maturity of goats of the Zaanensky breed is very high, already in 6–8 months of age the goats come to hunt, and in 10–12 months they can be crossed. At birth, the weight of the kids is not more than 5 kg, while in 80% of cases twins appear. At 2 months, their live weight reaches 12.6 kg, at 12 months - 38–48 kg. Adult goats gain 65–85 kg (best individuals - 110 kg), and queens - 50–60 kg (best individuals - 90 kg).

The milk production of the Zaanensky goats is the highest among other dairy breeds, the world record was reached in Austria and amounted to 3507 kg of milk. The amount of milk per lactation varies from 600 to 1200 kg with a milk fat content of 3.8–4.5%. The lactation period in goats lasts up to 360 days, and in some cases milk goats are milked for two years or even longer. The bad smell of milk is noted by the goat breeders of the Zaanensky breed only with the combined content of uncastrated goats with dairy goats and in violation of sanitary standards, in all other cases, milk has a pleasant aroma.

The meat productivity is quite satisfactory, but the most valuable is the high-quality leather from which people can obtain chevro, suede, husky and even fur coats.

Zaanensky goats are extremely important for improving the milk qualities of other breeds, therefore they are preferred to be bred in many countries of Europe, the CIS, Australia and South Africa.

Don breed. The origin of the Don breed goats was vague and caused a lot of judgment. However, the situation became clearer after proving that in 1811 and in 1880–1911. on the banks of the Don River and the territory of its tributaries, native animals were crossed with Turkish Angora goats. The breed got its name in 1933–1934, after being identified and described by scientists, in accordance with the distribution area. Goats of the Don breed are undemanding to the conditions of detention, unpretentious in nutrition (they easily absorb roughage) and have increased fecundity. But, their main advantage and distinguishing feature is high-quality fluff, recognized as the best in the world goat breeding. As a rule, down makes up about 70% of the hair, and in the best individuals even 96%, while its length reaches 11 cm and a thickness of 19 to 23 microns. The remaining percentage of wool is the remaining fibers, they are shorter than down on average 6 cm, and their thickness is not more than 80 microns.

The most common suit of goat's goat skin is gray in various shades, but animals of black, brown and white color come across as well. After seasonal molting, the color of the coat replaces the black color of the outer hair. Goats of this breed are characterized by a strong type of constitution. They have an elongated body, a well-formed chest, a wide croup and

correctly set limbs. The goats have characteristic features in the form of massive horns and a coarse outer belt passing along the back line. Measurements of adult goats give the following results: height at the withers is 58.3-60.3 cm; oblique body length is on average 64 cm; chest width is up to 16 cm; chest circumference behind the shoulder blades is 80–82 cm; width in maclocs is about 20 cm

The weight of the kids at birth is 2–2.5 kg, when they're away from the mother, it is already 15 kg, in 1.5 years their weight is 29 kg, in 2.5 years it is about 34 kg The weight of the goats on average reaches 70 kg, sometimes 85 kg, and the mass of adult goats is 35–40 kg per 100 queens, on average 130–150 kids are born, and in 62 cases they are twins.

The indicators of down productivity of the near-bottom goats depend on the type of animals, so white goats have a relatively small density of wool, but a larger fleece of super-valuable silver fluff (strong, flexible and elastic). On average, from full-aged goats they get from 700 to 1500 g of down, and downy fleece from goats - 1300–2000 g. Maximum fleece is possible in 4–6-year-old, from whose wool they produce at least 64% of high-quality downy yarn.

The meat productivity of the bottom goats is low. Slaughter yield is 43–50%, meat in the carcass of 5-year-old well-fed castrates is 76%, and the amount of internal fat does not exceed 4 kg

The milk content of the bottom breed is acceptable. The average milk yield for lactation is about 150 liters of milk with a fat content of 3.3 to 8.2%. 3 months after lambing, when the kids have already been weaned, goats can be milked. With an increase in the amount of feed and care of each goat in 30-50 days, you can get up to 40 liters of milk.

In our country, near-bottom goats are bred in West Kazakhstan and in a number of other areas.

Bengal breed of goats. The Bengal breed of goats was bred in the northeast of South Asia, in Bengal, which defined the name for this dwarf breed. The main breeding countries for Bengal goats are India and Bangladesh, where they account for 90% of the global livestock of this breed of small cattle. Bengal goats gained popularity back in the 18th century, thanks to their particularly delicate, aromatic red meat and goat skin, which is of excellent quality for leather goods. These animals are easily adaptable, characterized by early maturity and high productivity, in addition, they perfectly eat any grass, shrubs and foliage from trees, and they can also be used as pack animals.

The color of the breed is mainly black, brown, white and gray are less common. The hairline is short, soft and glossy. Animals are low, of

proportional composition, the average height measurement shows about 50 cm. The head with cylindrical horns is usually directed upwards (from 6 to 11.5 cm long), slightly drooping ears and beard. The back is straight, limbs are strong and short.

Bengal breed puberty ends at 6–8 months. Twins are usually born, weighing 800 to 1100 g. The average daily weight gain is 45 g, half a year animals weigh up to 7 kg, a year up to 12 kg. Adult goats reach a maximum weight of 22 kg, and goats - 30 kg. Dairy productivity is extremely low from 400 to 700 g of milk per day and 36–58 kg of milk per lactation (110–122 days).

Alpine breed. The initial distribution of the Alpine breed began in Switzerland, in 1911 Italy and France began to import it, and in 1922 it appeared from the French Alps in the United States, where it gained popularity. Alpine goats are extremely unpretentious in the content and diet, acclimatize well, in addition, they are very calm and friendly.

The color of the breed is extremely diverse, but there are several characteristic color options: the tan color of the neck and shoulders becomes brown or black in the rear third of the body; white color of the neck and shoulders, and a gray or black back third of the body; black front torso and white back; white marks on a black background; spotty or mottled color; white-headed; red-brown tones with black spots in the head and neck, and a black stripe on the back and the same limbs.

Alpine animals are large, but elegant. They have a light short head, hornless, or with flat, oval horns; short neck; wide, voluminous chest; straight back; narrow and strongly lowered sacrum; the limbs are dry and thin with strong hooves, hard on the outside and elastic inside (principle of depreciation). The hairline is short, but on the hips and back it is a little longer. Altitude measurement in adult queens is on average 74 cm, and in goats - 82 cm. The live weight of mature queens is about 62 kg, and in castrate goats - 78 kg. Meat productivity is satisfactory.

The milk productivity of the Alpine goat breed reaches 8 kg of milk with a fat content of up to 5.5% and protein - 3%. With a good stall content, their milk yield can exceed the performance of Saanen goats and reach 1600 kg of milk per year. Record milk yield was recorded in the United States and amounted to 2215 kg of milk. For milk of this breed a delicate taste is characteristic.

Currently, thanks to breeding work with the Alpine breed, there are: Austrian Alpine, British Alpine, Italian Alpine, French Alpine and stone Alpine breed.

Goat meat production accounts for 75% of the total production in the industry in Asia, where livestock are constantly growing and goat production is increasing by an average of 50% every five years. The leading world producers of this type of meat are India, China, Pakistan, Nigeria and other African countries. The best breeds are recognized: Burskaya, Chansi, Serana, Bengal, West African dwarf or Jalonka, South Sudan, Somalia, Galla.

Mountain Altai breed

Горноалтайский козел.

The Gorno-Altai breed is the first purposefully bred downy goat.
Bred in the Altai Republic of the Russian Federation in the period from 1944 to 1982 on the goat-breeding farms of the collective farms "Mukhor-Tarkhata" of the Kosh-Agachsky district, "Iskra" and "Lenin's Way" of the Shebalinsky district. The breed group was approved in 1968 (Order of the Ministry of Agriculture of the USSR No. 103 of May 5, 1968), and the breed in 1982 (Order of the Ministry of Agriculture of the USSR No. 26 of January 26, 1982). To breed small local goats with low productivity, they were crossed with bottom goats. Hybrids of the desired type of the second and partially third generations were bred “in themselves” in combination with purposeful selection and selection of animals in breeding herds. Also, although to a much lesser extent, complex

reproductive crosses of Angora goats (queens) with those of the bottom (goats) were used.

Родоначальник горноалтайской породы – придонский козел № 9.

The goat No. 9 of the Don breed, introduced in 1937 to the Mukhor-Tarkhata collective farm in the Kosh-Agach region of the Altai Republic from the Stalingrad state nursery garden, is considered the founder of the Gorno-Altai down goats. He had a live weight of 96.7 kg, fleece 900 grams with a length of 9 cm.

As a result of many years of work by a team of scientists and livestock breeders in the farms of Gorny Altai, a significant array of Altai cross-goat goats was obtained, which in their constitutionally productive qualities differed from both local and near-bottom goats.

For the breeding of the Gorno-Altai down breed of goats to its authors as part of L. V. Okulich-Kazarina, G. V. Alkova, V. N. Tadykin, V. L. Manzhin, Z. K. Kraskova, K. K. Tuimeshev, Ch. K. Shartlanova and M. Kuryapova in 1997 awarded the State Prize of the Russian Federation in the field of science and technology.

Goats of the Gorno-Altai breed are characterized by a strong constitution, a harmonious physique, and are well adapted to the harsh conditions of year-round grazing in the mountains. They are characterized by uniformity in suit, size and physique. The legs of the Gorno-Altai goats are strong, straight set, covered with short covering hair. Improper positioning of the legs, as a rule, is not noted. The hooves are usually dark in color, durable and shiny. Hooves are almost never trimmed and cleared, although they are little damaged, and lameness is extremely rare.

Medium sized animals, goats weigh from 63 to 70 kg (maximum 92 kg), uterus from 38 to 40 kg (maximum 65 kg), one-year-old goats from 32 to 39 kg, goats from 27 to 35 kg Height at the withers 1,5- summer goats on average 57 cm, adults - 62 cm

The coat of the Gorno-Altai goats consists of 65–75% of fluff 8–9 cm long, 17–19 microns fin and 25–35% of the outer fibers 75–90 microns thick. In addition to fluff, transitional hair fibers are found in significant quantities. Ost is black, and the fluff is solid dark gray. Down fibers are characterized by softness and strength. Their strength is 8–9.5 cN / tex. 750-1000 g (up to 2000) receive fluff from goats, 550-650 g from queens (up to 1500). Down productivity of goats and goats at the age of 1 year - 250-350 g.

The fluff of the Altai goats is a valuable raw material for the down-knitting industry. According to the technologists of the Orenburg factory of downy shawls, it is soft, elastic, silky, does not require additional adjustment of equipment. Products from Gorno-Altai fluff have a good presentation, shawls are fluffy, solid, soft with a silky sheen. The Gorno-Altai fluff is much better than the factory received from other procurement offices and is almost inferior in quality to the fluff of goats from the Orenburg breed. The fertility of the Altai goats ranges from 110 to 140 goats per 100 queens, and the yield of goats after growing from 87 to 121%.

The milk productivity of the goats is satisfactory. According to L.V. Okulich-Kozarina, for 159 days of lactation, it amounted to 92 kg with a fat content of 4.3%. The average daily milk yield per goat is 577 grams, the highest daily milk yield is 957 grams. In the experiment of V.I. Zavrazhnev (1983), with a feeding level of 20% higher than the existing norms, milk production was 1950 grams per day. In the experiment of A.I. Chikalev (1987), the milkiness of 2-year-old queens for the first 72 days of lactation, calculated by the weight gain of the kids using a coefficient of 5, averaged 25 ± 2.04 kg or 347 grams per day.

Gorno-Altai goats are distinguished by good meat qualities. Slaughter yield in goats is on average 45–46%, in goat-castrates 47–53%. The yield of meat without bones and tendons (by weight, carcasses) is 74–78%, its energy value in goats is 2203–2561 kcal, in castrates 2223–3226 kcal. In winter, adult goats lose about 25–35% of the mass that they had in the fall. However, in the summer (July-September), their mass is fully restored. According to G.V. Alkov, over 3.5 months of summer feeding on high mountain subalpine pastures, the weight of castrates increased by 13.4 kg, and of queens by 13.0 kg with an average daily gain of 125 and 121 g, respectively. According to the control slaughter , the average mass of the carcass of castrate was 30.7 kg, the mass of internal fat was 3.7 kg, the slaughter yield was 52.7%. After slaughtering castrati, meat of the first grade was obtained at 68.7%; 2nd grade 17.6% and 3rd grade 13.7%.

The goats of the Gorno-Altai goats belong to the steppe and are used mainly for the production of lining varieties of leather and the manufacture of fur products.

Goats of the Altai breed are bred in the Republic of Altai, Uzbekistan, Dagestan, in private households in Western and Eastern Siberia. The best livestock is concentrated in the Shebalinsky, Ongudaysky and Kosh-Agachsky districts of the Altai Republic.

In 1979, the USSR had 269 thousand Gorno-Altai goats, including 99 thousand among the population. At the beginning of 1990, there were 217.9 thousand goats in Gorny Altai, including 92.8 thousand from the population. As of January 1, 2001 the number of goats in the Altai Republic decreased and amounted to 79147 animals, including 51883 animals in the population.

Tribal work. Breeding work with goats of the Altai breed is aimed at creating two factory types - one in the alpine zone with a pile of gray down 650–700 grams and the other in the mountain-steppe zone with a pile of white down 550–600 grams. Gorno-Altai goats are used as an improvement breed, as well as in breeding other breeds in many regions of the CIS and abroad. They were repeatedly exported to Mongolia, Kazakhstan, Dagestan, Tajikistan, Tuva, Buryatia, Khakassia. Based on the breeding and use of Gorno-Altai goats in the Bayan-Ulgiy and Khobdos aimaks of Mongolia, a new breed, Uulynbor, was created in the Gorno-Altai type, which is more than twice as much as local goats in down productivity.

In England, scientists set the task of crossing the Tasmanian and New Zealand goats with the Gorno-Altai goats to create a group of animals that

combine the productivity of the Altai mountains, and the white color and fineness of the fluff - Tasmanian and New Zealand. For this, in 1987 and 1988, embryos of Gorno-Altai goats were taken to England, where 49 goats and 41 goats of Gorno-Altai breed were obtained and raised. There they conducted a comparative test of different breeds. At the age of one year, the average fleece from Gorno-Altai goats amounted to 579.8 g, which is 2.1 times higher than that of New Zealand, 2.6 times Tasmanian, 6.3 times Icelandic and 15.5 times Scottish. The diameter of downy fibers was 17.97, respectively; 16.39; 16.13; 14.04 and 13.75 microns. In terms of live weight, the Gorno-Altai goats had an advantage.

The main breeding farms of mountain Altai goats with gray down are the Mukhor-Tarkhata collective farm (approved by order of the Ministry of Agriculture of the Russian Federation No. 139 of June 7, 1995), the breeding farm Kyzyl Cholmon (order of the Ministry of Agriculture of the Russian Federation No. 108 of 04/17/96), pedigree farms collective farms to them. Kalinin and “Tebeler” (Order of the Ministry of Agriculture of the Altai Republic No. 23 of 05/12/95).

Breeding white goats of the Altai breed are bred in the agricultural union "Seminsky", LLP "Edigan", peasant farms "Kairal" and "Mikhail" of the Altai Republic.

Perfection of goats of the Gorno-Altai breed

Long selection and breeding work made it possible to establish that in the high altitude zone of Gorny Altai (Kosh-Agach and Ulagansky districts, which are climatically equivalent to the Far North), goats that are most adapted to the harsh climatic conditions should be bred. The work was carried out on the basis of the livestock of goats of the Gorno-Altai down breed of the Mukhor-Tarkhata breeding farm, the Kyzyl-Cholmon and Kyzyl-Maany collective farms. The selection of pairs was carried out according to the principle of uniform mating in the desired type, absorption of unwanted types by the desired and further dilution "in itself". The main attention was paid to the structure of the coat. As a result, a new high-mountain type of gray goats “Chuisky” was created and in 2009 approved on the NTS of the Ministry of Agriculture of Russia. Animals of a new type are characterized by a strong constitution, a well-developed skeleton, a distinct type, good mobility and adaptability to local natural and economic conditions of year-round grazing. They are relatively squat. The head is of medium size, there are horns, often a beard, the ears are half drooping. The withers are narrow, the body is elongated, the chest is deep, wide, the back and lower back are straight, the sacrum is straight. The limbs are directly set, the skin is thin, strong. Muscle and adipose tissue are

developed satisfactorily. The muzzle, ears, legs below the carpal and hock joints are covered with short covering hair, and the rest of the body is covered with thick hair, consisting of fluff, transitional hair and spine. At the external examination, the goat fleece consists of uniform wool, the spine is not much shorter than the fluff and is detected when it is deployed. A distinctive feature of goats of the Chui type is the high down productivity. By this indicator, they exceed the initial Gorno-Altai down breed by 28-36%. In terms of fleece, goats of the Chuy type are significantly superior to other breeds of goats of the down direction. In gray goats of the Chuy type, the fluff fineness is 17.0-19.6 microns. It should be noted a fairly high uniformity of fluff in the fineness of the fibers. The unevenness coefficient is 18% with fluctuations from 17 to 19%, which is within the normal range (25%). A study of the internal organs showed that the lungs and liver of the goat type, both in absolute numbers and as a percentage of live weight, are more developed than in sheep breeding in the same zone. The advantage in absolute numbers was 29% for uterus in the lungs, 51% for the liver, and 59% and 85% for live weight, which presumably provides better goat fitness for movement in the mountains. Gray down goats of a new type have a rather high slaughter yield (40-42%). In terms of protein, fat, and energy value, the meat of goats of the Chuy type after feeding did not yield lamb of the highest and average fatness. All goat carcasses were assigned to category 1. Studies of the chemical composition showed that the meat of a new type of goat contains 19% fat, 17% protein. Positive feedback was received from all processing factories on the quality of gray Altai mountain fluff. According to the relative breaking load of a single thread, elongation, coefficient of variation in density (thickness) when testing a paste of 50 meters in length, the content of core and dead fibers, yarn from down goats of the Chuya type of Gorno-Altai breed meets the requirements. Down products made with the addition of goat type fluff in all respects (breaking load, elongation, irreversible deformation of the strip of fabric, shrinkage after washing) meet the requirements of the standards. The economic efficiency of breeding goats of the Chui type has been established. The profitability of down production in tribal reproducers, taking into account the established subsidy for down production, was 38.3%.

In addition to the Orenburg, Don, and Gorno-Altai breeds, other goat farms of different types of down goats obtained as a result of interbreeding are bred in CIS goat farms. The main mass of these goats is concentrated in Uzbekistan, Kyrgyzstan and Dagestan and is represented by Ferghana, Kyrgyz and Dagestan goats.

Chapter 2 Breeds and genetic potential of cattle in Kazakhstan

More than 250 breeds of cattle (cattle) are bred in the world. For various reasons, they are combined into several groups. There are 3 classifications of livestock breeds:

Craniological

Household

Geographic

According to the first, based on differences in the structure of the skull, the following types of cattle are distinguished:

Narrow-minded - Dutch, Kholmogorsk, gray Ukrainian, Yaroslavl, Tagil, red steppe, etc.

Lobasty - Simmental and all breeds derived from it.

Short-horned - Schwyz, Jersey, Kostroma, Lebedinsky, etc.

Short-headed - Tyrolean, Hereford, red humpbacked, Kazakh white-headed, etc.

Straightforged - Kalmyk, Mongolian cattle.

In addition, the hornless type is distinguished - all hornless breeds of Northern Europe.

The economic classification is based on the prevailing animal productivity. Of the breeds of the dairy direction of productivity, the most widespread in many countries was Dutch black-motley; in some countries it is known as Holstein-Friesian (Canada, Japan, USA) or Frisian (Australia, New Zealand, Great Britain, France).

In Sweden, Poland, Italy, the former USSR and other countries, Dutch cattle were used to create different breeds of black-motley cattle. The Jersey breed is widespread.

In the CIS, the following main breeds of the dairy direction are bred: steppe red, black-motley, Kholmogorsk, brown Latvia, Angler (angelic), Aulieatinsky, Ayrshire, Istobensky, Estonian red, Lithuanian red, Danish red, etc.

Of the breeds of the combined direction of productivity in many countries of Europe, North and South America, Africa, breed Shvitsky brown, Simmental, Shorthorn meat-milk type, etc.

In the CIS, in addition to the listed ones - Bestuzhevskaya, Alatau, Kostroma, Sychevskaya, Lebedinsky, Kurgan, Red Gorbatovskaya, Carpathian brown, Caucasian brown, Yurinsky, Pinzgau.

The most common beef cattle breeds in the world: Aberdeen-Angus and Hereford (Australia, New Zealand, North and South America, many European countries), shorthorn meat-type (Australia, New Zealand, Argentina, USA, Denmark, etc.), Charolais (Argentina, Brazil, USA, Denmark, France, etc.), Santa Gertrude (Argentina, Brazil, USA, etc.).

In the CIS, in addition to the meat breeds listed above, Kazakh white-headed, Kalmyk, limousine, and Kazakh and Mongolian cattle are bred.

According to geographical classification, cattle breeds are distinguished:

Low-lying - mostly dairy;

Mountain - Tyrolean, Schwyz;

Steppe - Ukrainian steppe, red steppe, etc.

This classification is conditional, because many breeds are common in various geographical areas.

The gene pool of cattle breeds bred in Kazakhstan.

In the Republic of Kazakhstan, 6 breeds of dairy cattle and 2 breeds of combined dairy and meat production trends have spread.

Of the dairy cattle, 5 are adapted.

The black-motley cattle was obtained by crossing local livestock with Dutch animals.

Due to the high genetic potential of productivity of black-motley cattle, especially of new types, it is planned to further increase its number. Black-motley cattle have good acclimatization abilities, and therefore it can be bred in all areas of the country, from the western regions to the Far East.

Black-motley cows have a strong constitution. Body type and appearance are characteristic of cows in the milk direction of productivity.

The cattle of this breed are distinguished by good health and adapt well to various climatic zones. Cows are large with a slightly elongated, proportionally developed trunk. The oblique length of the body is 158–162 cm. The chest is deep, of medium width. The back, lower back and sacrum are wide.

The belly of cows is voluminous. The udder is large, mostly cup-shaped and rounded. The limbs are straight. The color of animals is black-and-white, but very rarely the red-and-white color is found.

Picture2.1 - Cow of Black-motley breed

The live weight of cows reaches 500–550 kg, in breeding farms - 550–650 kg, live weight of bulls - 900–1000 kg and more. The live weight of heifers at birth is 35–37 kg, calves - 38–42 kg. At present, the precocity of livestock has increased: heifers reach a live weight of 380–400 kg by 16 months of age, which has reduced the age of first insemination and calving by 2–4 months. Currently, several groups and types have formed in the breed, which differ in exterior features, milk yield and milk fat.

In the best breeding farms, milk yield reaches 8000–9000 kg per year. On average, the fat content of milk is 3.5–3.8%, the protein content is 3.0–3.2%.

Meat qualities of livestock are satisfactory. The average daily gain in live weight during intensive cultivation ranges from 800 to 1000 g. At the age of 15–16 months, animals weigh 420–480 kg.

Slaughter yield is 50–55%. As a result of long work to improve the black-and-white breed of cattle, the shape of the udder improved markedly.

Crossing of cows of black-motley breed with Holstein bulls at high and medium levels of feeding made it possible to obtain animals that exceeded black-motley peers in milk yield for the first lactation by 10–13%, and in milk fat content by 6–10%.

The brown Latvian breed is concentrated only within one breeding herd and does not play a special role in the commercial production of milk.

The Ayrshire breed, which participated in breeding to increase the milk production of Simmental, Black-motley, and Aulieatins, has now disappeared.

Among the cattle of the dairy direction of productivity, one can distinguish the domestic Aulie-Ata black-motley breed, which has become widespread in South Kazakhstan and partially in Zhambyl regions. The peculiarity of this breed is its good adaptability to the conditions of the hot climate of southern Kazakhstan, grazing in foothill and mountain meadows, as well as resistance to blood parasitic diseases (theileriosis and pyroplasmosis). On the basis of this breed, breeding is underway to create a pedigree dairy black-motley type of cattle using a gene pool of black-motley breeds and holstein from Europe, North America and Canada.

Milk and meat breeds are represented by domestic Alatau and adapted Simmental breeds.

The Alatau breed was bred in the farms of Kyrgyzstan and Kazakhstan as a result of a long-term improvement of the local Kyrgyz (Kazakh) cattle by crossbreeding with the Swiss breed and further breeding with crossbreeds. The formation of the breed took place in the foothill areas of Zailiysky Ala-Tau. Kyrgyz (Kazakh) cattle are distinguished by their adaptability to local conditions, and the ability to quickly feed. At the same time, it is small, late-ripening, low-dairy: in adulthood, cows have a live weight of 280–380 kg and produce 500–600 kg of milk with high fat content.

The first attempts to improve this local livestock with Schwyz breed were made in 1904. Later, in the period from 1929 to 1940. More than 4,500 were brought to Kyrgyzstan, and 4,300 Schwitz animals to Kazakhstan. Schwitz cattle acclimatized well in hot climates and mountain conditions.

An important role in the transformation of Kyrgyz cattle was also played by Kostroma breed animals from the Karavaevo breeding farm in the Kostroma region. Crossing of the Shvets-Kirghiz crossbreeds with the bulls of the Kostroma breed led to an increase in the milk yield of the offspring, an improvement in the milk fat and live weight, which allowed to accelerate the process of creating a new breed. The breed was approved in 1950. On January 1, 1990, there were 814 thousand heads in the Alatau breed.

Animals of this breed have a strong constitution, a dense, rough skeleton. The shape of the body is rounded. The head is large with an elongated front part. The chest is deep and wide, the ribs are widely spaced, the undercuts are well developed. The withers are wide, long, straight. The back and lower back are wide, straight. The back is wide, even. The belly is round. The legs are of medium height. The muscles are well developed. The skin is supple and thick. The udder is medium in volume, cup-shaped, cylindrical nipples, milk veins are well defined. Of the shortcomings of the exterior, there is a downward and roof-like rear, a mark of the forelimbs. Color most often (60%) of brown in different shades.

Alatau cattle has good meat qualities. During fattening and feeding, the gain of castrati bulls is 800–900 g per day, the lethal yield is 53–55%, and for fed oxen - up to 60%.

The structure of the Alatau breed includes 9 main lines. The milk productivity of the cows of the main lines varies in the range of 4,500–5,500 kg of milk with a fat content of 3.80–3.92%, live weight 580–600 kg.

Breeding of Alatau cattle is aimed at increasing milk productivity through purebred breeding and attracting the genetic resources of other breeds. The work on the creation of a new line of animals with blood of a Jerse breed has been completed. The milk yield of full-age cows of this line is on average more than 5000 kg of milk with a fat content of 4.10%. Currently, one of the types of new brown dairy breed is being created on the uterine basis of the Alatau breed. In the adjusted program for the breeding of a new breed, it is planned to switch from the use of producers of Schwyz breed of American selection to red-motley holstein. This decision is connected with the low effectiveness of the work carried out earlier: the productivity of daughters from American Schweiz bulls is higher than that of peers of the Alatau breed, only 3%.

In the breed, individual cows are distinguished by longevity. 13-14 healthy calves were received from them. Each of them gave an average of 7000–9000 kg of milk with a fat content of more than 4%.

Currently, the Alatau cattle breed is mainly distributed in the Frunze, Tien Shan and Issyk-Kul regions of Kyrgyzstan, Almaty regions of Kazakhstan. Animals of this breed are exported to Mongolia, where in the mountain-steppe regions a new type of Mongol-Alatau cattle of meat and milk production direction is being created.

In the Alatau breed, the Intra-Breed brown type “Аород-Yrys” was created using American breeding pin with productivity of more than 5.0

thousand kg of milk per lactation, 7.0–11.0 thousand kg of milk in the pedigree core, respectively.

The Simmental cow breed was bred in Switzerland and is one of the oldest cattle breeds in the world.

Simmental cattle belong to the combined direction of productivity. There is an assumption that the Simmental breed originates from animals that were obtained by crossing a wild tour with peat cattle from pile constructions.

In the past, the breed was called Bernese. Simmental cattle was exported from Switzerland to different countries. Currently, among this breed there are cattle of two directions: meat and milk and meat. In our country, dairy and beef cattle of the Simmental breed are most widespread.

The main color of cattle is fawn-motley, fawn, red-motley and red with a white head. In purebred cattle, a nasal mirror, tongue, pharynx and eyelids are light pink in color.

Typically, cows are large, the height at the withers reaches 135–140 cm. They have a proportional build with a strong skeleton. Cattle have a large head, wide in the frontal part. The neck is medium length. The chest is wide and deep; in the bulls, it has a developed breast.

The back is wide. The back of the body is wide and long, with an occasionally raised sacrum. Livestock have a strong skeleton with well-developed muscles. The limbs are correctly set. The udder is round in shape with a large margin and delicate hair. Nipples are large, conical or cylindrical in shape.

The disadvantages of the physique are improper setting of the hind legs, poor development of the front lobes of the udder, sagging back and insufficient development of the chest in width.

The average milk yield of Simmental cows is 3000–3500 kg with a fat content of 3.7–3.9% and a protein content of 3.3–3.5%.

The live weight of cows is 550-650 kg, bulls are 900-1200 kg. Calves are born weighing 36-45 kg. At the age of one year, they weigh 250–300 kg, and at 18 months they reach a live weight of 360–400 kg.

The cattle of this breed combine milk and meat productivity well. With intensive growing and fattening, calves weigh 450–500 kg by 15–18 months of age. Slaughter yield in young animals is 55-60%.

Further breeding with Simmental cattle provides for two directions. The first is the improvement and improvement of milk productivity and the creation of animals suitable for intensive technology conditions, characterized by high milk yield, a desirable udder shape and high milk removal rate (2–2.5 kg / min), body type characteristic of dairy cattle. This

work is carried out by the method of domestic breeding, as well as by crossing with red-motley Holstein bulls. The second is the production of animals with developed meat qualities, with the aim of creating a meat type of Simmental cattle. For this, purebred breeding is also carried out using bulls of Simmental breed of imported selection (France, Germany).

There are about 6.1 million head of cattle in the republic. In all categories of farms, the stock of pedigree cattle amounted to 344 thousand 100 goals or 5.6% of their total number. In 2006, this indicator was equal to 3.0%. Not only the number of pedigree cattle is growing, but also its quality.

The red-motley dairy type of cattle "Ertis" (2009) was created in the Simmental breed by complex reproductive crosses with the Montbeliard, German motley, Ayrshire and red-motley Holstein breeds with 4.4 thousand kg of milk per year. Cows of the desired type (n = 2729) produce 4951 kg of milk each, in the selection core (n = 130) from 5888 to 8000 kg

Simental breed of cattle (from German Simmental - Zimmentalskaya valley), milk and meat direction. Bred in Switzerland by improving the local and imported in the 5th century. Scandinavian cattle. Due to its high productive qualities and good acclimatization, it has spread to many countries. By long-term absorptive crossbreeding of cows of local offspring from different countries with Simmental bulls exported from Switzerland, related breeds have been created that in some countries have a different purpose (in Germany and Austria - flexies, in France - Montbeliard, in Hungary - Hungarian motley, etc.) , and various directions - from dairy to meat.

Picture 2.2 - Cow of Simmental breed

Simmental breed was imported to Russia from the 2nd half of the 19th century. Bulls were used for crossbreeding with local cattle - gray Ukrainian, Polesye, Kalmyk, Kazakh, etc. In addition to Swiss, German, Hungarian, Austrian Simmental cattle were imported into the former USSR. Crossing with various local breeds resulted in the formation of several zonal types of the Simmental breed (Sychevsky, steppe, Ukrainian, Volga, Ural, Siberian, and Far Eastern).

The color of cattle is fawn, fawn-motley, less often red-motley, head and end of tail are white; the nasal “mirror” is pink, the horns and hooves are light waxy. Bulls weigh 800–1100 kg, cows - 550–600 kg. The average annual milk yield is 3,500–4,500 kg, the fat content of milk is 3.8–3.9%. Animals are well fed. Gobies by the age of 12 months weigh 400-420 kg, by the age of 18 months - 500-600 kg. Slaughter yield 58–62 kg.

Bred in the Russian Federation, Ukraine, Belarus, Kazakhstan. The Simmental breed was used to breed Bestuzhev, Red Tambov, Sychev rocks.

In the black-motley breed, the creation of the black-motley type of Sairam cattle with milk yield per herd of 4812 kg of milk per lactation was completed, according to the desired type (n = 1082) - 5005 kg and in the breeding core from 6 800 to 7 100 kg of milk per lactation .

Red steppe cattle breed.

The red steppe breed was obtained by crossing local gray Ukrainian cattle with imported red cattle from Western Europe.

The color of cows is red in color with different intensities of color, ranging from dark cherry to red. Some animals have white marks located mainly on the head, legs, stomach and udder. The nasal mirror is dark gray, the horns are light gray with dark tips, the hooves are black.

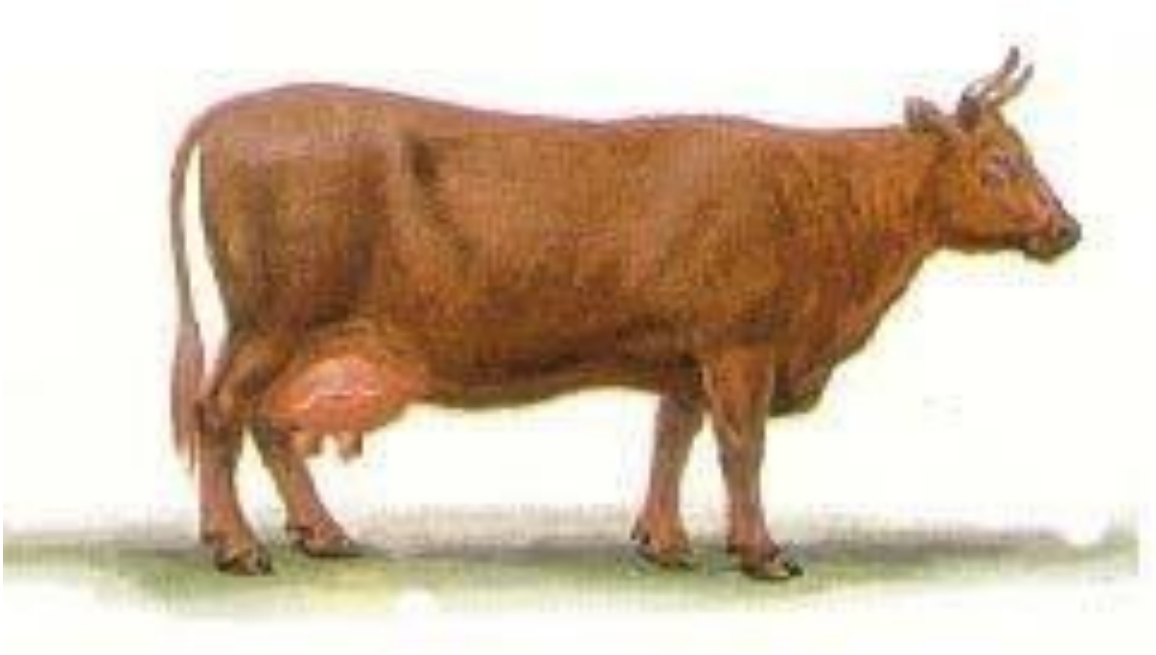
Cows of the red steppe breed are characterized by the following features of the exterior. They have medium height (height at the withers of cows 126–129 cm), the body is elongated and angular. The head is small in size, located on a thin and long neck with numerous folds. The sub-chest is usually poorly developed. The withers are slightly raised. The chest of animals is of medium width, deep, sometimes flat (non-circular).

The loin and back are moderately long and wide. The sacrum is well developed, it can be slightly raised. The abdomen is voluminous, but not saggy. In some cows, overgrowth and styloid (narrowness of the backside) are found in the ischial tubercles. The legs in animals are usually straight and strong. The backbone is mostly tender.

The udder is medium in size, glandular, often rounded. In cows of the red steppe breed, an udder is often found with unevenly developed lobes and an irregular structure. When cows are kept in poor conditions, cows have malformations of the butt, improper staging of the limbs, and narrow breasts are also encountered.

The milk productivity of red steppe cattle varies significantly depending on the climatic zone.

So in the steppe regions the average milk yield ranges from 3000 to 3500 kg of milk per year. Under good conditions of keeping and feeding, it rises to 4000–4500 kg of milk. From outstanding cows receive 10,000-12,000 kg of milk per lactation. The milk fat is low 3.6–3.7%. For some cows, good milk yield is combined with good fat content.



Picture 2.3 - Typical red steppe cow

The live weight of cows of the red steppe breed is 450–550 kg, bulls — 800–900 kg. The calf weight at birth is 28–30 kg.

The meat qualities of this breed are not well developed. The slaughter yield of well-fed cattle is usually 50%, although with intensive fattening of young animals this figure becomes somewhat higher.

The improvement of livestock of the red steppe breed is primarily aimed at increasing the fat content of milk and improving the physique and shape of the udder. For this, red steppe cows are crossed with bulls of the Angler breed.

The red motley breed acquired an improved body type as a result of crossing cows with bulls producing Angler and Red Danish breeds. The obtained improvements in physique, udder quality, and milk productivity did not meet modern requirements. As a result, when conducting breeding work to improve milk productivity, udder shape and quality, and improve the exterior, together with the purebred breeding method, crosses of red steppe breed cows and bulls of Golshinsky red-motley breed were used. The work yielded results: the milk yield of cows improved significantly, the quality of the udder increased, animals became more adapted to industrial technology. As a result of breeding, a new type of red steppe cattle “Siberian” was created; it was approved in 2003. The Siberian milk yield of red steppe cattle is 5700 kg, milk fat content is 3.75%, the weight of an adult cow is 550–600 kg

By thorough-breeding and crossbreeding with red bulls of the red-motley Holstein breed, the breed was improved according to the main breeding characteristics.

Beef cattle

Specialized beef cattle breeding, as an independent livestock industry, began to be created in Kazakhstan in the 30s of the previous century. By reproductive and absorption crossing of local (indigenous) Kazakh and Kalmyk cattle with Herefords, **a Kazakh white-headed breed** was created and tested in 1950. The animals of this first domestic breed combined excellent meat qualities and early maturity inherited from herefords, as well as adaptive and maternal properties characteristic of local livestock. This allowed the breed to be successfully bred in all regions of the republic with extensive natural pastures.

With the development of virgin and fallow lands in the 50-60s, the area of natural fodder land in the traditional zone of beef cattle breeding has significantly decreased. This led to the need to transfer the industry to intensive management methods, in which animals receive feed both from natural land and from sown pastures. Large industrial complexes for the production of beef and specialized farms for fattening were created. Before the transition to a market economy in the republic, there were 1 million 144 thousand head of cattle of this breed, including 440 thousand cows. Currently, the number of cattle of the Kazakh white-headed breed is in the range of 650–700 thousand. Animals are characterized by good reproductive, feeding and feeding qualities. Gobies and heifers at weaning from mothers at 7–8 months of age reach a live weight of 210–240 kg. When feeding on natural pastures, young growth, without top dressing with concentrates, gives 800–900 g of the average daily gain, and on fattening - 1200 g or more. The plasticity of the animal organism is also evidenced by the fact that the breed is widely used in other CIS countries. In Russia, using the gene pool of the Kazakh white-headed breed, a new type of beef cattle was created, and in Mongolia, the Selentin breed.

Intensive technology required the creation of new highly productive genotypes, an increase in the level of selection and breeding work, the direction of selection and requirements for beef cattle changed. If previously the early maturity of animals was given priority, now the foreground is the growth rate in combination with tall growth. Therefore, the activities of scientists and breeders were aimed at improving the breeding and productive qualities of beef cattle.

In 1997, four internal pedigree factory breeding types Shagatay, Ankata in the west, Kalbatau in the northeast and Alabota in the north of

the republic were tested in the breed. The new hornless cattle types are well adapted to the conditions of intensive technology with large group loose-breed livestock keeping and exceed the productivity of horned analogues by 5–8%. 12 factory lines were created in various regions of Kazakhstan, of which 6 are new. Young animals received from bulls of these lines by the age of 15 months reach a live weight of 425–457 kg with a slaughter yield of up to 60%.

Two-stage selection of bulls through their testing on their own productivity and offspring quality yielded positive results. Production bulls were identified that improved the main signs of selection in the offspring, their sons were raised and tested for productivity with growth rates of up to 1300 g on average per day with a feed consumption of 6.9–7.2 units. The results indicate the high genetic capabilities of domestic breeds in general and individual breeding herds. This is also evidenced by the performance of animal record holders: bulls with a live weight of 1200–1400 kg, cows 800–1030 kg. However, in most households, due to technological defects, the hereditary potential is realized at 50-60%.

Auliekol breed. It was tested in 1992 as a breed of beef cattle bred through complex reproductive crosses. The basis for the creation of the breed were three meat breeds - Kazakh white-headed, Charolais and Aberdeen-Angus. Animals of the new breed combine their adaptability to local climatic and feed conditions, the high quality of Kazakh white-headed meat, the Angus precocity, the large mass and the growth rate of Charolese breed.

Animals of the Auliekol breed are hornless, with a light yellow color, sometimes with a cream shade, are classified as large in size. The live weight of bulls is in the range of 900–1200 kg, adult cows 570–650 kg, young animals at weaning in 7–8 months, 220–250 kg, fattening calves give up to 960–1200 g of average daily weight gain with a carcass yield of 58–64% . The breed is widespread in Kostanay, North Kazakhstan, Almaty, Karaganda and Akmola regions.

In 2005, two factory lines were created in the breed. Animals have a high growth rate: the average daily weight gain of gobies from 8 to 15 months. - 1026 g, or above their unrelated peers by 9.4%, and the breed standard - by 36.8%; feed consumption per growth unit is 4.2% less; by the age of 15 months they reach an average weight of 429.7 kg, exceeding the compared analogues by 18.5 kg (4.5%) and the breed standard - by 54.7 kg (14.6%).

In addition to the above, in Kazakhstan there are small herds of Kalmyk breed in the semi-desert region of the South Kazakhstan region.

Santa gertrude of local selection (zonal type Zhetisu) - in the Balkhash and Galloveyskaya mountains in the Almaty region, Hereford - in the West Kazakhstan, Akmola and Almaty regions. The tasks of breeding work with these breeds are to improve the productive qualities of the breeds in purebred breeding and to expand the beef herd by crossing local populations with cattle. To expand the breeding base of beef cattle and increase its productivity, on the initiative of the National Management Holding KazAgro JSC, pedigree heifers of Angus and Hereford breeds are imported from the USA.

The gene pool of imported breeds is also used to improve domestic meat breeds and to obtain new genotypes by introducing crossbreeding of related groups of Kazakh white-headed cows with herefords, and Auliekol cows with sharole bulls.

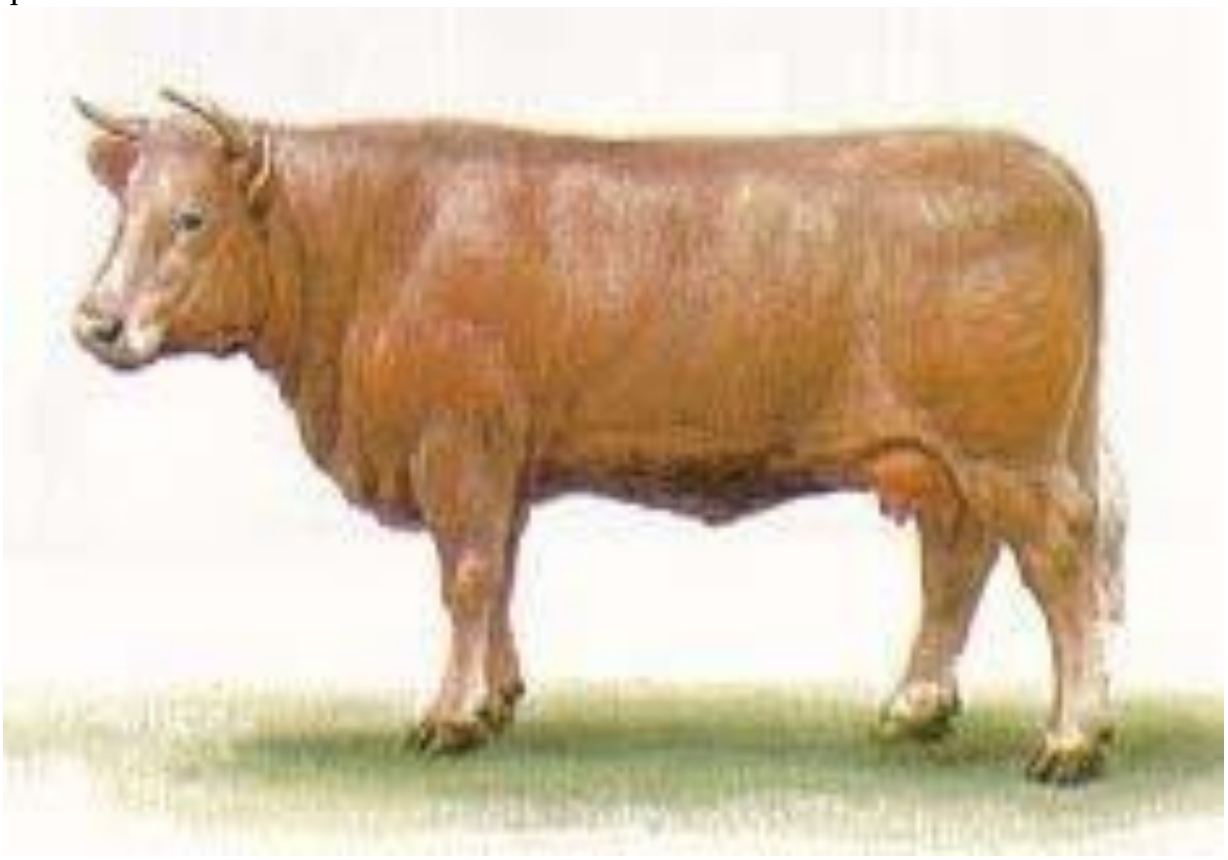
Breeds of cattle of the world gene pool.

Modern breeds of this direction are the result of about 300 years of breeding work aimed at creating animals that are able to turn feed into high-quality beef and veal with maximum efficiency. The dairy products of meat cows are maintained at a level that ensures only the feeding of young animals, since the physiological processes associated with the formation of milk and meat are completely different.

Traditionally, the most common and popular was beef cattle of British breeds created in the 18-19 centuries. It was these animals that became the basis of meat production in America and Australia, especially when large quantities of canned, salted, chilled and frozen beef were exported from there (often back to the UK). British breeds also played a prominent role in some regions of Asia, in East and South Africa, continental Europe, in the territory of the former USSR and in Japan.

CHAROLIS, a breed of cattle, meat. Bred in the 18th century. in France, in the Charolais area, improved livestock; in the 19th century crossed Charolais with shorthorns. The animals are large, the body is long and deep, the head is short and wide, the horns are long, rounded, the back is straight, muscular, the sacrum is wide, well muscled, and the hams are well made. The hairline is thin, long, often with tortuosity. The suit is creamy white, the nasal “mirror” is pink, the horns and hooves are waxy. Large breed is common for the breed, in connection with which heavy calving is observed in some animals. Bulls weigh 1000–1200 (sometimes up to 1500)

kg, cows - 700–800 (sometimes up to 1150) kg, gobies by 12 months. up to 525 kg, by 18 months - 600-650 kg. Slaughter yield 60–70%. Calves are raised on a chick. Unpretentious animals, steadily transmit valuable qualities to offspring. Crossbreeds from industrial crossings of Charolais bulls with cows of other breeds have high growth energy and well-defined meat qualities. Breed breed in many countries. In the United States, a beef cattle breed - chambray was bred by crossing a Charolais with Braman cattle, and in Brazil a crossbreeding of a Charolais with zebu - a Kansh breed. In the CIS, the breed is bred clean and used to improve the meat qualities of other breeds.



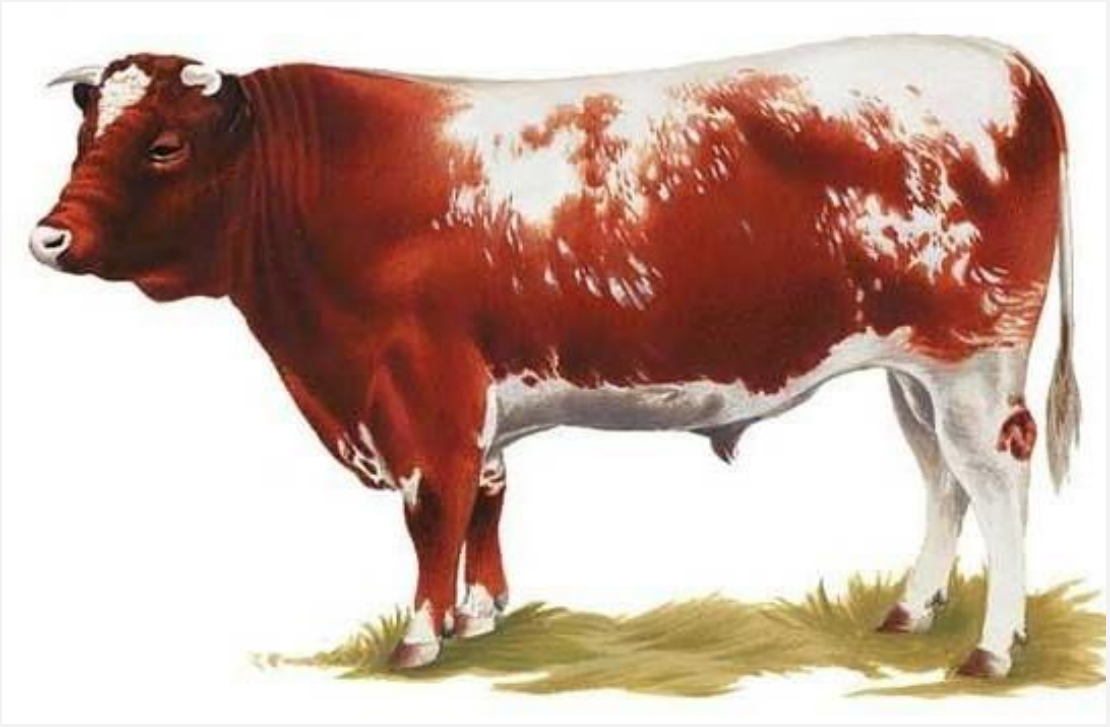
Charolais breed cow

Shorthorn. This breed was created in the north-east of England, in the counties of Durham and Yorkshire. One of its former names tiswater - comes from the river Tees flowing in these parts. Shorthorns formed no later than the 16th century, probably based on local cattle, for example black Celtic, as a result of its crossbreeding with Dutch dairy animals. A shorthorn breeding book was established in 1822 and is the first for cattle.

At first, English breeders did not strive for narrow specialization, but then, especially in Scotland, emphasis was placed on meat productivity,

and meat shorthorns appeared, and a line in which there was an improvement in milk qualities gave shorthorns meat and dairy. The breed first came to America from England in 1783. From 1817 to 1860, a large number of these animals were imported, and shorthorns became the largest cattle in the eastern United States.

In 1880-1900, Scottish meat shorthorns became especially popular. In the 19th century this breed also spread in Australia and continental Europe, especially in France, and in the 20th century. meat and dairy shorthorns appeared in South America, South Africa, New Zealand and Russia. They were used not only to improve other breeds, but also to create new ones, for example, Belgian blue, bonsmars in South Africa, drautmasters and Murray sulfur in Australia, Menjou in France and Santa Gertrude in the USA. In modern shorthorns, the suit is red, white, red-white, or most often red-roan (a combination of red and white hair).



SHORTGORSK BULL

Hereford. The breed got this name at the place of its origin - the English county of Herefordshire on the border with Wales. It began with one of the types of red cattle bred in the 18th century. in some southern and western parts of England. Work on improvement was initially carried out in the direction of increasing size and muscle strength in order to use animals as draft force and a source of meat; special attention has never been paid to their milk production. An English pedigree book of this breed was

established in 1846. Like the Shorthorns, Herefords have gained worldwide recognition, and their characteristic white head is present in all descendants obtained from crossbreeding with other cattle.

The breed has adapted very well to the much hotter climate than in England, and now it is probably the largest and most abundant cattle on the planet. Another 20-30 other breeds experienced it, especially in North America and Russia. Herefords have a red torso, a white head (especially the front part), a neck, a lower part, legs and a tail brush. The breed is famous primarily for its large size, strength and adaptability to pastures of various types.

Used for industrial crossbreeding with dairy and dairy-meat breeds. By absorbing Kazakh and Kalmyk cattle up to generation III – IV by Herefords, the Kazakh white-headed cattle breed, which is actually a zonal type of Hereford breed, has been bred because Hereford bulls are constantly used for its breeding.

GEREFORD BULL

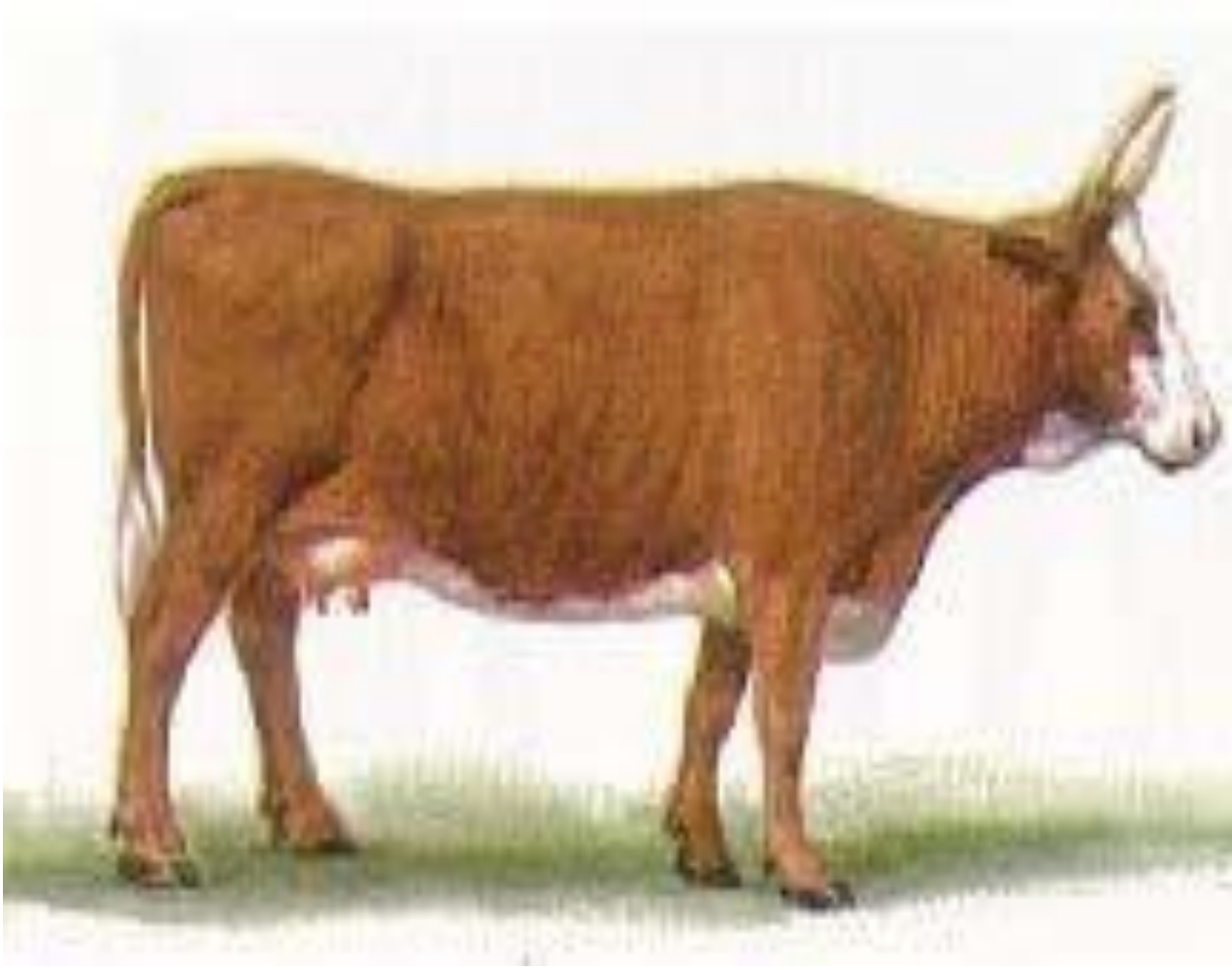
Aberdeen Angus. Hornless cattle were created in the northeast of Scotland - in the regions of Brechin (county of Forfarshire) and Bakan (county of Aberdeen) by crossing two lines similar to each other, called Angus-Doddis and Bakan-hamlis. Breeding began before 1800, but the breed was finally formed from 1800 to about 1875. A Scottish pedigree book was opened in 1879. Apart from the red line created in the USA, the color of typical Aberdeen Anguses is solid black (allowed white

underbelly). The breed is famous for its rapid maturation, good fatness and high quality carcasses. These animals were exported in large quantities to continental Europe, North and South America, Australia, New Zealand, South Africa and Japan. They were used to create many new breeds, in particular the Brangus, Jamaican black, Murray gray, vocals, Afrikus, barzones, etc.

ABERDIN-ANGUSIAN BULL

KALMYK BREED of cattle, meat industry. Bred by continuous improvement of cattle brought by nomadic Kalmyk tribes about 350 years ago from western Mongolia. Animals of strong constitution, harmonious constitution. Red suit of different shades (sometimes with a white stripe on the back and white marks on the body), less often red. Bulls weigh 750-900 kg, cows 420-500 kg. Cattle are unpretentious to feed and living conditions, make good use of winter pastures, quickly profit in spring and autumn, and steadily maintain their fatness during summer droughts and long wintering. By the age of 1.5, breeding bulls reach a mass of 400-450 kg, castrati bulls - 380-420 kg. With intensive stall feeding, castrati bulls aged 18-19 months. reach a live weight of 530 kg. Slaughter yield 57-60%. The meat has a high taste. The average annual milk yield is 650-1000 kg, the fat content of milk is 4.2-4.4%. The Kalmyk breed is used to improve the meat qualities of dairy and milk-meat breeds, as well as for industrial crossbreeding. It is bred in Kalmykia, Rostov, Astrakhan, Aktobe,

Dzhambul regions, Stavropol Territory and other regions of the Russian Federation.



Kalmyk breed cow

Brahman. American Braman, Jamaican Braman and Indo-Brazilian breeds came from Indian zebu, in particular the breeds of gir, ongul (nellur), cancredt and Mysore. These animals were first introduced to America in the 19th century, and by the 80s of the 20th century. About a million American Brahmans have already been registered, which, in turn, have been introduced into many subtropical and tropical regions, including Australia and the Philippines. American Brahmans, crossed with traditional British humpback cattle, gave rise to many highly productive meat and dairy breeds that are resistant to tropical climates and typical insects. The most important and most formed of them are Santa Gertrude in the United States and drautmaster in Australia, but others are also widely known, by the name of which it is easy to guess their origin: brangus (Brahman + Aberdeen Angus), brachhorn (+ shorthorn), braford (+ Hereford) and

Charbray (+ Charolais). In Australia, an experimental crossbreeding of the Red Sindhi breeds was carried out and sugar from the Indian subcontinent with the African Sanga breed from South Africa, as well as with the American Brahman and Santa Gertrude from the USA.

This trend towards the creation of new heat-resistant breeds based on Asian humpback zebu and European humpback cattle is one of the most promising directions in the world meat and dairy cattle breeding. Cattle Santa Gertrude was created by crossing Brahmans with Shorthorns. Breeding work, which began around 1910, continued especially intensively after 1920, and in 1940 this breed was officially registered by the US government as having about 3/8 Braman and 5/8 Shorthorn blood (this proportion leads to the practical disappearance typical for zebu hump). Good size and quality of the carcass are combined in it with resistance to heat and harmful insects. Cattle breed Santa Gertrude large, strong, red suit.

BRAMANIAN BULL

Dairy breeds.

Cattle's milk has been used by humans for food for at least 6,000 years, and during all this time, one of the main, if not the main, source of it was cattle.

Holstein-Friesian breed.

This cattle comes from the Netherlands, mainly from the provinces of North Holland and Friesland, where mottled black and white cattle

predominate. The names of the breed (Holstein, Frisian, Holstein-Friesian), as well as its appearance and use, depend on the country of breeding. In the USA, it was imported mainly between 1850 and 1886. For many years, the European form, which was commonly called the Frisian form here, was considered as dairy meat, giving good beef, while in Europe it became the main dairy breed.

In North America, a new form emerged from the same animals, especially prevalent in Canada, where it began to specialize mainly in milk production. Recently, these larger, lean, highly productive animals, called Holstein, in many places displace the traditional Frisian form of meat and dairy direction. The name "Holstein" itself arose in North America, possibly because in the 19th century. Dutch cattle often got there from the ports of Schleswig-Holstein in northwestern Germany.

Holstein-Friesian animals are easy to recognize by suit. They are motley black and white (sometimes red-white Frisian individuals are found), and they are almost white with several small black spots, and almost black, but with a white lower body, lower parts of the legs and tail tassel. Holstein cattle is the largest among the breeds of the dairy direction, consuming a very large amount of roughage. His milk yield is higher, but the fat content of milk is lower than that of other leading dairy breeds. Milk is usually white with small fat globules.

Thanks to its high qualities, Holstein cattle has gained worldwide fame and is widely used in many countries to improve local dairy breeds, as well as for purebred breeding.

Holstein-Friesian breed.

Jersey breed. Animals bred on the island of Jersey in the English Channel off the coast of France. Perhaps their ancestors got there from Brittany and Normandy. Already in 1789, local authorities issued a law prohibiting the import of pedigree cattle, and after that the breed was maintained in purebred condition. Jersey cows are introduced into many countries and seem to feel good even in the subtropics and tropics. In their characteristic color - from light red to dark brown, although red, gray and black specimens are also found.

The color can be solid or with white marks. In fawn animals, the head, upper torso, and front of the legs are usually darker, and there is a "flour" ring around the lips. The tail brush is black, white or two-tone. Animals are relatively small, fine-boned with a characteristic depressed forehead. They do not trample the pasture and traditionally graze in their homeland tied to a peg. Jersey cows are "nervous", but with proper care they become very obedient. They give milk less than other leading breeds of the dairy direction, but its content of fat and protein is the highest. The

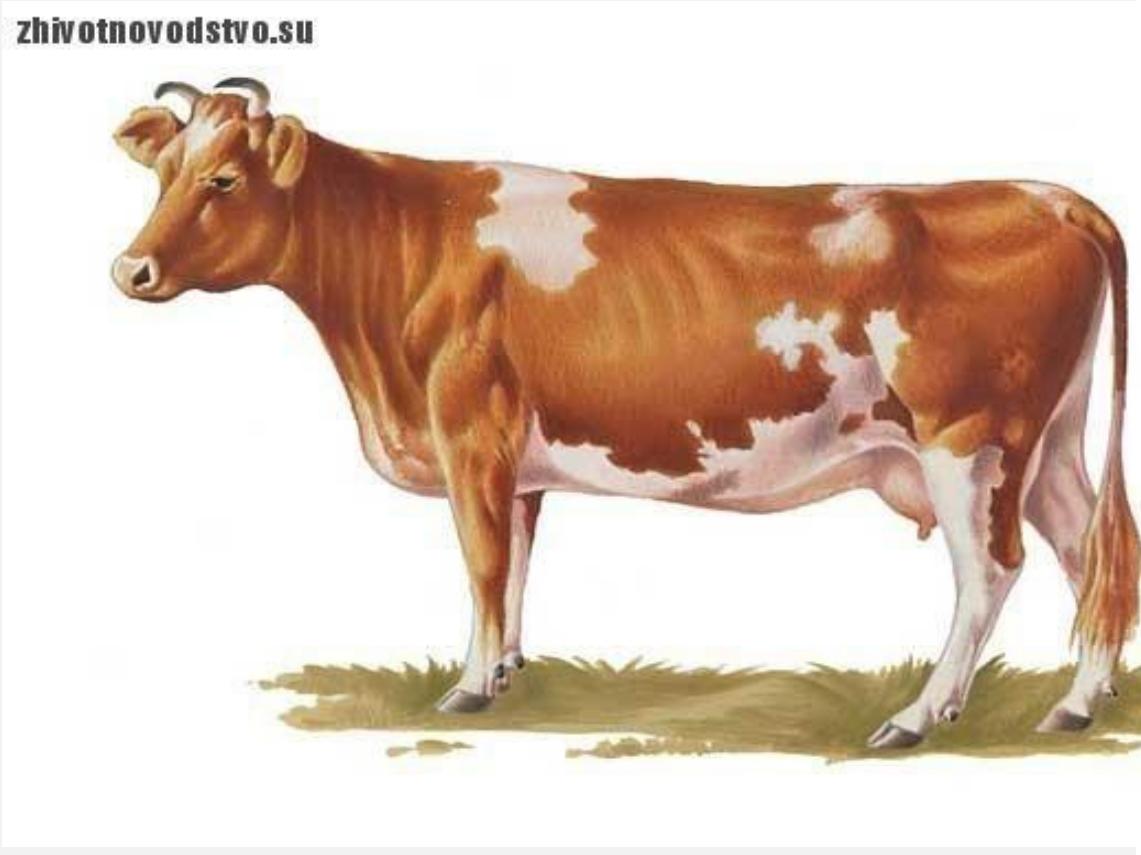
milk is yellowish with large fat globules, so the cream floats up very quickly and forms a clear border with the low-fat fraction.

In all countries of the world, the Jersey breed is used to cross milk milk cattle with cattle, which gives very good results.

Jersey breed

Guernsey breed. This cattle comes mainly from the Guernsey and Alderney islands in the English Channel. Like the Jersey, it used to be often called Alderney, but officially the breed is registered as Hernsian. Most animals are fawn with small white patches, but there are also reddish individuals. Guernsey cows produce slightly more milk than Jersey cows, but its fat content is lower. It is yellower in color than other breeds. Fat globules are large, cream quickly emerges, clearly separating from the fat-free fraction.

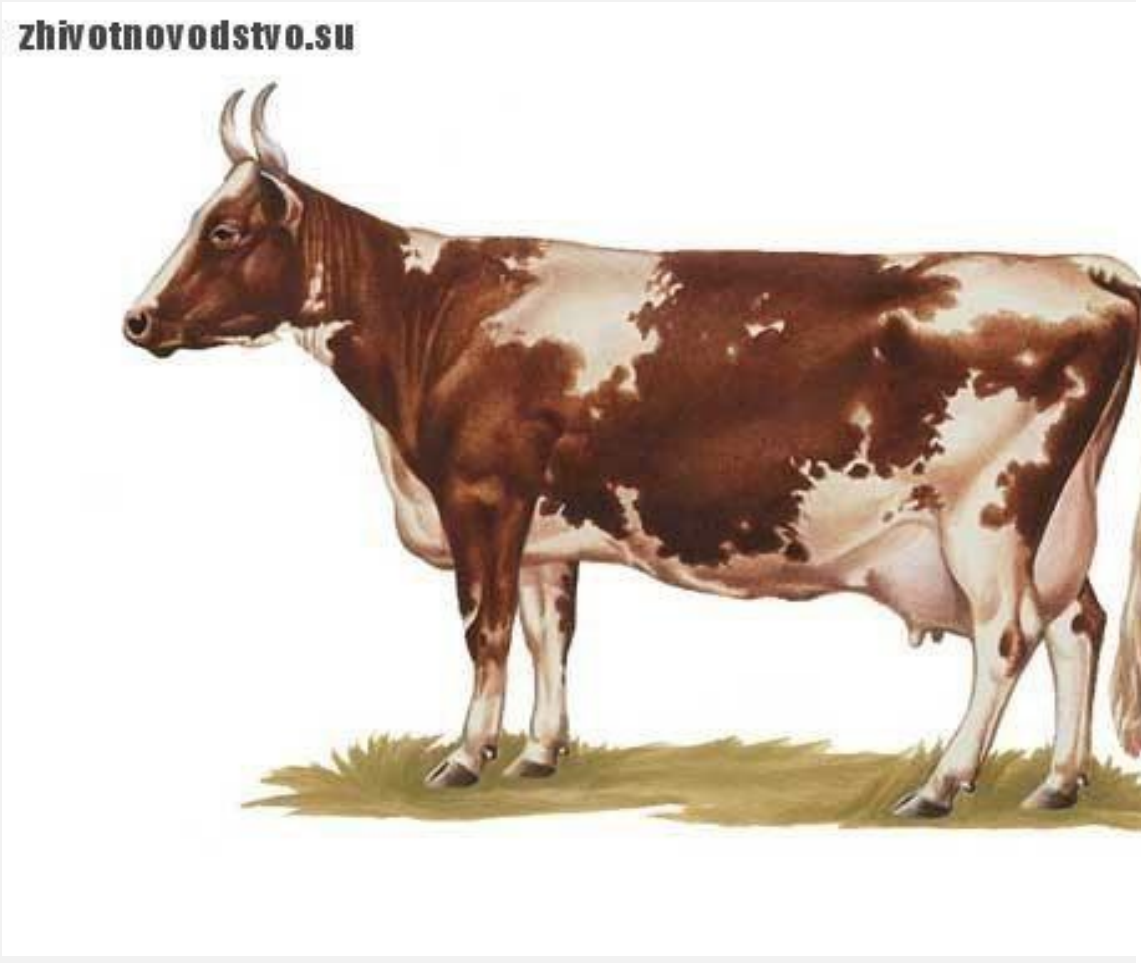
Guernsey cattle are more resilient than Jersey. But they, like the Jerseys, should be used in the experience of the United States to increase the milk production of our domestic dairy cattle.



Guernsey breed

Ayrshire breed. This cattle comes from Scotland. The breed was created on the basis of English and Scottish animals in the 18th century. and for a long time remained in Scotland the main producer of milk. Like other British cattle, it has been introduced to many countries of the world, including Canada, where it came from England in the 19th century, and in the United States - mainly in the 20th century. Ayrshire cows are characterized by lyre-like horns and a mottled red and white color, and the red color varies from light brown to very dark. In the first quarter of our century, Americans preferred almost white animals of this breed, and in the second quarter, demand for individuals with a greater share of red increased. Ayrshire cows are smaller than Holstein-Frisian, but larger than Herzey. They are shy and often nervous. In milk yield and fat content, they occupy a middle position between Holstein-Frisian and Herzey cows. White milk with relatively small fat globules.

In some regions of Russia, Ayrshire bulls are cross-bred with cows of Simmental and red steppe breeds to improve milk production and milk production. Ayrshire cows have a difficult disposition. They are aggressive and shy. Animals of this breed are well adapted to harsh conditions and a humid climate, but they do not tolerate a hot climate.



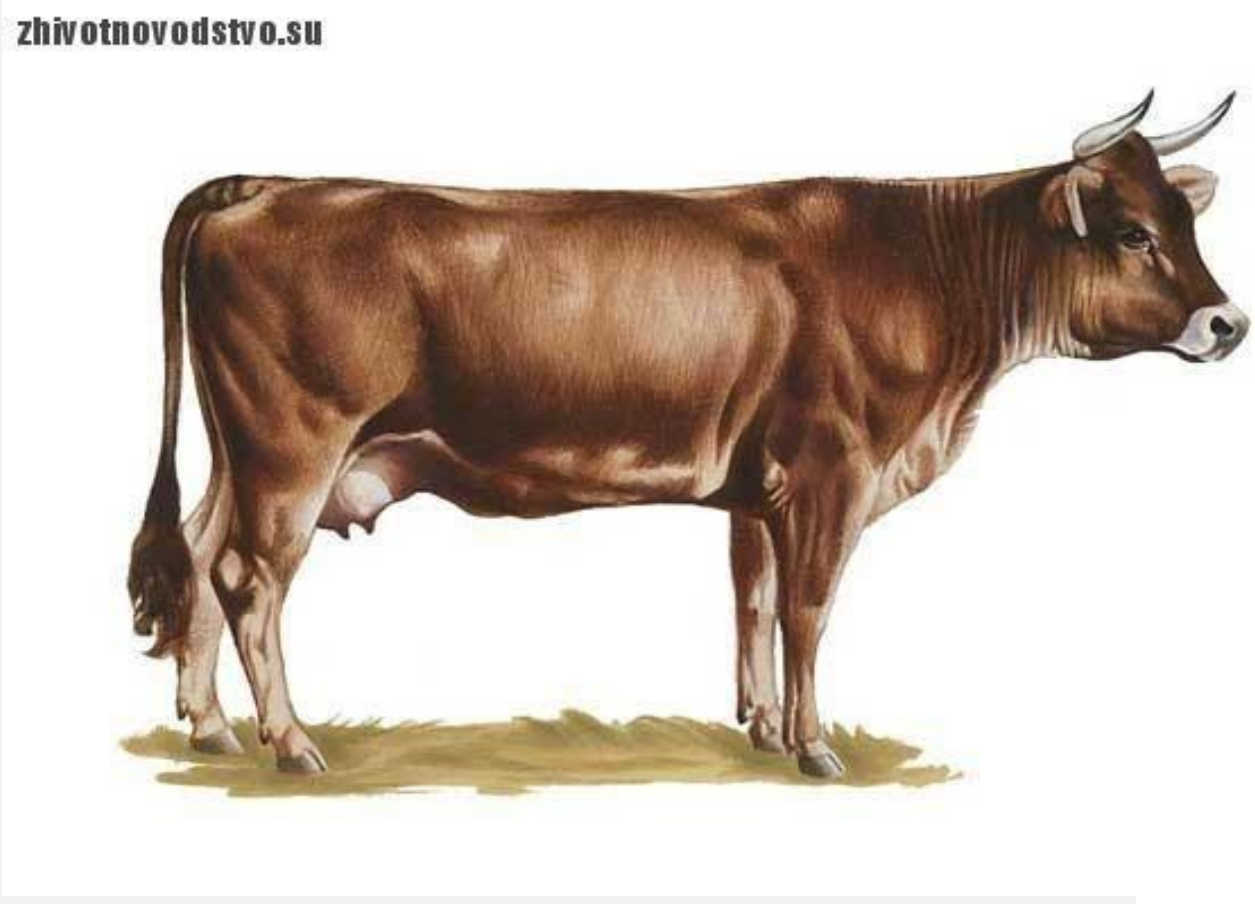
Ayrshire breed

Brown Schwyz breed. This cattle, also called simply brown or simply Schwyz, comes from Switzerland, mainly from the canton of Schwyz. The breed is very ancient, created at the same time as pack and meat and dairy. At the beginning of our century, its milk production was improved, and now it is one of the five leading breeds of the milk industry in North America (along with Holstein, Jersey, Hernsey and Ayrshire). As the name indicates, the typical color is brown, of various shades, in most animals it is solid, in some with white marks. In darker individuals, the hair around the lips, on the ears and along the back is usually slightly lighter than in other places. In terms of size, these cows are in second place after the Holstein-Frisian. They are very calm, sometimes even seem lethargic. In terms of milk yield, fat content, the color of milk and the size of fat globules, the brown Schwyz breed is close to Ayrshire.

As a result of the use of Schwyz bulls by crossbreeding with cows of local breeds, several new breeds were created: Kostroma in Russia (1944),

Lebedinsky (1950) in Ukraine, Alatau (1950 g) in Kazakhstan and Kyrgyzstan, etc.

(The Shvitsky breed participated in the breeding and improvement of a large number of breeds (Kostroma, Alatau, Lebedinsky, Caucasian brown and brown Carpathian)).



Brown Schwyz breed

Conservation of the gene pool of rare and endangered cattle breeds

The question of the need to preserve the gene pool of farm animals was first raised in our country in the 1920s. Even then, the most far-sighted scientists and practitioners appreciated the prospects of its use for creating factory breeds and types of animals, as well as for breeding the future. This was facilitated by the fact that many local offspring possessed a number of unique properties and could manifest them under conditions of feeding and keeping in which cultivated western breeds simply could not survive. The concept of the gene pool was proposed by A.S. Serebrovsky (1928) to denote natural wealth, like reserves of gold, oil, coal, etc. The gene pool of the species of agricultural animals is determined by the variety of available breeds, offspring and individual populations. All of them are characterized

by their inherent set of hereditary inclinations, the structure of the chromosomes themselves.

Of particular value in the gene pool of the species are genetic complexes inherent in local, native breeds and offspring, since they are a source of replenishment of the genetic variation necessary for breeding purposes. Meanwhile, the specifics of the development of domestic animal husbandry was characterized not only by the rational use of available genetic resources, but also by leaching them from the breeding process. Starting from the 30s, in a rather short period of time, a large number of local and small populations disappeared. Moreover, the erosion of the gene pool was not spared by such vast massifs of animals as Siberian dairy cattle, Kyrgyz meat, Pechora and Karelian hornless, as well as some others. The war of 1941-1945 inflicted irreparable damage to the gene pool of various types of farm animals. In the post-war period, a large number of cattle of European breeds entered the territory of the former Union, crowding out local animals. Apart from objective reasons, the purely administrative approach to the development of agriculture prevented the solution of issues of preserving the domestic gene pool. Thus, the widespread use of Jersey breed producers in livestock breeding, without giving tangible results with respect to milk fat, significantly worsened its viability and accelerated the erosion of the domestic gene pool. After some stabilization, the depletion of the gene pool continued as a result of the large-scale transfer of most of the animals to industrial production technology. As a result, the average period of use of cows on farms decreased from 4.3-4.8 to 3.5-3.8 lactation.

At the same time, a transition to a more progressive method of artificial insemination of animals was carried out. However, due to the lack of necessary genetic control and the reduction in the number of producers used, this measure also sharply reduced genetic diversity in herds and breeds. The situation was even more complicated when the principles of large-scale selection began to be implemented in animal husbandry. Progressive in nature, they were not adequately provided with the appropriate feed resources or the necessary genetic control, capable of dramatically reducing the number of bulls to ensure the preservation of the optimal level of genetic variation. The loss of part of the genetic material is not only the loss of many valuable qualities of animals of domestic breeds. Already now, even in widespread breeds, a decrease in vitality, an increase in susceptibility to diseases, and a deterioration in reproduction rates are also closely related to the causes of the genetic plan. It has long been known that a sufficient genetic diversity of animals in the absence of

optimal environmental conditions is a guarantee of the survival of breeds and herds, as well as their further progress. In addition, genetic diversity both within the breed and within the species is the material that breeders work with, so any reduction reduces the ability to adequately respond to changes in economic, environmental and social situations. Of course, the process of reducing the number of breeds used is quite natural and is mainly due to the lack of competitiveness of some of them in terms of productive qualities and suitability for industrial production technology. The reduction of genetic variation in all breeds of farm animals is quite objective, since they all experience the effects of both artificial and natural selection. However, this reduction cannot be unlimited. It should be borne in mind that the rate of loss of genetic information is usually higher than the rate of replacement of the corresponding nucleotides, which means that the loss of information cannot be compensated for by mutations. The result is a gradual loss of certain functions, degradation and extinction. It should be noted that the narrowing of genetic diversity leads to an increase in homozygosity, which is equivalent to an increase in the degree of inbredness, with all the ensuing.

However, the question arises - what exactly needs to be preserved from these breeds for breeding the future? It is unlikely that in a few decades the genes that control the main type of productivity will be of interest. She does not meet their requirements of today. Most likely, there will be a need to include in the breeding process the genetic material that determines the resistance of these animals to diseases, their longevity, high fecundity, and other signs characterizing viability. The existing uncertainty in predicting the needs of future breeding makes it necessary to preserve the maximum possible spectrum of genetic diversity from rare and endangered breeds. It should be emphasized that it is genetic, not phenotypic, which largely depends on environmental factors.

It should be noted that genetic diversity is not understood to mean the presence in animals or groups of animals of a different number of genes or a different set of genes. Their number in all animals of the same species is the same. By genetic diversity is meant the presence in a population of different states (alleles) of the same polymorphic genes. World experience shows that the degree of diversity of polymorphic genes is by far the most objective and informative criterion for assessing the level of genetic variation in populations. In addition to the above, data on blood groups will allow a more reasonable approach to determining the required number of gene pool farms and the number of animal reproducing genes. These

indicators can be repeatedly reduced, because genetic control will prevent the acquisition of gene pool herds by genetically similar animals.

In addition to constant genetic monitoring, breeding work should be carried out in gene pool farms, however, the purpose of this work will be significantly different from the traditional one. Here, the main breeding trait should not be milk or other productivity, but an allelic version of the gene. If monitoring shows that certain blood types are present in the herd at a critical concentration, measures must be taken to replicate them. It is also inappropriate to have an excessive concentration of any allelic genes in the herd. The intensive use in recent years of producers of highly productive imported breeds has caused an alarming situation in such relatively small breeds of cattle as Yaroslavl, Kostroma, Bestuzhev, Sychev, Tagil, Red Gorbatov, Kurgan. A similar situation takes place in the Pechora offspring of Kholmogorsk cattle. Here, in addition to constant genetic monitoring, the organization of special gene pool farms and farms is necessary, the work in which should be carried out according to the type described above. The question arises more and more sharply regarding the conservation of the gene pool of still widespread livestock breeds. Numerous studies have found that in recent years, due to the increasing negative impact of environmental factors, the use of the gene pool of imported breeds, and a number of other reasons, the breadth of genetic variation in all these breeds has sharply decreased. So, in the Simmental breed over the past 15-20 years, the number of allelic variants of the B-locus of blood groups has decreased by 15-20%, in the black-motley breed - by 30-35%, in the Kholmogorsk breed - by 40-50%, in the Ayrshire breed - 50-60%.

The fact that the number of animals of the black-motley and Ayrshire breeds has increased over the past 10 years does not in any way compensate for the narrowing of their gene pools. This clearly confirms that the number of livestock of a particular breed cannot serve as a reliable criterion for assessing the state of their gene pools. The level of diversity of polymorphic genes detected by immunogenetic studies shows a much more objective picture.

The contingent situation has developed among the contingent of producers of many livestock breeds. By the breadth of genetic variation, this category of animals is almost 2 times poorer than the brood stock and carries in the herds those allelic variants of genes that are already in excessive quantities there. The degree of genetic similarity between producers and breeding stock in the main livestock breeds is currently 0.950-0.990, which excludes the possibility of an improving effect of producers on herds and breeds. Calculations show that in the prevailing conditions of feeding and keeping

animals in most farms, the producers' improving influence can only be if these differences amount to about 0.600-0.700. Otherwise, the gene flow of producers will be balanced by a negative vector of natural selection.

The lack of genetic diversity in livestock breeds causes not only a high degree of similarity between producers and brood stocks, as a result of which the efficiency of use of producers decreases sharply. It substantially complicates the course of the entire breeding process. At a low level of genetic variability, selection selection is not able to influence the genetic structure of herds, and it is mainly genetic, but modification variability, which is not inherited, that falls into the field of its activity.

All this necessitates the organization of continuous genetic monitoring in the main breeds of livestock. Such control will make it possible, depending on the current situation, to select producers for herds that would enhance the genetic variation and optimize the structure of their gene pools. The existing experience shows that the acquisition of a contingent of producers with rare blood groups in combination with heterogeneous selection by genetic markers allows a relatively rapid increase in the breadth of genetic variation in the breeding stock, increase the efficiency of its fertilization, ensure more intensive growth and development of young animals, and improve productive and adaptive qualities of animals. Countries with developed livestock breeding have long understood the advisability of preserving the gene pool of local small breeds of animals. There they are a kind of "golden fund" for genetic engineering and other promising areas in breeding. In our country, where the conditions of feeding and keeping livestock will lag behind the optimal for a long time, the unique adaptive qualities of local breeds can play the role of a kind of bridge between the genetic information of highly productive imported breeds demanding on environmental conditions and the conditions that we are able to provide in the coming years .

Cattle breeding is one of the leading branches of livestock production, which is explained by the widespread distribution of cattle in various natural and economic zones and a high proportion of milk and beef in the total mass of livestock products.

In recent years, significant successes have been achieved in developing scientific foundations and practical methods for improving production technology in animal husbandry, realizing the genetic potential of animal productivity, improving their technological qualities, and obtaining high-quality products.

The further development of cattle breeding largely depends on specialists working directly both in agricultural enterprises and in

governing bodies at various levels, consulting services and other organizations. Their ability to search for and master new forms of management, advanced production technologies based on modern achievements of science and practice, their creative activity, research and activation of all production reserves are essential in increasing the quantity and quality of products with minimum production costs.

Food, economic and social conditions confirm that there is an urgent need in Kazakhstan to organize and separate specialized meat cattle breeding into an independent industry, which will develop in parallel with dairy cattle breeding.

Each region should have its own specific program for the development of beef cattle breeding and feeding technology, taking into account the specific features of a particular zone. The advantage of this industry over others is the most low-cost technology: it takes several times less grain, labor, equipment and energy to produce products than in other industries.

Important for the successful development of beef cattle breeding is the use of animals of highly productive breeds, their systematic improvement with a view to suitability for maintenance in an industrial technology based on selection by growth rate, which allows to increase the economic efficiency and profitability of this industry.

Kazakhstan has all the necessary conditions for the successful and rapid development of beef cattle breeding. However, financial support from the state is needed, in the form of a well-designed subsidy system, without which it is impossible to solve the problem of beef cattle breeding in the country.

Chapter 3 Breeds and genetic potential of horses in Kazakhstan

GENOFUND (from the word gene and French fond - base), the totality of genes that are present in the individuals that make up this population. Emphasizing the need to preserve all breeds and types of horses currently bred, one cannot help but talk about preserving their gene pool. Currently, methods are being developed to conserve the genetic resources of these biological species of animals that are of practical and breeding importance or are in danger of extinction. HORSE (Equus caballus) according to the zoological classification refers to the family of equine order of equids, to the genus of horses. Her closest relatives are wild horses, donkeys and zebras.

The biological characteristics of horses differ from other types of farm animals in the specialized structure of the limbs, which are unusually well adapted for fast movement on hard ground. There are about 212 bones

in the horse’s skeleton (various sources give figures from 205 to 252). A structural feature is the absence of a clavicle, which gives greater mobility to the scapula, providing greater amplitude in the movement of the forelimbs.

Like all ungulates, the domestic horse is a herbivorous species that has long been leading a mobile lifestyle. That's why they formed a relatively small digestive apparatus: a small single-chamber stomach and a voluminous large intestine. Perfectly developed incisors and especially molars, large salivary glands, strong chewing muscles - such a device of the dental system helps the horse grind and prepare hard grain feeds well for assimilation. Due to the small size of the stomach, feeding should be done often, in small portions. These animals have a well-developed heart and lungs. The horse’s heart has a large volume and usually weighs 4-5 kg. And in the horses with the best performance, it can reach 8 kg. At rest, the heart rate is 36-44 beats / min. In a jump, the pulse rises to 120-130 beats per minute, and the volume of blood passing through the heart reaches 150 l or more. Horses have a light capacity of up to 50 liters. The breathing at rest is uniform, 8-16 times per minute, and with hard work they can increase the respiratory rate by 5-7 times. Normal horse body temperature is 37.5-38.5 degrees.

The sense of smell in horses is very developed, by the smell of a horse they recognize their harness, saddle, stall; mother is a foal and vice versa. The stallion by smell determines the state of the mares in the herd, the boundaries of their or other possessions and marks them. At a distance of 1.2 - 1.5 m, horses distinguish edible and inedible herbs, they will never take spoiled feed or impurity to it. The horse's eyes are much larger than those of other larger mammals and allows the horse to see in the dark. The horse’s angle of view is almost 360 degrees. Therefore, she can see everything that surrounds her, both in front and behind. The “blind” zone is very small - just behind the back of the head, above the forehead and under the chin. Another “blind” point is about 2 meters behind the horse’s tail. Horses are “nearsighted”, they can see well near (they can catch facial expressions and the slightest gestures), but poorly - at a distance further than 500 m. The hearing of horses is much more perfect than in humans. Horses hear high-pitched sounds. One of the most important sensations of a horse is touch. Both in winter and summer, the horse has an enhanced metabolism for warming, it sweats with all its skin. Therefore, a hot horse in cold weather must be covered with blanket. Horses touch with sensitive bristle-like hairs located near the eyes, nostrils, on the lips and chin, in the ears. The ability to touch is embedded in the soles of horses' hooves.

Therefore, non-horses should be hooves cleared before riding. During hard work, the horse releases up to 85-100 g of salts with sweat per day. To compensate for these losses, horses are added to the feed 25-40 g of salt per day or put in the feeder salt-lick. Horses have a highly organized nervous system. On external stimuli, conditioned reflexes are easily developed, which persist for many years. Horses have a good memory, they can remember the road that they walked several years ago. A horse is a late-ripening animal, the mare's organism reaches full development by 3–3.5 years, and stallions physiologically mature at 3–5 years. Pregnancy in mares lasts 11 months and, as a rule, a mare brings one foal. At birth, its weight is 10 - 12% of the live weight of the mother. Lactation of the mare lasts 8-10 months. With proper feeding, heavy mare breeds give up to 15-20 kg of milk per day. Reproductive ability lasts almost until the end of life. This also applies to performance.

Horses have a fairly long life expectancy - an average of 20 years, but under good conditions they can live up to 25 - 28 years. The maximum period of economic use of horses is 15-20 years. The age of the horse can be determined not only by the teeth, but also by the skin: pull the horse's skin on the cheeks or shoulders: if it quickly stretches, the horse is young, and not quickly - old. The horse for Kazakhs has always been not only a measure of prestige and wealth, but also an indispensable traditional source of nutrition. Of all the livestock species, horses were preferred. Back in 1895, A. I. Dobromyslov, who studied the livestock farming of the Kazakhs, wrote about the importance of horse meat in the nutrition of nomads: "Horse meat is preferred by the Kyrgyz to any other: the honored guest will always treat the horse with horsemeat, for lack of it mutton and even goat meat, but large horned meat cattle will offer the guest only when there is nothing else. " In its nutritional and taste qualities horse meat is not only inferior to many species, but also surpasses most of them. Konin easily digestible, has dietary properties, high iodine content. Its fat is rich in unsaturated fatty acids, which are antagonists of cholesterol, it is easily digested and absorbed by the human body. Horse meat is an obligatory component of all high-quality smoked sausages not only in Kazakhstan, but also in other countries of far and near abroad. Animals grown under herd conditions never consume food containing pesticides, fertilizers, therefore their meat is environmentally friendly. The horse does not suffer from tuberculosis, foot-and-mouth disease, mad cow disease. It should be emphasized that the West does not yet know the taste of real ghoul horse meat obtained from specialized meat and dairy breeds of horses, such as the Mugalzhar and Kushum horses, as well as other meat-type horses, created

in Kazakhstan relatively recently and did not manage to get wide distribution. In Europe, as a rule, they eat meat from old horses of riding and trotting breeds, who have completed their sports careers, as well as culled heavy trucks. At present, the question of increasing the number of horses is urgent, and it must be resolved in the shortest possible time, using the rich, centuries-old experience of horse breeding in Kazakhstan, and the latest achievements of the republic's horse breeders. The presence of vast arrays of natural pastures, steadily high demand for horsemeat, especially for delicious national products from it (kazy, map, sting, sting, stranger, sur-et). The traditional skills of the population in breeding herd horses, the presence of local Kazakh and new specialized meat breeds of horses that are well adapted to natural conditions make the development of this agricultural sector not only promising, but also a priority. Today, the proportion of herd horses in Kazakhstan is more than 80 percent of the total livestock; in 2009 they produced 71.38 thousand tons of horse meat, which is very small for Kazakhstan. The current situation can be explained by the low specific gravity of the uterus, the low yield of offspring, the low live weight and weak forage base. Along with this, there is a departure and loss of horses due to the lack of rational maintenance technology, as well as the lack of horse breeders. Few breeds were created in Kazakhstan, but the creation of a new meat and dairy breed, the Mugalzhar breed, can rightfully be considered the crown of breeding and breeding work at the end of the second millennium. The live weight of the best stallions reaches 600 kg, and mares 550 kg or more. Speaking of dairy horse breeding, it is necessary to identify at least 3 areas in which it should develop. These are preparations from whole milk of a fermented milk product - koumiss, its use as a substitute for human milk and its use in the perfumery industry for the production of creams, ointments, tonic agents, anti-aging serums, which are in great demand today in Europe and America. Natural koumiss made from mare's milk has long been a traditional food product of the population of Kazakhstan. Our country is the birthplace of koumiss treatment for tuberculosis patients. Modern medicine uses koumiss for combined treatment in combination with antibiotics. At present, in a number of sanatoriums, koumiss is used not only for the treatment of patients with pulmonary tuberculosis, but also for diseases of the gastrointestinal tract and other diseases. Koumiss is in great demand among the population as a food product almost everywhere where its production is established. So, horse breeding in the Republic of Kazakhstan is a traditional multifaceted livestock industry, covering a huge range of the most important tasks of a national nature. Horse breeding today has four major areas: productive,

work-using, breeding and sports. Today, the base of pedigree horse breeding of the republic is represented by more than 118 agricultural. formations, including: 18 stud farms and 100 pedigree breeding breeding 14 breeds of horses of domestic and foreign breeding.

The Kazakh horse belongs to the group of steppe-type breeds. Formed in Kazakhstan according to the latest data, more than 10 thousand years ago. It is believed to be a descendant of an Asian wild horse. The breed was influenced by the wasps of a number of other breeds, most of all - Mongolian, Arabian, Karabair and Akhal-Teke, and more recently, the English thoroughbred, Oryol trotter and Don horse. Within the breed, there are two main different types: adaev and jabe.

Adaev fits a saddle, harness, has a light constitution and a lively temperament. He was very much influenced by the English thoroughbred, the Oryol trotter and the Don horse, unlike the djabe, which made it possible to create a high-quality riding horse, though not very resistant to harsh environmental conditions.

The height of hells is up to 142 cm. The color is red, white, golden or bay. They have a beautiful exterior, a small head with a long neck, a flat back with a slightly sloping croup. They are often criticized for lack of skeleton.

Kazakh horses such as the djebe of the meat and dairy direction of productivity, created by the Kazakh people for centuries,

They are distinguished by an exceptionally strong constitution, excellent adaptability to year-round grazing and shade maintenance. They are characterized by a large head, a short fleshy neck, a wide and deep body, a broad back, muscular croup, bony legs, mane and tail are thick, long; short brushes on the legs; the skin is thick, dense, these horses have subtle subcutaneous blood vessels and tendons of the legs

Dzhebe mares are characterized by high fecundity (85-90 foals per 100 mares) and milk yield (2000-2300 l per lactation).

The meat productivity of horses is quite high, when 9 year-old mares are slaughtered, the carcass weight is 253.2 kg with a slaughter yield of 55.5%, and for 2.5-year-old jabe stallions the carcass weight is 226.8 kg the slaughter yield is 57.4%

In the carcasses of stallions, 4.7 kg of pulp per 1 kg of bone. The meat of young dzhebe is characterized by high nutritional value. The highest calorie content of meat is observed in young dzhebe at the age of 18-30 and 42 months. It is at these ages that stallion meat is high in fat and suitable for making valuable national dishes such as kazy, card, sting, sting, stranger and telsik.

Kazakh breed of horses like jabe

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making valuable national dishes such as kazy, card, sting, sting, stranger and telsik.

Purposeful breeding work with jabe began in the Aktobe region of the Soviet Union in the 1930s. Currently, on the basis of thoroughbred breeding of horses of this type, a new factory breed - Mugalzhar breed - has been bred. Apply line dilution.

The horses of the breeding group of the **"Emben domestic type of Mugalzhar breed"** differ from the Kazakh horses of other zones of the republic in their higher live weight and relatively large measurements (adult stallions have an average height at the withers of 145.5 cm, oblique body length of 159.1 cm, chest circumference - 185.8 cm, metacarpus girth - 19.9 cm, live weight - 553 kg; mares, respectively: 144.5-154-179.5-18.8 cm and 480.2 kg), with high meat productivity (260 -280 kg carcass weight) and a good slaughter yield (56-58%) in grazing conditions. Mares are highly fertile, with an average business yield of 92-97 foals per 100 mares. The genetic potential in live weight of mugalzhar breed mares reaches 560 kg, and stallions - 595 kg. Their adaptive qualities in relation to the conditions of their breeding range deserve the highest rating. The horses of the Mugalzhar breed are well adapted to the conditions ofyear-round grazing and shade maintenance. They hold the body well in all seasons of the year. Massiveness, harmony of constitution, possession of a strong constitution, sufficient bosom, normal staging and structure of a limb, monophonic color (mulled, Savras, red, bay, muscle-sized), excellent body appearance - these horses have the Emben breed of Mugalzhar breed. In the Mugodzharsk stud farm of the Aktobe region, lines of stallions Velvet, Bison were highlighted; at the Mynbaev state farm and the Kengir experimental farm of the Dzhezkazgan region - the line of stallions Mesker and Maupas, at the Mynbaev experimental farm in the Alma-Ata region - the Bes line. In the Kazakh breed, a new factory type was formed - Sary – Arka.

Average measurements of linear stallions of the Mugalzharsky factory, cm: 145-159-189-19.2, mares - 144-5; 180-18.5. Average measurements of stallions throughout the massif: 145-150-179-19, mares - 143-149-178-18.5. The genetic potential in live weight is 600 kg. The daily milk productivity of the mare djebe at the beginning of lactation ranges from 10 to 20 kg

New highly productive Seletinsky (2013) and Bestausky (2015) factory types were created in an array of Kazakh horses of the Jebe type, live weight of stallions-producers reaches 503 kg, mares 450 kg In the Seletinsky factory type, Bracelet, Zadorny and Pamir factory lines were

created, in the Bestaus type created factory lines of stallions-manufacturers of Umbrella, Call and Asem.

The authors of the Celetino factory type of Kazakh horses dzhebe*: Nechaev I.N., Akimbekov A.R., Omarov M.M., Sizonov G.V., Duysembaev K.I., Akimbekov B.R., and Rzabaev S.S., Akilzhanov R , R., Musin A, Musin D.A., Shamshidin A.S. others.*

The authors of the bestau factory type of Kazakh horses jabe: *Asanbaev T.Sh., Bekseitov T.K., Omashev KB, Uakhitov Zh.Zh., Kodebekov AB, Zhanataev M.Sh. and etc.*

Kushumskaya breed of meat and dairy direction. Bred in 1976 on the basis of complex reproductive crosses of local Kazakh mares with trotting, thoroughbred riding and Don stallions.

Color red, bay, brown, carapace, black, often with marks on the head and limbs. Live weight of stallions 590 kg, mares 520 kg Carcass weight 2.5 year old stallions 280 kg with a slaughter yield of 53%. Milk yield of mares is 2100-2200 l per year.

There are two ecological (zonal) types in the Kushumi breed, formed under the influence of various climatic conditions and horse breeding systems in the Aktobe and West Kazakhstan regions. Horses of the Kushum breed compare favorably with a number of other breeds in such economically useful qualities as early maturity, fecundity, high meat and dairy productivity, good adaptability to year-round grazing and shade maintenance, and economic production.

As a result of many years of scientifically based selection and breeding work with horses of the Kushum breed, with purebred breeding, highly productive factory lines of stallions were created: Krepysh, Grom, Samotsvet, Laskovoy, Khitrets and Baikal, characterized by high live weight: stallions - 605 kg, mares - 520 kg Based on the use of linear stallions and mares, the factory types Rza-Aktobe and Zhangalinsky were created. The creation of these plant types contributed to the improvement of breeding and productive qualities of the breed. The genetic improvement in the current population of stallions in terms of live weight is 92 kg (18%), in mares - 44 kg (9%), the stallion mass index reaches 147%.

The author of the breed: Barmintsev Yu.N., Borisov MN, Belyaev A.I., Rzabaev S.S., Nurgaliev A.N., Gubashev B.I., and others.

Stallion of kushum breed

Mugalzhar breed of meat and dairy direction of productivity. Bred in 1998 on the basis of thoroughbred breeding and improvement of Kazakh horses of the Jebe type in breeding herds of breeding farms. Massiveness, harmony of physique, possession of a strong constitution, sufficient bosom, normal staging and structure of limbs, monophonic color (mulled, Savras, red, bay, muscle-sized), excellent body appearance - horses of the Mugalzhar breed possess these exterior advantages.

Mugs of the Mugalzhar breed are characterized by high milk yield (12.0-15.0 L per day) in grazing conditions. Highly productive mares are able to produce 16 liters of milk per day, and individual ones up to 20 liters. Adult horses of the Mugalzhar breed produce 255 kg of carcass, with a slaughter yield of 56.7%, which indicates their good meat productivity. The meat of horses of the Mugalzhar breed is distinguished by high nutritional value in all respects: chemical and biological indicators, the ratio of pulp, fat and bone, complete protein, as well as calorie content.

The average live weight of stallions of the Mugalzhar breed 530 kg, mares - 480 kg

The Mugalzhar breed of horses is an improver of many local horse breeds of the CIS countries.

The author of the breed: *Barmintsev Yu.N., Nechaev I.N., Kikebaev N.A., Zhumagul A.E., Begimbetova GS. other.*

Mugalzhar stallion

Kustanai breed

Kustanai breed. Horse-drawn direction. It was created as a result of a complex reproductive crossing of Kazakh mares with Kalmyk, Don, Strelets, Oryol-Rostopchin, Anglo-Arabian, as well as high-blooded and thoroughbred horse stallions under conditions of stable-grazing and cultural-herd keeping. Tested in 1951

Kustanai horses are distinguished by high working qualities - great endurance and good agility. In terms of performance under the saddle and in the harness they are not inferior to the horses of the Budyon breed.

In the stud farm "Kazak Tulpary", high-class stallions-producers such as Flagman 12, Bobrik 10, Skif and others also work in reproduction. From the day of testing the breed, the Kustanai uterus of the stud farm became, on average, 8–9 cm higher at the withers (165.1 cm), more bony. The preserved breeding stock of Kustanai horses gives a real opportunity to raise the breed to a higher level.

Kustanai horses are characterized by medium height, tight build, strong constitution. Horses are unpretentious, adapted to herd keeping. Their head is of medium size with a straight profile, a wide forehead and wide ganaches; the neck is straight, of medium length; withers average,

muscular; the back is wide, strong; the loin is even; croup of medium length, normal slope; scapula long, obliquely set; the chest is deep, the ribs are long, rounded; nrgi dry, bony, their formulation is correct. The color is mainly red and bay, rarely gray.
The author of the breed: GG Khitenkov (manager, VNIIIK), M.G. Motoriko. V.M. Sgrinskaya, P.Ya. Naidenov, V.B. Munkin, A.A. Glotov.

New Altai horse breed

The presence of large areas of natural fodder land in the mountain and foothill areas of the Altai Territory, where you can keep horses on pasture all year round and get cheap products, represents the necessary conditions for the development of meat herd horse breeding.
Altai horses, heterogeneous in pedigree and type of improvement, possess valuable hereditary property of local horses, excellent adaptability to year-round herd-shade maintenance in harsh, sometimes extreme, climatic conditions. The most valuable animals are those with the addition of heavy breeding blood, which have a very high live weight of up to 670 kg, which proves that in Altai large meat horses can be raised at minimal cost.
Therefore, specialists from the farms of the Altai Territory and the Altai Republic since 1978 began work on the creation of a new breed of horses for meat production.
Work on the creation of a new breed was carried out in six farms of the Altai Republic and four farms of the Altai Territory by the method of complex reproductive crossing of local mares with stallions of heavy-duty breeds: Lithuanian, Soviet and Russian; crossbreeding of hybrids of different blood levels in the direction of consolidation of the type of horses of the breeding group, improving their biological and productive qualities. The valuable qualities of the hybrids were fixed by uniform selection, with particular attention paid to maintaining fitness for year-round grazing and shade maintenance, the ability to quickly restore fatness after wintering, and conditional stability. The selection of mares for the stallions was carried out both to consolidate the existing valuable properties of the parents, and to improve the severity of the desired qualities in the offspring.

Based on the obtained materials on measurements and live weight of mares and stallions selected in the breeding group, a rating scale was developed for horses - a standard for a new breed, it is included in the 1988 local grading guidelines for horses.

As a result of targeted selection and selection, the number of horses of the desired type increased, promising groups of horses were identified, and on their basis the genealogical structure of a new breed was laid down, which was registered by the State Commission of the Russian Federation for the Protection of Breeding Achievements and included in the State Register of Breeding Achievements Allowed for Use in 2000 as New Altai.

The stallions-producers of the modern composition of the New Altai breed are large, massive, with a long, well-developed body, a wide chest, a broad back, a smooth muscular lower back, a muscular, slightly bifurcated croup, strong legs and well-developed muscles. Their average measurements: height at the withers - 156.4; body length - 166.8; chest circumference - 200.3; metacarpal circumference - 22.8 cm, live weight - 624 kg

Mares of the New Altai breed have a somewhat rough head, muscular, medium neck, long, well-developed body, a wide and deep rib cage, a broad, well muscled back, a smooth, muscular lower back of medium length, well muscled, sometimes bifurcated croup, legs strong, bony The setting is correct, the hoofed horn is satisfactory. Measurements: height at the withers -149.5; body length - 161.1; chest circumference - 194.0; metacarpal circumference - 20.2 cm, live weight - 571 kg. By measurements and live weight, stallions-producers and mares of the New Altai breed meet the requirements of the elite class. The breed has six genealogical lines.

In fact, the breed is unique. This is the only breed of horses not only in our country, but also in the world, bred in harsh climatic conditions. The uniqueness of the breed lies in the fact that horses are bred at year-round grazing and have a sufficiently large growth, high live weight and good meat quality compared to the mass population of horses bred in Altai, surpassing analogues by 80-112 kg in live weight. Horses of the New Altai breed are the largest of the productive breeds bred in the CIS, they accumulated the best qualities of the original breeds: large growth and live weight from heavy-duty stallions, and they adapted from the Altai local horses to adapt to the harsh conditions of herd-shade content.

The economic efficiency of breeding horses of this breed is high and in some years the profitability reaches 300%, except for the main use - for the production of cheap horse meat - New Altai horses are successfully used in

work both under the saddle, especially for winter grazing animals, and in harnesses for transporting goods .

The breed is also promising for the production of koumiss, as evidenced by the experience of milking mares in some farms of the Altai Mountains, as well as in the Semipalatinsk, Pavlodar region of Kazakhstan, where mares of this breed were sold.

Horses of the New Altai breed have already gained wide popularity and are in demand. A new breed of horses is a major achievement of domestic zootechnical science and practice of the last decades and can rightfully be an object of special pride. This work is of great importance not only for the regions of Western Siberia, but also for the Russian Federation as a whole.

The presence of large areas of natural fodder land in the mountain and foothill areas of the Altai Territory, where you can keep horses on pasture all year round and get cheap products, represents the necessary conditions for the development of meat herd horse breeding.

According to A.I. Nikonova, the average weight of New Altai stallions is more than 600 kg, and that of adult mares is 565–580 kg, while for local Altai horses these figures are 449 and 415 kg, respectively, The slaughter yield of horses of average fatness is 54.7%, 57 7%.

The average measurements of the New Altai stallions are as follows: height at the withers - 155.3 cm, oblique body length - 165.3 cm, chest girth - 197.7 and metacarpal girth - 22.4 cm; average measurements of a mare are respectively 149.8 - 160.9-192.0 cm; live weight and 20.1.

New Altai horses are characterized by a somewhat rough head, a well-developed body, a wide and deep rib cage, well-muscled muscles and a wide back, medium muscular, sometimes bifurcated croup, short, strong, bony legs with their correct setting, strong hoofed horn

Two types are cultivated in the breed - desirable and universal.

Horses of the desired type are mainly used for the production of horse meat. They most retained the signs of the local Altai horse. Universal type horse stock is bred both for meat production and for working in harness and under saunder saddle. The New Altai horse breed is now beginning to be widely used in certain areas of Kazakhstan, in particular in the Pavlodar region, as an improver of local Kazakh horses.

Stallions-producers of New Altai breed of horses

Breeds of horses of the world gene pool

Horse breeds began to form on the basis of local, wild horses. All breeds are divided into several types according to their purpose: amateur breeds (“hobby class”), sports

horses and race horses with trotters. Also, horse breeds are distinguished by their constitution and exterior, there are draft horses (heavy trucks, agricultural, carriage or saddlery), riding breeds, pack, trotting and racing. Horses whose pedigree is impeccable, just as all proportions of the exterior and appearance are called - an elite breed of horses. Purebred horse breeds are now bred in all corners of the world, riding horses are very much appreciated. Just lovers of these animals pay attention to rare breeds of horses and the most beautiful breeds of horses. Equestrians appreciate the best breeds of horses suitable for sports.

Many sports breeds have not pure blood, such breeds are called half-blood or mixed. In order to determine how much blood of this or that blood they characterize in this horse with fractional numbers 1/4, 1/2, 3/4 of blood, etc., and the greater the percentage of blood from purebred breeds there, the more the animal is valued. These breeds include Trakenensky, Russian, American, Kustanai, etc.

English thoroughbred riding horse

In the world there is no breed faster in speed and agility than the English thoroughbred horse. A precocious, energetic and temperamental breed with a rich history. The English thoroughbred breed of horses is excellent in horse racing, there really are no equal to it. The famous Eclipse and Ledikiller come from this breed. The famous horses that cost millions of dollars are a tourist attraction in England, and indeed the whole world. One of three purebred horses that are bred in strict cleanliness.

Measurements:

Stallion: Height at withers - 155 - 170 cm, chest girth - 186 cm, metacarpal girth - 20.5 cm

Mare: Height at the withers - 155 - 170 cm, Bust - 184 cm, Metacarpus - 19.5 cm

Usage: horse racing. less common eventing.

Withdrawal Place: England.

Weight: 450 - 590 kg Color: bay or red, less often dark bay, karaka, gray and black.

A purebred English horse - in a biological sense, is not purebred, in it is a cross between different bloods, but the eastern one still prevails. Great Britain was a strong power, and the demand for riding horses was very great both for cavalry and for various types of entertainment. A certain

height of the horses, which were kept in military units, was established. English riding horses descended from three common ancestors, who were brought to England from the countries of the East. To date, hippology scientists still cannot determine which breeds these three stallions belonged to, which became the founders of the unique race breed. Only nicknames have remained of them: Darley Arabian, Godolfin Arab or Berber (Godolphin Arabian, Godolfin Borb) and Bayerly Turk (Byerly Turk), to say with confidence that they are an Arabian breed (Darley, Godolfin), and Turkish (Beyrle) is not allowed today. Previously, the definition of the breed of horses was not accurate, in addition, nicknames were given horribly, and often the name of the country from where the horse was brought. Therefore, for a long time it was believed that Darley was a purebred Arabian breed, Godolfin was considered an Arabian and a Barbary stallion, and Beyrle was considered a "Turkish" horse. But in our time, more and more are believed that the English thoroughbred breed of horses comes more from the Akhal-Teke than from the Arabian. But nevertheless, the ancestors of the breed are Darley, Godolfin and Beverly, and to their descendants (red-haired Eclipse 1764 gr., Bay Matcha 1748 gr., Herod 1758 gr.). Horses of the English purebred breed are strictly selected, and as a result, a breed of horses that is perfect in all respects has been bred for 300 years. Since 1793, only the direct descendants of these three stallions are entered into their studbook, no horses of other lines and blood are allowed to be brought.

Let us dwell on Eclipse, the red stallion, the grandson of Darley, who played a special role in the formation of the new breed. The exterior of this horse was not perfect, its croup was higher than the withers, which caused inconvenience to the riders, he galloped lowering his face to the ground, but however, his memory remained for a long time. "Eclipse is the first, the others are nowhere," the English proverb says. Eclipse for 23 years, participated in 26 races and never lost, even more so no one was able to come to the finish line close to him. At the beginning of his life, he was sold for 75 pounds at auction, and after his death, his skeleton was sold for one thousand pounds. As it turned out after the autopsy, the secret of this horse was in his heart - it was larger than that of other horses of his complexion and weighed 6.3 kg versus 5 kg. All subsequent descendants, children and grandchildren of Eclipse turned out to be gorgeous horses, and to this day some of the lines purebred horses dates back to the blood of Eclipse.

In 1793, the first volume of the pedigree book of this breed of horses was published. And already in this book for the first time there was a ban

on introducing horses in which at least one horse in any generation and age does not go back to Eclipse, Herod and Matchem. And already in 1821 the breed was officially recognized. Purebred British came to Russia already in 1825, a race community was created in Lebedyan. Horse racing, namely the English Derby, was actively developing. The Civil War caused tremendous damage to purebred horse breeding, by 1920 there were only 182 purebred mares and 193 stallions in the country that were of high tribal importance, these were direct descendants of Saint Simon and Bend. In 1920, the Voskhod stud farm was built, which by the end of the decade began to breed the best representatives of purebred horses in the country. The main producer was the stallion Granite II, the son of Tagore, the grandson of Floreal. All the descendants of Granite II were exported to Germany during the Great Patriotic War. After the war, the stallion was lost and only a few standing producers remained in the country: Rafael, Raufbold and Etalon Or. However, this was too little. After the collapse of the USSR, many stallions-producers were bought, mainly the Nearco-Norsern Dancer line, which is considered to be classical today and gives good, high-spirited offspring.

The English purebred riding breed is excellent in improving other breeds, it is thanks to it that we know many breeds of the trotting direction (French trotters, Oryol trotters) and even draft (standard bred horses). When crossing, it transfers its growth, speed, energy, bulky lungs, developed muscles, dense bones and dry build; therefore, it can equally serve to improve both a riding horse and a draft horse. Almost all riding horses were improved with English blood. The most famous producer in sports breeds was the Ledikiller stallion, who founded a whole line in the Holstein breed.

The English breed of horses is not in vain called purebred. The exterior of these has long lines characterized by a square format. Their height ranges from 155 cm to 170 cm (slightly higher than the Andalusian horse). Head with a direct profile, light and dry, clever and expressive look, ganache widely spaced, wide nostrils, long nape turning into a long, thin and straight neck, practically without bending. A high withers, more developed than in other breeds, the back is straight and sometimes soft (in mares), a long and oval croup, sometimes slightly deflated. Deep chest, long, medium in width, roomy, ribs slightly deflected back. Lean belly. Powerful limbs, pronounced joints and tendons. Long shoulder blades, obliquely set, long humerus, wide wrists, occasionally clubfoot of the front legs. Often long dibs, normal tilt, hooves are small, normal in shape with a dense horn. The mane and tail are sparse and short, the hair covering is

sparse, the relief of muscles and veins under thin skin is often visible. At first glance, you can determine the purpose of these horses. A riding horse, which throughout its breeding was engaged in horse racing.

There is no horse equal in speed to the English purebred breed. Their norm at a gallop is read 1 km per minute! The world record belongs to the thoroughbred stallion Beach Rackit, who in Mexico City was able to reach speeds of up to 69.69 km / h. Any other breeds are forbidden to participate in races with purebred English because any purebred is stronger and faster than any other breed. The heart of a thoroughbred horse is larger than that of other breeds, and the volume of lungs is larger. The horse's pulse at rest is about 60 beats per minute, during a sharp jump it rises to 140 per minute.

The use of this breed is obvious - horse racing. Given the high-spirited nature, energy and temperament of choleric, these horses are not suitable for a novice equestrian, these horses need a daily load of gallop, and at the same time, only a professional can handle the impulsivity of a thoroughbred horse.

Thoroughbred horse breed is an improvement in the racing qualities of the world's riding horses.

Arab thoroughbred

Measurements:

Stallion: Height at the withers - 153.4 cm, oblique body length - 150.5 cm, chest girth - 178.9 cm, metacarpal girth - 19.9 cm

Mare: Height at withers 150.6 cm, Bust - 172.9 cm, Metacarpus - 18.4 cm

Usage: horse racing, horseback riding, amateur riding, less often dressage.

Withdrawal Place: Arabian Peninsula.

Weight: about 400 kg

Color: gray of all shades, bay, red, rarely black, piebald type of sabino (registered as a roan), less often silver-bay color.

The Arabian breed of horses is divided into 3 families: ateshi, kadishi, and kohlani. In modern purebred Arabian horses, 4 types of exterior are possible:

kokheilan - massive horses with a strong constitution, broad-chested, hardy, excellent horses; color is mostly bay or red;

siglava - pedigree and smart horses with an average body constitution, short stature, lighter and less playful in races; the suit is mostly gray;

hadban - not pedigree, but the largest horses in the breed, frisky, hardy horses and athletic horses; suit red or bay, less often gray;

kokheilan-siglavi - a mixed type that combines elegant, dry forms of siglava and massive coheilan; this type also has a higher growth and high performance; suits - bay, gray, red.

The Arabian horse is known throughout the world, and is distinguished by endurance, especially in runs of more than 100 miles. Very hardy, every horse lover knows about its speed and endurance (85-90 versts a day for 5-6 days in a row) and excellent temperament and good health. But in our time, there are almost no thoroughbred Arabian horses left. Even in Arabia itself, horses of this half-breed breed. Breeds like Anglo-Arabian and others appeared. And yet the horses of the Arabian breed are considered to be elite,

The most famous representatives of the Arab purebred breed are considered Pesnyara (Raid - Song 1955) and Menes (Raid - Metropolis 1977). Purebred Arabian stallions were considered the best of their kind, and sold for a lot of money. Pesnyar was sold for 1 million dollars in the USA, and Menes for 2.4 million dollars.

Arabian horses are distinguished by their temper and temperament, which does not prevent them from being good and faithful friends.

The Arabian breed is an improver of many breeds of the sports direction, an English thoroughbred horse was bred on the basis of this breed, and a Kazakh riding breed is being created in Kazakhstan.

Akhal-Teke horse. The Akhal-Teke breed of horses is one of the oldest breeds of riding horses, bred more than 5000 years ago, and is still a leader in the equestrian world. Akhal-Teke is extremely smart and elegant. It is often known for its special exterior.

Measurements:

Stallion: Height at the withers - 160-165 cm, oblique body length - 160-165 cm, chest girth - 175-190 cm, metacarpal girth - 19-20 cm

Mare: Height at the withers 157-160cm, oblique body length -158-160cm, chest girth - 178-179cm, metacarpal girth - 19.0-19.5 cm

Usage: horse racing, dressage, show jumping, demonstrations, hobby class.

Withdrawal Location: Turkmenistan. (Ahal-Tekeke). Weight: 400-470kg

Color: bay (40%), bulan (more than 20%), black (12%), red (11%), gray (8%), solovy (5%) and isabella (2.5%).

The Akhal-Teke breed is known as “Argamaki”, “Golden horses of Parthia”, “Horses of Nyssa” and “Paradise horses”. A breed was formed in

Turkmenistan (Oasis of Akhal and from the name of the Teke tribe, Tekintsy). For Tekinians, horses were a member of the family, because in those days a lot depended on the steed. Constant battles and the need for a strong, courageous, hardy horse and helped to breed the Akhal-Teke. Horses were cared for as best they could, fed exclusively from their hands, instead of brushing or bathing - brushing in the sand. Horse racing was a favorite activity of the Teking people, therefore, agility, endurance and dry physique were valued in the breed. It was believed that if after a long run the horse drank with greed, then he is not yet ready for big jumps. This was such a custom for this breed of horses!

Since ancient times, Akhal-Teke residents have been compared with an eagle, a cheetah and a snake because of their exceptional exterior. Features of feeding, traditional training and use - a combination of fast racing for short distances and long grueling hikes - all this affected the exterior and interior (internal features) of the breed: the horses became lean and dry, without excess fat, unusually hardy and not demanding on quantity (but to the quality) of food.

He resembles a snake with its flexibility, smooth movements, thinness of the skin, smooth silkiness of short integumentary hair and a light rare mane. And most importantly - with an unusually high set of the longest neck, its bend similar to the cobra prepared for the cast. A majestic and proud look, a powerful, as if flying gallop Akhalteke resembles an eagle. This feature has long been noticed by the Turkmens and reflected in the nicknames of their horses, adding the prefix “jackpot”, which means “bird” (Mele Kush - a Bulan bird, Kara Kush - a black bird). There is a legend about an outstanding horse, who could not find an equal rival in the race, and then they arranged a competition with a falcon, releasing a bird and a horse at the same time, and the horse came to the finish line a moment earlier.

As a result of many years, a beautiful breed with an established psyche was bred. This is a smart horse, proud and at the same time very devoted to its owner. The soft gait of this horse is very convenient for the rider, you can even put a child on the Akhal-Teke and be sure that the horse will not harm him, and in turn this breed is very sensitive to the impact of its rider. Akhal-Teke horses are difficult to work on horseback, but only because they differ from the phlegmatic horses who obey any promise of the equestrian. This breed of horses with a certain disposition, and will not tolerate a bad attitude towards her and the rider’s inept hands. But if you find a common language with this horse, then you are guaranteed victory in almost all types of equestrian sports! Akhal-Teke is a wonderful horse, a

gorgeous dressage horse, a hardy competitive horse, as well as a triathlon, suitable for horse riding, vaulting, runs and even for a hobby class for a child. Again, due to the origin of these horses, their gaiters are extremely convenient for the rider, the horses born in the sands of the horses step on the ground as gently as possible, this horse is quite suitable for a beginner, but patient and persistent rider.

As a result of centuries-old breeding of the breed and artificial selection of suits, the Akhal-Teke bred the most diverse, in addition to the usual and familiar to everyone: red, bay and crow, these horses appeared yellowish shades and such suits as: mulled, salted and isabella. It is the Akhal-Teke horse of the Isabella suit that is very popular because it is a rare and beautiful suit. Akhal-Teke of the Isabella suit is much more expensive than any other suit. Another feature of the suit of the Akhal-Teke is the widespread use of a bright golden hue, which is found in addition to the Akhal-Teke only in the Don, Budyon and Karabakh breeds that carry Tekin blood. The "goldenness" of the Akhal-Teke suits has deep historical roots and dates back to the horses of Parthia and Bactria, which had "standard" suits. There are other unusual shades of color in the breed, for example, bronze-light red (with a shade of hair approaching a tan) with a dark mane and tail, a rare playful, and some options for non-standard pintess and gray hair.

Bright and unusual shades of golden-bulan, golden-salt, isabella color constantly attract attention to Akhal-Teke horses. The ratio of colors in the breed has changed over the centuries, for example, in the 20s of the 20th century, the gray suit was the most numerous, and at the end of the 20th century it was bay and bovine. Less common are black and isabella color. Despite its thin delicate skin and very short coat, the Akhal-Teke horse can tolerate temperatures in a wide range - from -30 to + 50 ° C, as well as sudden temperature changes. These horses tolerate severe frosts, as well as desert heat.

Today, this breed is used in all classic equestrian sports. The Akhal-Teke breed of horses shows great success in show jumping, a particular success was shown by a gray stallion named Arab, he managedto take a height of 212 cm His son, the black absinthe (Arab - Baccarat 1952), glorified the breed throughout the world for his dressage achievements. This ancient breed is unique, and its uniqueness is determined primarily by the special exterior, which is not similar to any other breed, the psyche of a horse, gait, potential, endurance, elegant appearance. The only disadvantage of this breed is their "late maturity", these horses are formed only in 5-6 years, but this feature does not affect

the horse itself, and even less does not reduce the potential for learning these gorgeous horses. The Akhal-Teke horse is the result of the work of many generations of horse breeders in the field of breeding, a heritage of ancient horse breeding cultures.

Chapter 4 Species and genetic potential of camels in Kazakhstan

Camels are created by nature for life in waterless deserts and dry steppes. They adapted to this primarily thanks to special “shoes”: the feet of camels are protected by callus pillows. On this basis, camels and llamas related to them are united in a corpus callosum. Corns protect legs from burns on hot soil and sun injuries against sharp stones. Corns are resilient, therefore, especially suitable for walking on sand. There are corns on the knees and other parts of the body of a camel in contact with the ground when it lies down.

There is not much food in the desert, and camels are quite content with plants that are inedible to other animals, such as a camel thorn. A camel eagerly chews shoots studded with thorns, which, if stepped on, will freely pierce the sole of the boots. Only nails can be digested in a three-chamber camel stomach. True, for this, camels, like other ruminants, have to re-chew dry plant mass carefully. Camels can do with a small amount of food.

Camels are perfectly adapted to the lack of water. In the heat, they almost do not evaporate, and from overheating they are saved by thick wool. In addition, they allow the sun's rays to increase their body temperature to 40.5 degrees Celsius during the day, "cooling" at night to 34-35 degrees.

The body of a camel can lose 30% of its moisture, which is fatal for almost any creature, while a camel does not have a slight thickening of blood. A camel can live without water for 45 days, and for the first 15 days it will work normally and eat an ordinary portion of absolutely dry hay. This does not mean that he does not need water. At the first opportunity, he will drink about 50 liters of water in one gulp.

It used to be thought that the stored moisture is stored in the stomach of a camel. Later it turned out that the real “water storage” of a camel is its fat deposits. From 100 g of fat, more than 100 g of water can be obtained. A well-fed camel has an impressive supply of fat: 110-120 kg. It is in his humps. The better the camel eats, the higher its hump. Hump is not for beauty. He sticks out on his back, and the rest of the body is freed from fat, and the camel is not hot. When animals are left without water and food,

they begin to spend their fat reserves, while providing themselves with water.

There are only 2 types of camels: the Asian two-humped, or Bactrian, and the one-humped (dromedary or dromedary) - the benefactor of the Sahara. It is unlikely that a person would be able to master the desert, if not for these animals. About 15 million camels live in the world, of which 90% are dromedaries.

Bactrian camel (Camelus bactrianus) is a large animal with a long neck and two fat humps on its back. Body length 250-360 cm, height 180-210 cm, tail 50-58 cm, weight 450-690 kg The existence of a wild two-humped camel in the deserts of Central Asia was known for a long time, but European scientists still doubted the existence of wild camels .For the first time in 1878, N. M. Przhevalsky brought the skins and skeletons of a wild camel, having repeatedly observed them in the Kumtag desert east of Lake Lobnor. For several decades, the wild camel was not known, and it was assumed that it had disappeared. However, in 1943, wild camels were again found. A few years later, in the same area, Mongolian operators first took a photograph and shot a short film about a wild camel. Currently, a wild two-humped camel lives in the Zaaltai Gobi (Mongolia). It is possible that another part of the range is located to the south, in the area of Lake Lobnor (China). Once the Haptagai, as the camels are called in Mongolian, were widespread throughout the Gobi and west reached Central Asia and Kazakhstan, wherefrom their remains are known from the kitchen wastes from 1500-1000 BC. e. Now about 300 wild camels live in the summer in the most remote corners of shrubby deserts, preferring wide valleys and small hills. In winter, they migrate 300-600 km to the south and often stay in the mountains protecting them from the wind, or along dry streams. If oases with variegated poplar are not occupied by people, camels spend winter and especially autumn near them. Haptagai feed mainly on shrubby and semi-shrubby hodgepodge, they love onions, blackberries, leafworms with its juicy large leaves, eat ephedra and young shoots of saxaul, and in autumn they eat poplar and reed leaves in oases. Despite the great endurance, wild camels are currently most affected by a small number of watering places, since a person, mastering the desert, primarily occupies open sources. This was the main reason for the reduction of the wild camel in the past. Wild camels are characterized by wide migrations during the day, even with plenty of food, in the latter case, large transitions are associated with watering places. Thus, A. G Bannikov's observations of one of the herds showed that camels travel at least 80–90 km per day. For most of the night and midday hours, the Haptagai rests, choosing takyrs or

an even area somewhere near a lonely bush for lying down. Camels definitely avoid laying down in dense shrubby thickets, in narrow deep waterways, between stones, in lumpy sands and other places where the surrounding area is poorly visible and where it is easy to sneak up on sleeping animals unnoticed. The most active camels in the morning and evening hours. Alarmed Haptagai always leave, without stopping, for tens of kilometers. Camels have very keen eyesight, and, as observations have shown, they notice a moving person more than 1000 meters away. When they see a person or a car, they stop grazing and, stretching their necks, look intensely towards danger. Usually camels keep herds of 5-9 goals. Such a herd consists of females and young. The herd is headed by an adult male. Often males can be found singly. Camel females become sexually mature at 3 years old. Males take part in reproduction, apparently, not earlier than 5 years of age. Camel rush happens in January - February. During this period, there are fights between males, sometimes extremely fierce. The males press their necks against each other, trying to bring down the enemy. Less often, they gnaw at each other and strike with their heads and front legs. During the rut, in search of females, wild camels sometimes attack herds of domestic camels, kill males and steal females. A camel's pregnancy lasts about 13 months (365-440 days), so that the females give birth in a year. The female gives birth while standing, always one camel. The domestic camel feeds the cub with milk for more than a year, giving 4-5 liters of milk per day. Camel milk contains 6.4 percent fat. Wild camel of exceptional scientific value is subject to protection. The domestic two-humped camel, also called Bactrian, named after the ancient state of Central Asia - Bactria, differs little from the wild. Domestic camels have more humps, a wider foot and well-developed corns on the knees of the front legs. In addition, the proportions of the skulls of domestic and wild ones have small, but stable differences. Finally, the color of the hair of domestic camels is quite variable - from light, sandy yellow to dark brown, while wild ones have a constant reddish-brown-sandy color.

The two-humped camel has been domesticated for a long time, in any case more than 1000 years BC. e. As an animal resistant to low temperatures, it has been most widely distributed in Mongolia, Northern China and Kazakhstan. There are several breeds of domestic two-humped camels, for example, Kalmyk, Kazakh, Mongolian and others.

One-humped camel (Camelus dromaderius) or dromedary, known only as a pet. He has taller legs, one hump, a shorter and lighter coat. It differs from Bactrian in the structure of the spinal processes of the vertebrae and in the details of the structure of the skull. The absence of any

data on the wild one-humped camel and the fact that two humps first form in the embryo of the one-humped camel served as the basis for the assumption that the one-humped camel is just a domestic animal bred from the two-humped man. However, it is more likely that the wild ancestor of the home dromedary has long died out. Most likely, he lived on the Arabian Peninsula. The Arabs have long considered the central part of Arabia to be the cradle of the dromedaries. In Egypt, a statuette of a loaded dromedary was found, whose age is more than 5000 years. Apparently, the same age or older drawings depicting one-humped camels on the rocks of Aswan and Sinai. In the literature, both camels were mentioned 700-600 years BC. e. Herodotus wrote a lot about camels in connection with the great importance of these animals for wars. Obviously, the dromedary was domesticated about 4000 BC. e., somewhere in Arabia or North Africa. Dromedaries are widespread in Africa, Arabia, Asia Minor, India, Turkmenistan, Uzbekistan, and Kazakhstan. It was also brought to Mexico and Australia. In Australia, he played a large role in the study and development of the interior of the country. Several breeds of dromedaries are known, including light, high-speed riding Maharis of North Africa, riding Indian Rajputans, heavy packaged Turkmen dromedaries, etc. The lifestyle and behavior of the dromedary are similar to those of Bactrian. But the dromedary is more resistant to high temperatures and does not tolerate frosts. It, apparently, longer, up to 10 days, can do without water and runs under the saddle in a day up to 80 km, developing a speed of up to 23.5 km / h. The usual, working speed of camels is up to 10 km / h. Dromedaries, like Bactrians, travel only 25-30 km a day in caravans, since they need to graze for a long time. The ability of camels not to drink for a long time is determined not by the supply of water in their stomachs, as they thought before, nor by the fact that fat in the humps can decompose, as was recently assumed. A feature of camels is that they are able to lose up to 25% of the mass due to the loss of water, while retaining moisture in the blood in a much larger amount than other animals. In addition, in a camel, an increase in body temperature up to 40 ° does not cause increased moisture loss, as in other animals. For example, a camel loses water 3 times slower than a donkey under the same conditions. Camels are able to drink quickly and often. In 10 minutes, the dromedary drinks 130-135 liters (10 buckets) of water. Almost as much and quickly drinks Bactrian. Dromedary can also be rutted in winter, but starts a little earlier than Bactrian. The female dromedary gives 2-2.5 times more milk - up to 8-10 liters per day. Dromedaries and Bactrians produce prolific offspring, the so-called bunks, which are

superior in stamina and strength to parents. However, when the hybrids are crossed with each other, the offspring is weak.

Camel breeding in Kazakhstan

According to S.M. Terentyev [1975] and P.V. Kugenev [1982], the distribution zone of camels is characterized by a uniform desert relief, an insignificant supply of freshwater basins and an extremely small amount of precipitation. The specific vegetation of semi-deserts and deserts of Kazakhstan and Central Asia - hodgepodge, wormwood, jusan, hard-stalked cereals and others form a large supply of fodder. The presence of these feeds according to the data of I.K. Dzhumagulov [1963], A. Baimukanov [1991] favors the expansion of the distribution zone of camels.

According to FAO / UNEP [1995] and D.A. Baimukanov and A.Baimukanov [2009], purebred Kazakh bactrians are the most valuable in terms of productive qualities, well adapted to the sharply continental climate of Kazakhstan.

The gene pool of camels in Kazakhstan is also represented by Kalmyk and Mongolian Bactrians, Turkmen dromedaries of the Arvan breed and Kazakh dromedaries. In addition, there is a large number of camel hybrids bred using the gene pool of purebred Kazakh bactrian.

Productive camel breeding mainly develops in the southwestern region of Kazakhstan and the Almaty region. The least studied is the gene pool of camels of the Mangyshlak Peninsula, in comparison with other regions of Kazakhstan. This is due, first of all, to the difficult climatic conditions of the Mangyshlak Peninsula and the difficulty of introducing scientific developments into production.

In the conditions of the Mangyshlak Peninsula, Kazakh Bactrians of the Mangystau population, Turkmen Dromedars of the Mangystau type, hybrids from crossing camels of the Kazakh Bactrian with producers of the Turkmen Dromedar, hybrids from crossing camels of the Kazakh Bactrian and producers of the Kazakh Dromeda became widespread.

Breeds of camels bred in Kazakhstan

Bactrians of the Kalmyk breed. The camels of this breed are the largest in the world, have well-developed muscles and a skeleton. Females have a live weight of 650-800 kg, males 800-1000 kg. The main direction is the production of meat and wool. The taste of camels is not inferior to beef in taste, the yield is up to 60%. From the camel, the local residents of the region make a national dish - Beshbarmak.

Animals give high quality wool. Products made of camel wool are light and soft, very warm and do not fall off. The average cut of wool per

head is 8 kg. Champions by breed have cuts of up to 20 kg. The valuable economic qualities of Kalmyk Bactrians are explained by the favorable living conditions, as well as directional selection.

A promising direction in the camel breeding industry may be the development of dairy production. The milk production of camels for full lactation (16-18 months) can reach 2000 liters. In terms of fat content (up to 6%), camel milk is 3 times more saturated than mare (2%). Milk has a high protein content (4%), milk sugar (5%), is rich in vitamins C and A and trace elements. The fermented milk product (shubat) made from camel milk has unique nutritional, therapeutic and preventive properties.

Kazakh camel (Kazakh Bactrian) - a breed of productivity, giving meat, milk, folk selection.

Modern Kazakh camels are a compact, proportionately folded animal with a good exterior. The chest is wide and deep, the body is somewhat elongated, with humps widely spaced. The hair clotting is good. The cutting of the wool of producers is on average 12 kg, of camels - 5.7 kg. Kazakh camels are bred in relatively different feeding and keeping conditions and therefore are not identical in size and type: small camels are found along with large camels. In this regard, camels bred in Kazakhstan belong to different types (offspring) of the Kazakh-Bactrian breed of two-humped camels.

Turkmen "arvana"

One-humped camel of the breed Turkmen "Arvana". Camels are inferior to Kazakhs in live weight and wool productivity. Their hair is curly like an astrakhan curl. The color of camels has specific shades, from light to dark brown. The wool contains less fluff and a rather large amount of spine.

The purebred dromedar has one compact hump, slightly shifted backward, not covering the withers. A reliable sign of purebred dromedar is long curled hair in the area of the shoulder blades, completely absent in bactrians and hybrids (the so-called "epaulettes"); a beard and mane are developed only in the upper third of the neck, bangs and "breeches" are absent, the hair on the sides and forearm is very convoluted.

Improving the breeds of camels in Kazakhstan

World experience shows that the basis for the successful development of productive animal husbandry is the animal gene pool, adapted to specific climatic conditions and capable of producing the maximum amount of production.

One of the valuable gene pools of camel breeds in Central Asia is the Turkmen breed of arvana dromedars. This breed is unique from a biological

point of view, due to the zone of its distribution. In particular, according to A. Amanmammadov, A. Ya. Okorokova, the Turkmen breed of Dromedars is a specialized meat and milk breed of camels and is characterized by great working capacity. In the next decade, camel husbandry in Turkmenistan, Kazakhstan and Uzbekistan will remain one means of developing deserts and semi-deserts. In particular, S.M.Terenteryev emphasizes that in Turkmenistan, Uzbekistan and Kazakhstan, deserts occupy from 50 to 80% of all land.

D. Baimukanov, A. Baimukanov, B. S. Turumbetov describing the gene pool of camels in Kazakhstan note that "in Kazakhstan and neighboring CIS countries, five camel breeds are bred: Kazakh Bactrian, Kalmyk Bactrian, Mongolian Bactrian, Kazakh Aruana and the Turkmen" Arvana ". In addition, interspecies hybridization of camels is practiced in Kazakhstan.

J.F. Leslie believes that natural selection combined with artificial selection is an integral part of farm animal breeding.

All breeds of camels bred in Kazakhstan and neighboring countries are an integral part of the genetic resources of farm animals that must be preserved in the 21st century.

Taking into account the breeding and genetic characteristics of each population of the type and line of camels, it is necessary to conduct breeding work. In general terms, breeding work should be aimed at improving and reproducing animals of a strong constitution that combine well the basic economically useful qualities: high milk yield, optimal live weight, and good wool productivity.

The Kazakh breed of Bactrian Bactrian camels is the main planned breed that specializes in milk and meat-wool productivity. The main method of increasing the milk production of Kazakh Bactrian camels is purebred breeding. According to A. Baimukanov, the most promising animals are those corresponding to the following breeding parameters: live weight of 600-650 kg, milk production for 12 months. lactation 1000-1200 l of marketable milk, with a fat content of 5.0-6.0%.

I.N. Nechaev and Z.M. Musaev believe that in the offspring of breeding camels it is very difficult to maintain the qualities of especially valuable parents, in view of the tendency to return to average productivity parameters. On this basis, in the selection of Kazakh bactrian, it is necessary to widely practice a single blood flow of producers of Kalmyk bactrian.

The basis for the development of breeding is the introduction of progressive theoretical developments. In particular, the preservation of the achieved improvement of the breed remains an urgent problem. According to N.T. Shevchenko, "the achieved improvement in the offspring was destroyed by further overlapping by the animals of another, less suitable breed." This problem is especially relevant in camel breeding, in particular in the interspecific hybridization of Kazakh Bactrians and Turkmen dromedars, as well as in the selection of hybrid uterus with purebred producers. In this regard, it is necessary to use camel-producers with a special genotype.

According to A. Baimukanov and D.A. Baimukanov, Kazakhstan is a center where breeding of Bactrian and Dromedar is possible, in connection with this, hybridization between them, that is, various variants of crossbreeding, has become widespread.

The improvement of purebred Kazakh bactrian is carried out through targeted selection and selection of animals, and interspecific hybrids through the use of corrective selection of hybrid uterus with purebred producers. Due to the above measures, a highly productive gene pool of purebred and hybrid camels, which has no analogues in the world, was bred.

According to the data of A. Baimukanov, D. Baimukanov, B. Turumbetov and A. Tatibekov in the desert and semi-desert zones of Kazakhstan with a total area of more than 210 million hectares, the breeding of camels, which are highly adaptive, is the most biologically justified and economically advantageous. Moreover, with purebred breeding of Kazakh bacteria, genetic features are not taken into account, in view of the poor knowledge of this issue. In the conditions of the South Kazakhstan region, camel-producers of Kazakh bactrian are characterized by a live weight of 770 kg. Camels have a live weight of 602 kg. Cutting wool is 13 kg for producers and 6.5 kg for camels

Describing the genetic characteristics of purebred Kazakh bacteria of the desired type A. Baimukanov et al. Note that animals of the desired type reliably outperform the improved ones both in live weight and in shearing of the coat.

According to the results of Z.M. Musaev’s research, it is difficult to maintain high productivity among a generation of purebred Kazakh bactrianians. In this connection, in order to increase the heterozygosity of Bactrian, interbreeding of Kazakh and Kalmyk Bactrian is necessary.

According to D.A. Baimukanov, Kazakh Baktrians have a high repeatability of milk yield of 0.84-0.92. Therefore, according to the first

lactation, it is possible to predict milk yield in the second and subsequent lactations.

Z.M. Musaev and A. Baimukanov believe that camel breeding in Kazakhstan should be developed by increasing the number of purebred Kazakh bactrians, which differ in appearance and productivity, depending on their belonging to one or another zonal type. The above authors in the Kazakh breed of Bactrian distinguish the following types: Kyzylorda, Ural-Bukeevsky and South Kazakhstan. The most numerous is the Kyzylorda type.

To increase the genetic similarity of the offspring with the outstanding ancestors in camel breeding, moderate inbreeding is practiced. Camels-producers of Kazakh bactrian from moderate inbreeding in the conditions of the Suzak district of the South Kazakhstan region are characterized by a live weight of 760 kg, a sheared wool of 13.5 kg, a height between the humps of 185 cm, an oblique length body 170 cm, chest 242 cm, metacarpus 22.5 cm. Camels have a live weight of 619.5 kg, hair cut 5.5 kg and body measurements 182.7-159.6-229.2-20.1 cm, milk yield for 12 months of lactaci and 1367 l That is, the genetic potential of milk yield per lactation exceeds 2700 kg

One of the promising areas of reliable assessment of the genome of camels according to D.A. Baimukanov is cytogenetic monitoring and certification.

Monitoring as an integrated system of observation, assessment and forecasting of changes is an integral part of biological research. Moreover, when cytogenetic monitoring requires a comprehensive analysis of genomic mutations.

D.A.Baimukanov et al. Established a connection between hypodiploidy and the age of animals and the level of milk productivity. The higher the milk production, the higher the physiological hypodiploidy.

Moreover, the rate of physiological diploidy in camels of the first lactation is significantly lower than in adult camels.

B.LKoshshan, A. Baimukanov, D.A. Baimukanov believe that when thoroughly breeding Kazakh Baktrians, it is necessary to conduct strict selection on the exterior, fertility and milk production indices.

E.T. Turlybaev believes that in the selection of purebred Kazakh Baktrians it is necessary to pay attention to selection by suit. In particular, Kazakh white suit bactrians reliably outperform their peers with a traditional suit in live weight by 12%, cut their hair by 18%, and measure their body by 3-7%.

Linear breeding of camels, according to D.A. Baimukanov, A. Baimukanov, is the highest step in breeding and breeding. The formation of lines begins with the selection of a particularly valuable group of breeding animals originating from a particular outstanding camel producer. When breeding along the lines, the role of the ancestor is great, on which they are guided at any stage of work with the line.

In the conditions of the Sozak PK in the Suzak region of the South Kazakhstan region, a line of camel-producer of the Kazakh Baktrian breed of the South Kazakhstan type of Kara-bora was bred. Manufacturers have: dark brown, uniform coat, live weight of 780-850 kg, wool cut 13.5-18.0 kg

In the conditions of the Taushyk TO in the Tupkaragan region of the Mangistau region, there is a line of camel-producer of the Kazakh bactrian Sary-Almas. All manufacturers have a uniform light brown color, live weight of 700-810 kg, wool cut 10.0-14.0 kg

To ensure maximum fixing in the offspring of camels of the Kazakh breed of Bactrian breeding traits, it is necessary to use moderate inbreeding of degree III x III with intralinear breeding.

B.S. Turumbetov et al. Recommend the use of inbreeding of degree III x IV in the selection of camels of the Kazakh Bactrian breed. This allows maximum consolidation in the offspring of the best indicators of parental productivity.

According to A. Baimukanov, B. Turumbetov and D. A. Baimukanov, to increase the rate of improvement of the breed, it is necessary to practice intensive selection of producers. This allows you to ensure the milk yield of commercial milk from daughters with a one-time milking of 3-4 liters

D.A. Baimukanov, O. Alikhanov, A. Baimukanov established that Kazakh bactrians in the conditions of the Mangistau region are different from Kazakh bactrians of the South Kazakhstan type, the Ural-Bukeev type and the Kyzylorda type. K.I. Duysembaev recommends a rigorous assessment and selection of two-humped camels by milk yield, taking into account payment for feed.

N. Alibaev and D.A. Baimukanov developed a unique scheme for converting meat-wool and meat-and-milk Kazakh baktrians of the South Kazakhstan type into the milk direction of productivity. For this purpose, camels of meat-milk and meat-wool productivity are mated with borax-producers of dairy herds having high-milk mothers in the pedigree.

In the conditions of the Kyzylorda region, camels of Kazakh bactrian are characterized by high milk productivity, due to the uniformity of milk production throughout the entire period of active lactation.

According to B.S. Turumbetov, one of the reserves for increasing milk yield is interspecific hybridization of camels.

That is, the amount of milk yield depends on the species, the blood content of hybrids, grazing conditions, on the technology of maintenance and other factors.

B.S. Turumbetov found that as blood levels of dromedar increase, milk production increases, and vice versa, milk production decreases with an increase in blood count of bactrian. In addition, the decline in milk productivity in the interval between the 3rd and 6th months of lactation directly depends on grazing conditions and on the growth of camels.

B.S. Turumbetov established that the Turkmen dromedars and Caesars from the two-breed interspecific crossing have all existing forms of the udder - cupped, round, lobate and goat.

The introduction of Kazakh Baktrian camel breeding by milk yield of an additional assessment and selection by milk yield coefficient allows to increase milk production by 15-20% and live weight by 7.510% in comparison with the traditional selection method.

When using outbreeding and topcrossbreeding, as shown by the results of studies in camels, a decrease in the fat content in milk is observed.

The best option for the selection of parental pairs to increase the absolute milk yield along with inbreeding to the degree of IV x IV is bottcross-breeding and inbredlinecross-breeding

The use of producers of Kazakh bactrian of the western population in crossbreeding with hybrid uterus allows increasing the content of milk fat and protein in milk.

Three-breed mating is widely used to create a collection herd of hybrid camels. The use of Kazakh dromedars in interspecific crossing allows increasing the absolute fat content in milk by 12% in comparison with Turkmen dromedars. Therefore, the breeding of hybrids by three-breed interspecific crossbreeding is one of the promising areas in milk camel breeding. That is, the best options for selecting parental pairs of camels are selection using hybrid camels and manufacturers of Kazakh dromedar.

According to B.S.Turumbetov, of particular interest are purebred Kazakh Baktrians of the South Kazakhstan, Ural-Bukeev and Kyzylorda type, as well as two populations - the Western and Mangistau, which are of

some value in terms of increasing production of both camel meat and camel milk .

A.Akhmediev established a positive effect of interspecific hybridization of the uterus of Kazakh bactrian with manufacturers of Turkmen dromedars. In this connection, in order to increase meat production, it is necessary to breed hybrid camels, which are distinguished by high energy of growth.

A. Baimranov and D. A. Baimranov focus on the problem of maintaining interspecific heterosis in the further breeding of hybrid camels.

One of the reserves for increasing the meat productivity of camels is a scientifically-based feeding organization system, taking into account the age and gender of the animals.

The meat productivity of camels is characterized by its feeding ability, yield of yams and fat.

A. Baimukanov et al. And other researchers established the effectiveness of using various breeding methods in camel breeding of Kazakh baktrian of the South Kazakhstan type of meat and wool productivity to increase slaughter yield and meat ratio. The use of inbreeding in degree IV x IV allows providing a slaughter yield of young animals in 2.5 years of not less than 57.0%, similar results were obtained with inbreeding-line crossbreeding 57.0%.

Outbreeding allows for a slaughter yield of 56.5%, topcrossbreeding 55.0% and bottcrossbreeding 56.4%.

The greatest yield of pulp per 1 kg of bones, i.e., the meat coefficient, is observed when inbreeding is in the degree of IV x IV - 4.55, then in descending order of outbreeding - 4.47, bottom crossbreeding - 4.38, top crossbreeding - 4.20 and inbreeding crossbreeding - 3 , 56.

In terms of meat productivity, hybrid animals of the first generation of the bunker are significantly superior to individuals of the purebred Kazakh bactrian. The inheritance of these characters in hybrids of the second and third generations is on the paternal side.

The main problem of meat-wool camel breeding is the production of high-quality camel meat.

The quality of camels, as shown by numerous studies, depends on the breed of the camel, the age, sex of the animals and fatness. Fatness depends, first of all, on the precocity of animals, the used technology of keeping and feeding.

Studies on a comparative study of the productivity and exterior indicators of Bactrian camels and hybrid uterus of different generations show that hybrid animals of all generations are superior to Bactrian in all the main

body measurements taken, which is very noticeable in the girth of the chest in animals.

According to I.K. Dzhumagulov, A. Tastanov and other researchers, hybrid animals have a large and powerful physique, increased vitality and adaptability to breeding conditions.

A comparative analysis of the productivity of hybrid animals according to literature has shown that in hybrids the action of dominant genes is combined with overdomination. The inheritance of milk productivity is intermediate, and in terms of live weight hybrids exceed bactrian to 12.1%.

The degree of correspondence of the gene pool of one breed to the gene pool of another breed determines the compatibility. In camel breeding for interspecific crossing, the gene pool of camel breeds is used, which differ significantly from each other in external forms, physiological characteristics, and analytical structure. As numerous studies have shown, when interspecific crossing of Kazakh Bactrians with Turkmen dromedaries, an increase in the endurance of the offspring arises in comparison with the original parental forms, i.e., the effect of heterosis is observed.

Interspecific crossbreeding of the uterus of the Kazakh Bactrian breed with the lek-producers of the Turkmen Bactrian breed allows us to ensure a sufficient level of heterozygosity in the first generation, and to ensure the preservation of residual heterosis during the absorption crossing of hybrids of the first generation of Narov with the Borax producers of the Kazakh breed of Bactrian. With interspecific crossing of camels, the choice of the initial species, breeds and the generation of hybrids affect the combining ability of the resulting offspring. Not every crossing allows you to get offspring with the desired productive qualities. Only well-selected breeds, with certain combinations, are capable of transmitting valuable qualities to offspring with interspecific crossbreeding.

Two methods of hybridization are distinguished depending on the initial parental forms: Kazakh when crossing females of Bactrian with a male of Dromedar and Turkmen - crossing of females of Dromedar with a male of Bactrian. The resulting hybrids of the first and subsequent generations have different names.

According to D. Baimukanov and P.V. Kugenev, hybrids of one and two-humped camels (Dromedar and Bactrian) are characterized by good development with a clear manifestation of heterosis in both prenatal and postnatal periods. The development of hybrids of the second and third generation is largely determined by the compatibility of parental pairs.

With variable crosses, heterosis in the resulting young is retained.

A comparative analysis of body measurements showed that hybrid camels have a high degree of growth.
Animal productivity depends on the quantity and quality of feed consumed.

Camel production

Camel milk

Camel milk (camel milk) is a product traditional for eastern countries (Central Asia, the Middle East, the Arab countries of the Arabian Peninsula, it is included in the children's diet in schools and kindergartens of the UAE). It has daily use there, it is used to make cheeses, ice cream, cocoa, etc. In Kazakhstan, Turkmenistan, they prepare national dishes and a shubat drink based on camel milk.

This milk due to the high content of trace elements in comparison with cow, has a sweeter and slightly salty taste. It is very useful: it contains calcium, phosphorus, iron, sulfur and many other useful trace elements, camel milk contains much more sugar lactose and amino acids, and less casein protein. Among the beneficial properties of camel milk is its resistance to chronic diseases such as allergies.

You should get used to camel milk, gradually increasing its use.

Shubat

Shubat (or chal) (kaz. Shubat) - a sour-milk drink made from camel milk. The traditional drink of the Kazakhs. Turkmens have a similar drink called chal. In Kazakhstan, the drink is consumed in the summer and is called shubat. Compared to koumiss, shubat has a higher fat content (up to 8%). Due to safety requirements, the chal is almost not exported. Fermented cream - agaran - is also collected from the surface of the drink.

Useful for asthma, tuberculosis, liver inflammation, diabetes and psoriasis. Vitamins C and D are three times more in it than in cow's milk.

Cooking

Fresh camel milk is poured into a wooden tub, pre-filled with sourdough, then a lid is tied or clogged, then left for souring for a day. Shubat, unlike koumiss, is not shaken, but mixed well before serving Shubat is thicker than koumiss and has a white color.

Specifications

The preparation features of shubat also include its preparation in a natural environment, which serves as a serious obstacle to the spread of this drink. A shubat is prepared in 6-8 hours, and its shelf life is very limited, since it quickly sours in a day. The only possible way to prolong its storage is to place it in conditions with a temperature of no higher than 5 ° C, which is impossible without a refrigerator.

Some characteristics of shubat:

	Camel milk	Shubat (Chal)
Acidity	18°	28°
Fat	4.3 %	4.3 %
Lactose	2.75 %	1.32 %
Dry matter other than fat	8.2 %	6.6 %
Minerals	0.86 %	0.75 %
Ethanol		1.1 %
Ascarbinic Acid	5.6 mg%	4.8 mg%

Camel meat

Camel meat resembles veal, but a little harsh and has a sweetish flavor.

The first mention of camel meat dates back to biblical times. The laws of Moses forbade the use of camel meat, although his milk has been drunk and is still being drunk. For centuries, camel meat has been the foundation of traditional nomadic cooking. Nomadic tribes could use only long-term storage products or eat meat of animals that they brought with them: usually they were camels. Traveling, nomadic tribes exchanged camel meat for other products and objects. And so camel spread around the world.

In ancient Rome and Persia, camel meat was considered a delicacy. In Mongolia, valuable fat was melted from camel meat. Camel was widely distributed in North Africa, the Middle East and Central Asia. For Russia, camel meat is still rare, the closest place where you can get it is Kazakhstan.

It is interesting that camel, which does not have internal fatty layers, is considered a dietary product.

In the Arab countries, camelina is considered an excellent means to increase potency.

Many parts of a camel are eaten: from a fleshy tongue to a whip-like tail. The taste of camel meat resembles beef, and the younger it is, the more valuable and tastier. Camel, like other meat, can be fried, boiled, stewed. Stews, pastes, barbecue, burgers, shawarma, belyash are prepared from it.

Camel is easily prepared in large pieces as well as small ones. The meat from the hump of a camel is considered the best; it is usually fried with spices or stews are cooked. The meat from the thigh is twisted into minced meat and cutlets or meatballs are cooked, baking them in the marinade. Soft feet are fried over an open fire, seasoned with plenty of spices. The stomach and heart are usually stewed with vegetables.

Tender camel is part of the famous Moroccan dish - tajine. It is easy to cook: meat is mixed with vegetables and baked in a traditional clay pot.

To cook the meat of an adult camel, it is necessary to cook it for 4 hours. If you want to fry the finely chopped meat, then you should marinate it in vinegar for 3 hours in advance, after which it will soften significantly and will taste better. For frying it is better to use a thin edge of a young animal or tenderloin.

The properties

Camel is beneficial for the health of the skin and mucous membranes, nervous and digestive systems. The trace elements that make up the meat regulate blood sugar. Camel meat contains antioxidants.

Composition

The camel is rich in phosphorus, potassium, iron, vitamins B1, B2, B9, PP, C, E and A. It has no internal layers of fat, is a dietary product.

How much to cook camel

A kilogram piece of camel must be cooked for 45-55 minutes.

Calorie content and nutritional value of camel

Calorie camel meat - 160.2 kcal

Nutrition value of camel meat: proteins - 18.9 g, fats - 9.4 g, carbohydrates - 0 g

Camel's wool

The camel's hair is extremely soft, smooth, and light, of excellent quality. The best quality wool is obtained from young camels. The thickness of its fibers is 16-18 microns.

Fibers of wool of young camels (aged one to three years) up to 20 microns thick and 43.5 - 45.5 mm long Camels older than three years old have an average thickness of up to 24 microns with a length of 44.5 - 45.5 mm. There are three colors of camel six:

-white (the color of baked milk - wool of this color is more expensive than wool of other colors)

-beige

brown or brown

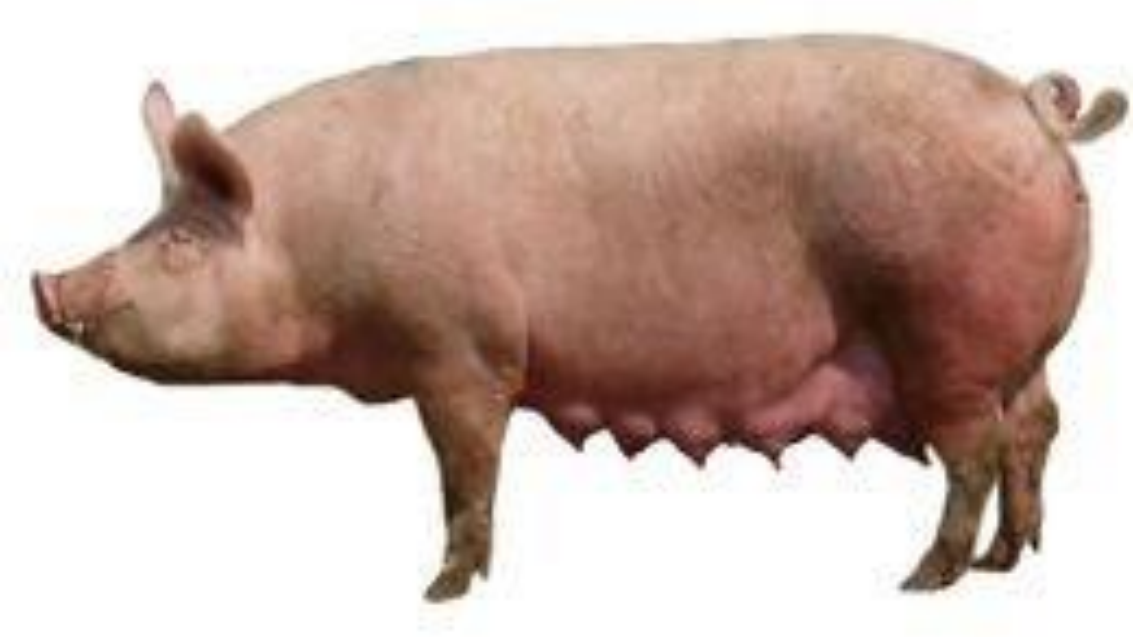
Because of the beauty of the color, and also in order not to lose the valuable properties of the coat, items made from camel hair are usually left unpainted or painted in darker beige tones. Its unique properties allow you to make the best yarn in order to knit various garments from it. Camel wool is very popular in the global market and in the textile industry.

Processing camel hair into final products is a complex process that takes time and skill. Shepherds collect camel hair. They comb the animals by hand during the spring, when the molting period is underway. Then camel hair goes through other processing steps. This is sorting, and making fabric or knitting.

Chapter 5: Pig Breeds and Genetic Potential

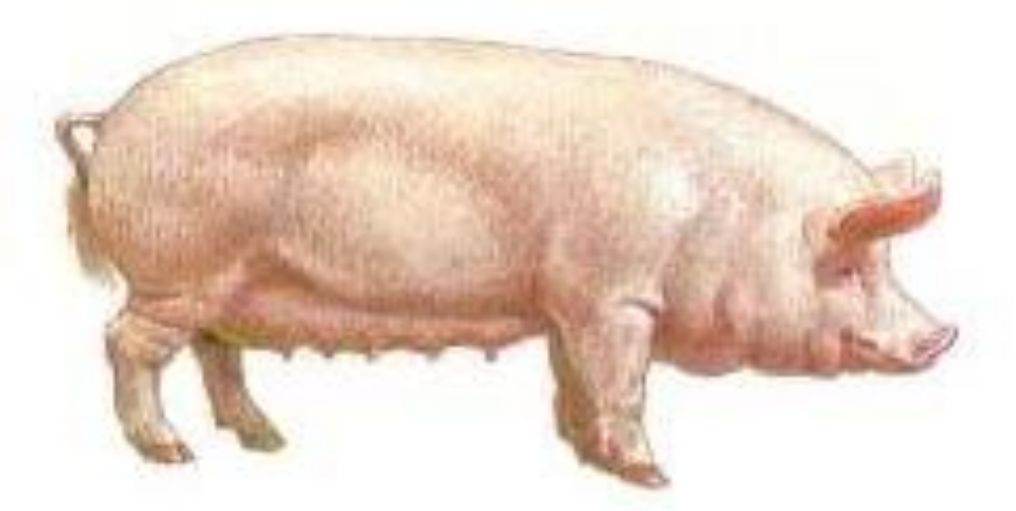
In the world of pig breeding, a little over 100 breeds of pigs are now actively bred. 32 breeds of domestic and foreign pig breeding are common in the CIS countries, this is due to large climatic diversity, feeding conditions and some other conditions. All breeds of pigs in the direction of productivity are conventionally divided into three groups. Pigs of the universal (meat-greasy) direction of productivity are referred to the most numerous first group. The second group includes breeds of meat and bacon directions of productivity. In the third group there are breeds of meat and fattening characteristics very similar to the first group, but their multiplicity is lower. When choosing one or another breed of pigs, first of all, their adaptability to the terrain should be taken into account. High results can only be obtained from animals adapted to your feed conditions and climatic zone.

Breeds of pigs of the first group are representatives of large white breed and their descendants (Siberian northern, Ukrainian steppe white, Lithuanian white).



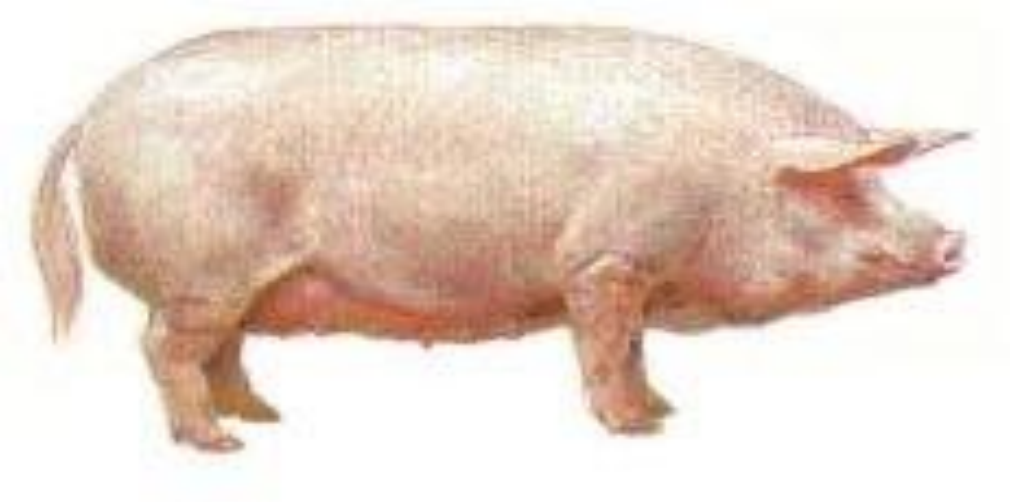
Large white breed is the most famous in the CIS. As a result of long domestic breeding, the English type of large white pigs has been radically changed and improved. During the selection period, a new domestic breed was actually created, which in many ways surpasses the English large white. Animals of white color, perfectly built, they have good health. The body is wide, long, deep, with a broad back without "interceptions" behind the shoulder blades. The ham is well done. The limbs are relatively small, without folds of skin, with strong hooves and short elastic headstock. The skin is strong, elastic, without folds. Bristle is not coarse, smooth, densely covers the entire body. The weight of adult boars is 340–360 kg, sows 230–260 kg. The length of boars is 175–185 cm, sows 161–165 cm. Multiple uterus from 10 to 12 piglets with an average weight of 1.1–1.3 kg each, live weight of farrowing 21 days, approximately 48-50 kg By 2 months, the weight of each piglet is approximately 16-18 kg With intensive feeding, young animals at the age of 7 months have a weight of 100 kg witha cost of 4-4.5 feed. units per 1 kg of growth. You can read more about the English large white breed of pigs and its modern development by clicking on this link.

The Belarusian black-motley breed of pigs was created by breeding local pigs with large white, large black, Berkshire and Landrace breeds. This breed is characterized by a black-and-white suit, a long and deep body, a wide and straight back, moderately developed hams, and slightly short limbs. The weight of boars is 320–350 kg, sows 210–250 kg. 10–11 piglets are brought to each sow farrow. The average daily gain during fattening is approximately 730–750 g, costs 3.9–4.0 feed. units per 1 kg of growth. These animals are widespread in Belarus.

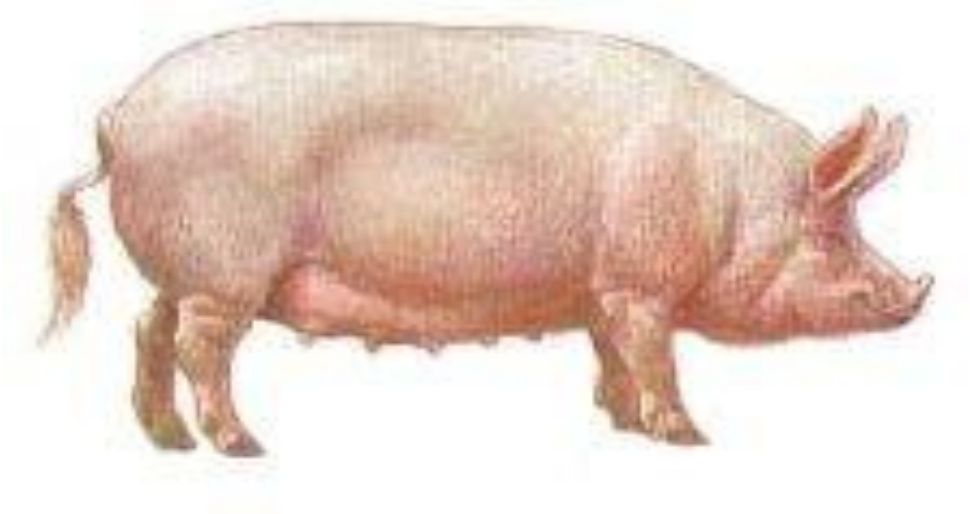


The Latvian white breed was created in Latvia on the basis of crossbreeding of local pigs with large white and partially white short-eared pigs. By type of addition and exterior, Latvian white pigs are similar to large white ones. Adult boars weigh 310–340 kg, sows 210–240 kg. Young

fatteners weigh 100 kg by the age of 7 months and have an average daily gain of about 700 g. About 4 food is spent per 1 kg of growth. units. Pig carcasses contain 54–55% of meat. The breed is mainly distributed in Latvia.

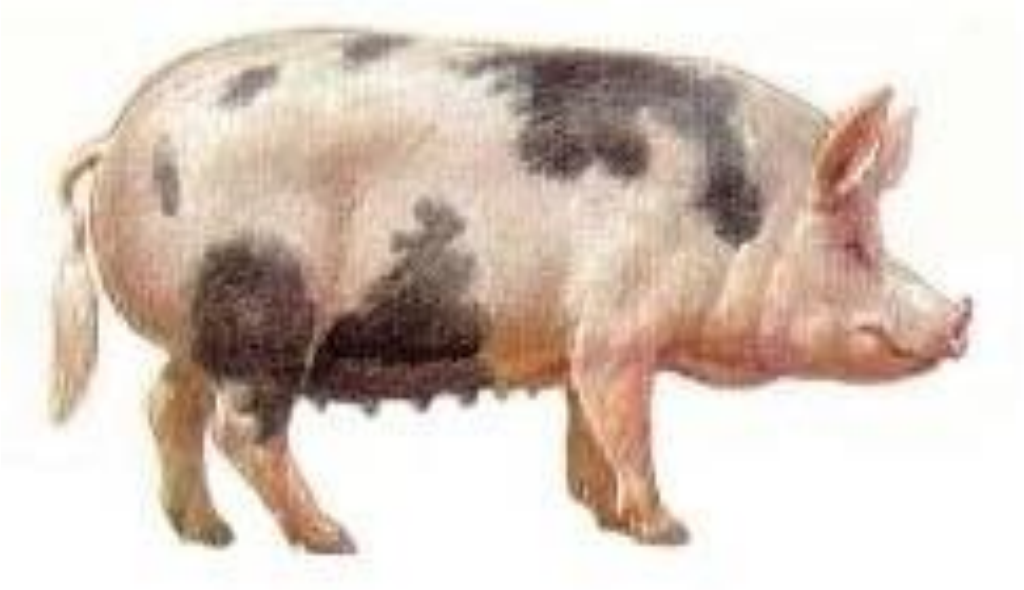


The Ukrainian steppe white breed of pigs was bred in southern Ukraine by breeding local pigs of the Kherson region with large white boars. Animals are well adapted to the arid climate, have a white coat, a strong physique and good body overgrowth. Productivity indicators are not inferior to indicators of large white breed pigs, except for early maturity, which is lower for this breed. The carcasses contain 52–54% of meat and 34–36% of fat. The breed is grown in the south of Ukraine, as well as in the Rostov, Kharkov, Donetsk, Astrakhan, Volgograd regions and the North Caucasus.



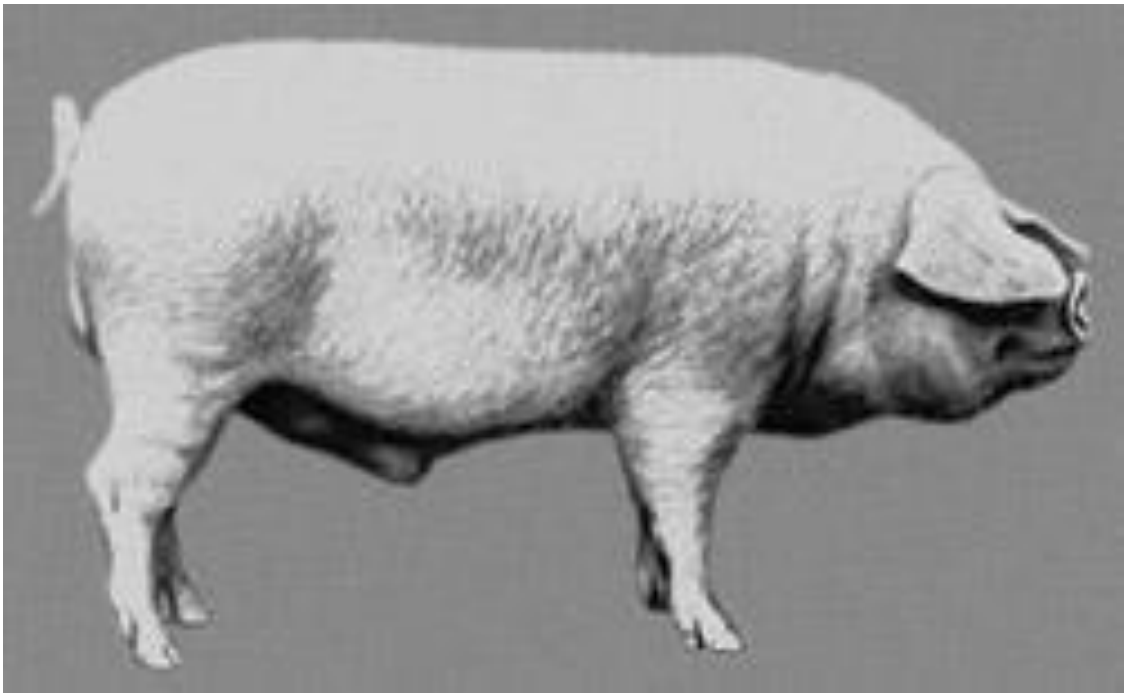
Lithuanian white was created in Lithuania by breeding local pigs with large white, German long-eared and short-eared breeds. These animals of a white color, by constitution and exterior, are very similar to large white breed. The weight of boars is 310-340 kg with a body length of 170-175 cm, sows about 240 kg and 152-155 cm. This breed is bred mainly in Lithuania, but is also used for industrial breeding in Moldova, Belarus and Ukraine.

The Murom breed was bred in the Vladimir region by crossing local animals with Lithuanian white and large white. Pigs of white color, strong build. A distinctive feature of Murom pigs is their adaptability to the use of a large amount of voluminous feed with a small amount of concentrates and backfill in their diets. The weight of boars is 250-280 kg, of queens 200-220 kg. Multiple pigs are 10 pigs per farrow. When fattening, young animals weigh 90-100 kg by the age of 6-7 months, and at a cost of 3.9-4.0 feed. units per 1 kg of growth. Carcass meat 57%. Animals of this breed are raised on farms in the Vladimir region.



The North Caucasian breed was bred by reproductive breeding of local Kuban breeds with such breeds as large white, white short-eared and Berkshire. Animals variegated black, large, massive physique. Adult boars weigh 260–310 kg, sows 210–235 kg. The sow brings 10–11 pigs to farrowing. In fattening, the growth of young animals is 670-700 g per day, at a cost of 3.9-4.1 feed. units per 1 kg of growth. The breed is grown in the Rostov, Volgograd region, Krasnodar and Stavropol territories.

Northern Siberia was obtained by crossing local short-eared pigs with large white. Representatives of the Siberian northern pigs are distinguished by a strong structure, great endurance and adaptability to harsh conditions. Animals of white color, with well-developed breasts, wide and straight backs and well-defined hams. The bristles are long, thick. Adult boars weigh 310–370 kg, sows — 230–250 kg. Multiple sows — 11 or more. The average daily growth of young animals during fattening is about 760 g per day, at a cost of 4.0-4.2 feed. units per 1 kg of growth; meat yield in carcasses is 53–54%. The Siberian northern breed is grown in the Novosibirsk region, Krasnoyarsk Territory and the Buryat Republic.



Livenskaya was bred in the Oryol region by breeding local pigs from the Berkshire, large white and Polish-Chinese breeds. Animals of the Lebanese breed are both pure white and motley-black, but there is also a motley-red color. The backbone is massive. The head is short with a curved profile. The ears are drooping large. Animals are wide-bodied. The skin is very loose, often in folds, strong overgrowth. The weight of adult boars is about 320 kg, sows are about 240 kg. The body length of boars is 170-175 cm, sows 160-165 cm. 3.9 feed. units per 1 kg of growth. Meat - 52-53%. The Lebanese breed is cultivated in the Oryol, Lipetsk and Voronezh regions.

Semirechenskaya was bred in Kazakhstan by breeding animals of the Kemerovo and large white breeds with wild pigs. Animals are well adapted to local conditions, hardy, have a strong constitution. In the climate of Northern Kazakhstan, this breed even surpasses the large white and Kemerovo breeds in productivity. The live weight of boars is 250–285 kg, sows — 210–250 kg, multiple pregnancy - 10–11 piglets. The average daily gain is about 700 g, costs 4.0-4.1 feed. units per 1 kg of growth, slaughter yield — 58-60%. The breed is grown in Taldy-Kurgan and Alma-Ata regions of Kazakhstan.

Kemerovo was bred in the Kemerovo region on the basis of crossing local Siberian pigs with boars of large white, Berkshire and large black. Animals of black color with small white spots on the body and white marks on the limbs, tail and head. The constitution is strong, the body is elongated, the chest is deep and wide, the hams are well executed. The live weight of adult boars — 295–350 kg, sows — 210–245 kg, and multiple sows —

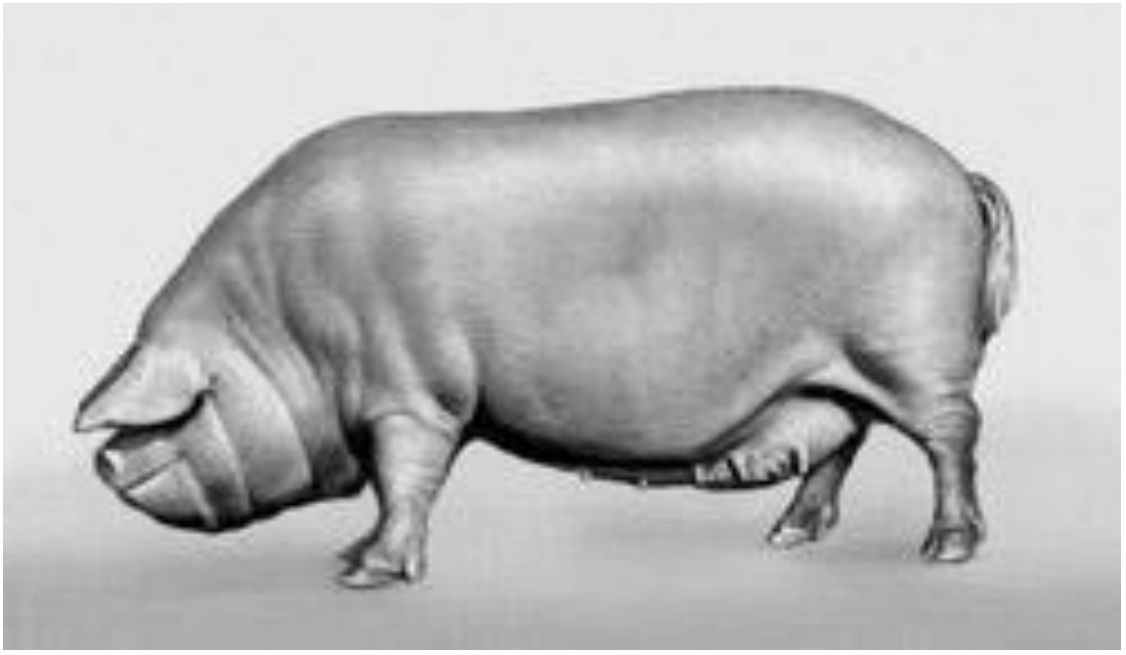
10–11 piglets. The average daily growth of young animals is 720-740 g at a cost of 3.9-4.0 feed. units per 1 kg of growth. The age of 100 kg is 190-100 days. It has distribution in the Kemerovo and Omsk regions, the Krasnoyarsk Territory and partially in Kazakhstan.

The Pietrain pig breed was bred at the beginning of the 19th century in Belgium. It was named so because this breed of pigs was bred near the Pietrain Sea, when the English large white pig and Bekshire were crossed. Pietrain pigs have a wide body, meat and large ham, not prone to obesity, and developed muscle joints. The weight of Pietren boars is approximately 230-270 kg, and sows 210-240 kg, fecundity - 7-8 heads per farrow. Young animals by the age of 7-8 months are gaining weight of 100-120 kg. The feed consumption will be 1 kg of growth - 5.4-6 feed units.

Pigs of this breed are used in crossbreeding in countries such as the Netherlands, England and France to improve the meatiness of other breeds.

The suit of pigs is mainly white with gray or black spots. The calling card of Pietrain pigs is short erect ears. These pigs, in Germany, are bred mainly in the north.

Pietrain pigs are demanding on the quality of food and are quickly excited in stressful situations compared to other breeds.



Breitovaya breed pigs obtained in the Yaroslavl region as a result of crossing local pigs with Danish landrace, medium white, large white and woodland. Animals of white color, good build. The head is medium, the ears are large, drooping. The chest is deep and wide. The loin and back are large. Pronounced hams. The live weight of adult wild boars is about 260–310 kg, body length 161–173 cm, sows 220–245 kg and 130–160 cm, respectively. Multiple fertility — 10–11 piglets. Young growth in fattening gives an average daily gain of 630-700 g, at a cost of 4.0-4.2 units of feed per 1 kg of growth. units. Slaughter yield - 53–55%. The meatiness of carcasses reaches 56-59%. Breitov breed is bred in the Leningrad, Yaroslavl, Ivanovo, Smolensk, Pskov, Kostroma and Murmansk regions.

Brazier pigs were obtained by crossing a wild boar with a Carpathian brazier. These pigs are considered the elite of all herbivores. The brazier belongs to pigs of the meat direction of productivity, like Lithuanian and Latvian white, Ukrainian steppe white, North Caucasian and Kemerovo.

In the brazier, at the genetic level, the rate of build-up of muscle tissue, and not adipose, is laid.

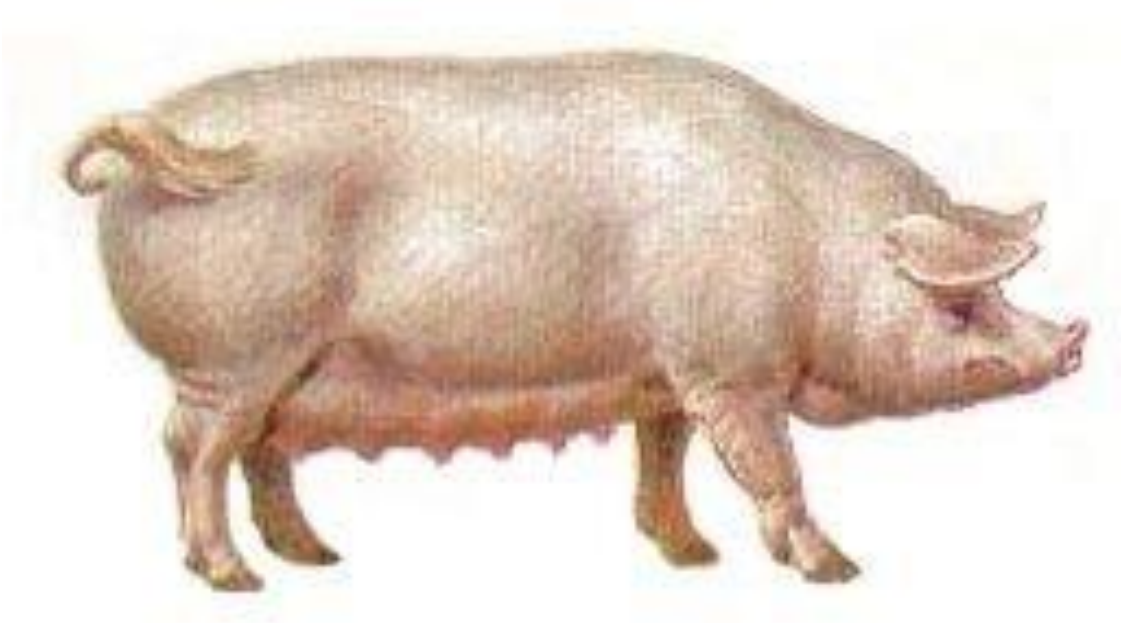
Brazier pigs eat both animal and vegetable feed, a variety of food waste, their processed products and technical residues. In winter, their feed ration consists of chopped stalks of corn, hay, root crops, acorns, chestnuts, waste from distilleries in the form of corn and wheat mash, bones, bran, and offal of a low category. It is only necessary to accustom young animals to eat everything. In the summer, hay and chopped grass are replaced by herbs, carrion from fruit trees, duckweed. These pigs are very fond of fresh shoots of trees, especially bark and oak roots. They do not need special conditions of detention. You can breed them both in winter and in summer on a walk. In autumn, pigs are overgrown with thick, long hair from black with a grayish tint to light brown. If you grow them in a pigsty, they will look like ordinary pigs and they will have normal bristles.

The weight of an adult animal exceeds 300 kg. If it is planned to fatten for meat, then piglets need to be neutered at 1-1.5 months of age, and then they quickly gain weight in six months. Puberty occurs in 5-7 months. Pregnancy lasts about 116-120 days. In the offspring usually 12-16 goals. From 4-6 days, young animals can be fed with liquid mash, barley grain, as

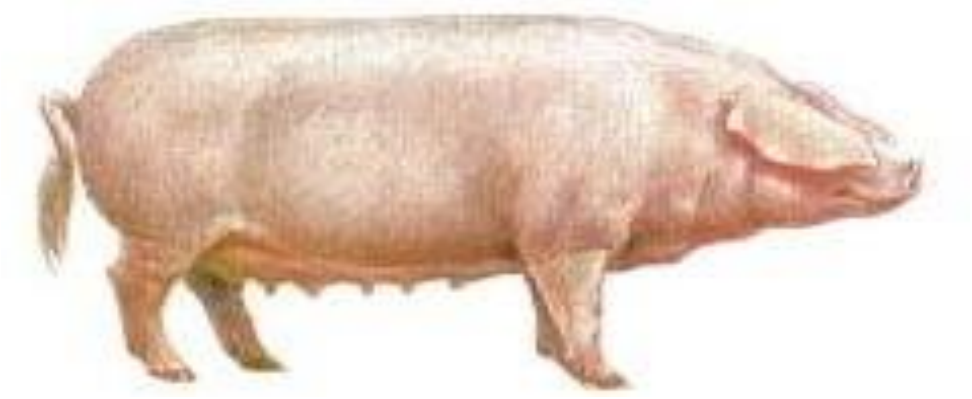
well as bone meal, chalk, red clay. There should always be water in the drinkers. At 3 weeks of age, the pigs themselves already gnaw apples, beets, eat grass, hay.
Barbecue pigs can not be vaccinated, they have very strong immunity. Braziers are grown in many regions of Ukraine, but their number is very limited.
Breeds of pigs of the second group
Landrace and its pedigree lines belong to the second group of pig breeds. These pigs are also white, but differ in long torso, long-eared, well-developed hams and loin.

Landrace pig breed appeared in Denmark as a result of breeding a local Danish breed with large white. Animals of white color, have a long relatively narrow body, with large drooping ears, wide pronounced hams. The average daily growth of young animals during fattening is 700-750 g at a cost of 4.0-4.1 feed. per 1 kg of growth. The meat yield in carcasses is 57–59%. The uterus brings 10-11 piglets into the farrow. Animals are quite picky about their living conditions and diet. But still, the Landrace breed is

widely used throughout Russia.

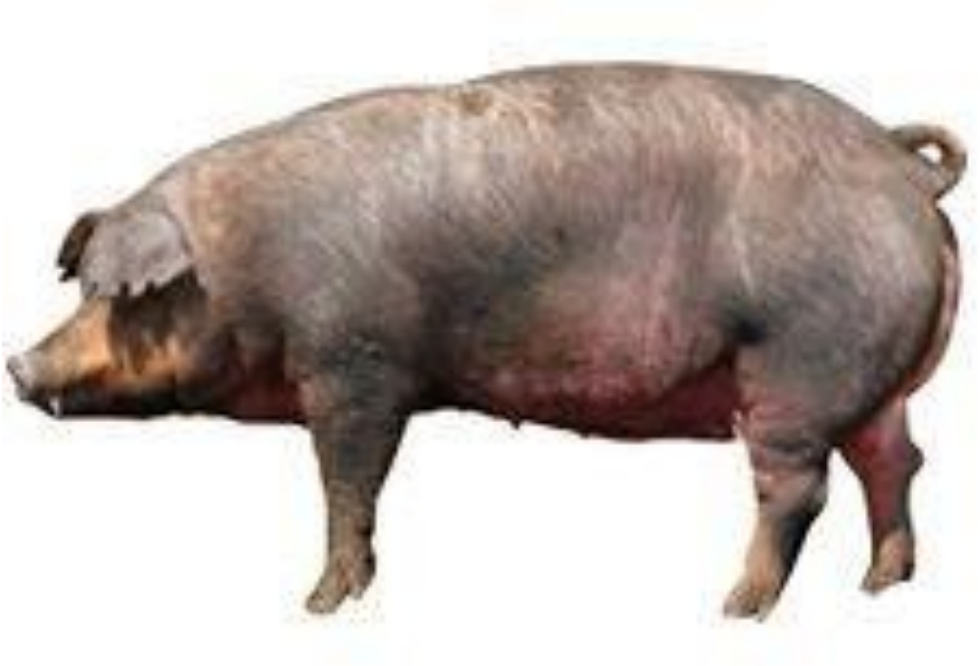


Urzhumskaya was bred in the Kirov region by breeding a local long-eared pig with a large white one. White animals, characterized by a strong physique, high productivity and good adaptability to the use of local feed. The weight of boars is 300–320 kg, sows — 230–250 kg. Multiple fertility — 11–12 heads. Fattening young growth reaches a weight of 100 kg by 6 months, with an average daily gain of 680-700 g, and at a cost of 3.95-4.1 feed. units per 1 kg of growth. The meat yield in carcasses is 57–58%. Urzhum type pigs are grown in the Republic of Mari El and the Kirov region, as well as in separate complexes of the Volga-Vyatka and Ural economic regions.



Estonian bacon breed created in Estonia. Pigs of white color, on the exterior are very similar to animals of the Landrace breed, have a stronger

constitution and better adaptability to local conditions. Adult boars weigh 320-330 kg, trunk length 180-185 cm, and sows 220-240 kg and 160-165 cm, respectively. Multiple sows 11 or more piglets. The average daily gain in fattening is 700-750 g at a rate of 3.75-3.85 feed. units per 1 kg of growth. The meat content in carcasses is 58-60%. This breed has very high productivity indicators when thoroughbred breeding. Widely distributed in the Baltic states.



The Duroc pig breed is bred in the United States from several red pig breeds. It was registered in 1883. The suit of Duroc pigs is not completely red; shades are often found - from golden to dark cherry or yellow-brown. Large-bodied pigs, with a rough skeleton and stiff bristles, with a small head and wide hanging ears, late-ripening.

Duroc has a deep and wide sternum, a slightly convex back. The body is compact, medium length, deep and wide. The ham is full. The limbs are strong.

The main advantage of the Duroc pig breed is its fantastically fast growth rate. According to the results of studies with dyuroks, the largest gain per day for fattening is a little more than 1 kg, with an indicator for other breeds - a maximum of 962 g. Adult boars reach a weight of 340-380 kg; uterus 250-310 kg Sows are infertile - 9-10 piglets in farrowing. Slaughter yield over 86%. The total weight of piglets at three weeks of age is only 141 kg (14-16 kg each). Therefore, purebred breeding Duroc mass distribution is not received. They are used to produce pedigree hybrids.

Don meat - 1, or DM-1. Bred in the 60-70s in the farms of the Rostov region by the method of reproductive crosses. Don meat - factory meat type of the North Caucasian breed of pigs. Pigs are well adapted for breeding in the climatic conditions of the North Caucasus. Animals are characterized by a black-and-white suit. The sizes are average. Lightweight head with a straight profile. Legs set correctly. Hams of the correct form. The weight of an adult boar is 310–320 kg with a trunk length of 170–172 cm, the weight of a sow is 220–230 kg with a trunk length of 150–154 cm. A sow brings an average of 10–11 pigs per farrow. Up to two months of age, the piglet reaches a live weight of 17-18 kg or more. In all respects, Don Meat - 1 is superior to the North Caucasus. Animals of this breed have a smaller, about 15%, thickness of fat and a 10–15% greater mass of back ham. The meat content in the carcass of a Don meat pig is 8-10% higher than that of a North Caucasian pig.

Early meat - 1, or SM-1. This breed of pigs - the steppe type of precocious meat breed - was created by combining useful hereditary traits of a number of meat-type breeds: Belarusian, Poltava and Rostov. One of the youngest pig breeds - it was approved in the early 90s of the XX century.

The live weight of an adult boar is 300-320 kg with a trunk length of 180-182 cm, the live weight of a sow is 230-240 kg with a trunk length of 165-168 cm. For one farrow, a sow can bring 11-12 piglets. By the age of two months, a young animal acquires a mass of 18-20 kg

Let us dwell in more detail on the productive qualities of precocious meat - 1, since these data are not in all books on pig breeding. So, the early maturity of these pigs is 180 days, the average daily gain in live weight of fattening young animals is on average 0.79-0.8 kg; feed costs per 1 kg of live weight gain - 3.8 feed units; bacon thickness - 25-30 mm; the mass of the rear third of the half-carcass is slightly more than 11 kg

The precocious meat breed of pigs -1 includes 19 factory lines, as well as 3 factory lines of Siberian breeding. There are four factory types of precocious meat - 1: Krasnodar type, steppe type, Lipetsk and Leningrad types.

Breeds of pigs of the third group

Animals of the third group are mainly black or motley-black suit. They are characterized by early maturity and quick salting.

Ukrainian steppe pockmarked was created in the Kherson region by crossing pigs of the Ukrainian steppe white, Berkshire and mangalitsky. Animals of a motley suit of different shades (black, black-red, black and

white) with a strong constitution, deep and wide chest, a fairly long body, well-developed ham. The live weight of wild boars is 280-300 kg, pigs 200-200 220 kg, multiple fertility, 10 or more piglets. The average daily increase in fattening is 650-680 g at a cost of 4.0-4.2 feed. units per 1 kg of growth. These animals are bred in the Kherson, Nikolaev, Odessa, Crimean and Zaporozhye regions of Ukraine.

Mirgorod created in the Poltava region. Animals of a motley-black suit, of a strong constitution, with a deep and wide chest, with a wide body of medium length and well-defined hams. The weight of adult boars is 290–335 kg, the body length is 170–180 cm, the sows weigh 205–220 kg and the body length is 150–165 cm. The uterus brings 10 or more piglets to the farrow. The average daily growth of young animals during fattening is 670-700 g, costs 4.1-4.3 feed. units per 1 kg of growth, meat yield 53–55%. Animals are perfectly adapted to the use of pastures. grown in the Poltava, Rivne, Zhytomyr, Sumy, Khmelnitsky, Ternopil and Chernihiv regions of Ukraine.

The large black one was created in England at the end of the 19th century by crossing local long-eared pigs with Neapolitan and Chinese. Animals of medium size, black suit, with a somewhat loose constitution. The weight of boars is 280–310 kg, sows — 190–215, multiple pregnancy — 9–10 piglets. The increase in fattening 670-690 g per day, the cost of 4.1-4.45 feed. units per 1 kg of growth. Meat - 52-53%. Animals are often used in breeding with white breeds. Pure-bred animals are raised in a small number of pedigree farms in the Republic of Tatarstan, the Tula region, the Krasnodar Territory, Donetsk Region and several other regions

Pigs have a number of biological and physiological features, due to which they can be widely used to comprehensively increase the production of meat and fat. Pigs better than cattle and sheep process a variety of feeds into meat and fat. Pig meat is highly nutritious and tastes good. Pigs are very fertile. Under normal conditions, an adult pig can produce 2 farrowings per year, 9–11 piglets on average in one litter. Pigs of modern cultivated breeds and offspring are characterized by very high precocity. The carcass of a meat-type pig slaughtered at 6–9 months of age weighs 80–100 kg. In a short time, pig farming in our country has turned from an extensive and unprofitable livestock industry into one of the most intensive and profitable. According to its organizational structure, pig farming is one of the largest branches of our livestock. Thousands of large specialized farms are engaged in pig farming. In areas around large cities and industrial centers, specialized farms are organized that feed hundreds of thousands of piglets annually. A powerful breeding base for pig breeding was created, which allowed to improve the pedigree and quality of pigs. Over 15 new highly productive breeds of pigs were bred. More than 95% of the breeding stock of pigs is currently represented by purebred animals. This scale of

development of pig farming made it possible to systematically increase the production of pork. But the pace of development of pig farming still far from satisfying the needs of the population, and therefore we continue to import a significant share of the consumed pork. Therefore, the task was set to further develop pig production, increase pork production and reduce its cost. In order to fulfill this task, work continues on the specialization, consolidation and mechanization of pig farms and the introduction of advanced technologies for keeping and raising pigs in practice.

Chapter 6: Breeds of domestic rabbits and their genetic potential

The history of rabbit breeding dates back many years. During all this time, a sufficient number of different breeds has been bred. The ancestor of a domestic rabbit is a wild rabbit. Outwardly, he looks like a hare. But there are some differences. These are mainly anatomical and physiological signs. Pregnancy for a hare lasts 52 days, for a rabbit - 30 days. Rabbits are born blind and naked, and rabbits are born into fluff and sighted. Usually, the hare has 4-5 babies in the litter, and the rabbit has 7-8 babies, sometimes 15-18 rabbits. Bunnies immediately become independent and run, while rabbits are still helpless for a long time. If you cross a wild and domestic rabbit, the result will be strong offspring. The size of a wild rabbit is much smaller than a domestic one. It weighs up to 2 kg, and reaches 50 cm in length. Coloring can be different, but more often gray-brown with yellowish, white on the breast and abdomen.

Breeding rabbit breeds began in the XIX-XX century. It was mainly a meat direction. Later, they began to pay attention to the coloring of skins, they were used in kind.

Gradually, rabbit breeding became a source of fur raw materials. Modern breeds are very different from their wild relatives not only in color, but also in weight and physique.

Particularly noticeable is the diversity with respect to the hairline. Rabbits of down breeds are now bred, in which the length of the guiding hair is 85-100 mm, as well as short-haired with a hair length of 18-22 mm, which is 4-5 times shorter.

No pet species has such a variety of colors as a rabbit. Interest in the skins of the original color has survived to the present.

The rabbit (Oryctolagus cuniculus) belongs to the order rabbit-like (Lagomorpha), the Zaitsev family (Leporidae), the genus of burrowing rabbits (Oryctolagus), and the species of ordinary rabbits.

All human-bred rabbits are descended from a wild rabbit, whose homeland is considered to be Spain and Southern France. The natural habitat of the wild rabbit extends to all countries of the Mediterranean basin, including the countries of North Africa. Since the 19th century, rabbits have been imported to many countries as an object of hunting. Now they live in England, Germany, Switzerland, Yugoslavia, North and South America, New Zealand, Australia. They were brought to Russia at the end of the last century by landowners of the southern regions of Ukraine. Currently, they can be found in the southern regions of Moldova, in the Odessa, Nikolaev and Kherson regions of Ukraine.

In New Zealand, Australia, wild rabbits multiplied so quickly that they began to cause significant damage to agriculture. Only as a result of intensive fishing (up to 100 million skins of wild rabbits were harvested annually) did their livestock decrease.

Wild rabbits are not much different from outbred rabbits of a gray-hare color. The color of their gray-brown with streaks of black outer hair. The chest and lower part of the neck are painted reddish-gray, the abdomen is white. Full-aged rabbits are relatively small animals, their body length reaches 45 cm, and their mass does not exceed 3 kg. They live on rocks, cliffs of the sea coast, in ravines, gullies, avoiding damp and wetlands.

Wild rabbits live in colonies. In their habitats, they dig burrows with nesting chambers and numerous exits. Near settlements, where they are often disturbed, they are mainly nocturnal. They are most active at the beginning and at the end of the night.

Wild rabbits are predominantly herbivorous animals. In the summer, their main food is herbaceous plants, especially cereals and legumes. Animal feed (insects, worms, gastropods) occupy an insignificant part. In the summer, with high yields of natural grasses, rabbits do little harm to agriculture, but with massive reproduction (Australia can serve as an example), they can cause huge damage.

Wild rabbits are highly fertile. In subtropical countries, rabbits bring 5–6 litters per year, with 3–7 rabbits in the litter being fertile. Succulence lasts 28–32 days. Rabbits are born naked, helpless, blind. They grow surprisingly fast: at 10 days of age, their eyes open, on the 20th day they already temporarily leave the nest and consume food on their own, and

at 2 months of age they lead an independent life. The increased fecundity of wild rabbits is associated with their high mortality: in natural conditions, they rarely live up to three years, live in captivity for 10-12 years.

The high mortality of wild rabbits is due to the spread among them of various diseases, often taking on the character of an epizootic. Many rabbits, especially young animals, also die from predatory animals and birds.

The history of the resettlement of a well-known ordinary, or European, rabbit on the planet is very instructive to all, and, presumably, is not yet complete. According to paleontological studies, before the ice age, rabbits (more precisely, their ancestors) were distributed in most of Europe. During the cold snap, they were driven back beyond the Pyrenees, where they survived. By the beginning of our era, many rabbits were found in what is now Spain - the very word Hispania may have come from the Phoenician spany - rabbit. The Romans who captured Spain rated rabbit meat as a delicacy, and they began to breed rabbits in cages. This is how rabbit breeding came about.

Around the same time, for the first time, people noticed that rabbits strongly eat vegetation and can compete with sheep. So, in the Bolear Islands, the legionnaires of Julius Caesar have already specifically exterminated rabbits as harmful animals. But at the same time, the Roman conquerors brought the rabbits to England.

Later, in the Middle Ages, rabbits from France were again brought to England, as well as to Germany, where they were specially settled by monks - the rabbit then stood like a piglet. At the same time, rabbit husbandry developed in Western Europe, first for the sake of fluff, then for meat. At the University of Bologna, they began to give lectures on rabbit breeding. By the 16th century breeds of domestic rabbits are already known.

In Russia, rabbits appeared in the XI century. - under Prince Yaroslav the Wise. But mass rabbit breeding began to develop in Russia only in the 1920s.

Rabbits were brought both to the USA and to South America. There, they took root and incorporated into native ecosystems - local predators limit their numbers, preventing excessive reproduction. Otherwise, the situation in Australia - rich vegetation, a small number of predators and a suitable climate contributed to the mass reproduction of rabbits on this continent.

It is generally believed that these animals multiplied in Australia in large numbers after the only importation of several animals. This is not

entirely true. The literature refers to repeated cases of releases and shoots of rabbits into the wild in the south and in the north of Australia in the middle of the XIX century. But already at the end of the XIX century, these animals settled here at a speed of up to 100 km per year. At the beginning of the XX century. rabbits in Australia numbered about 20 million, and by the middle of the century - already 750 million. They actively ate grassy vegetation, nibbled tree branches, and became rivals of local rodents and marsupials. Rabbits began to be exterminated primarily as competitors of sheep. In Europe, however, sheep harm rabbits by trampling and destroying their burrows. In Australia, the behavior of rabbits has changed: they dig less holes and hide in pits, grooves, under bushes and dense grass, and even began to climb branches of shrubs and low trees.

Throughout the XX century. fighting rabbits in Australia did not lead to significant success. It was only possible to reduce their numbers in some places and for a while. The introduction into Australia of European predators - the natural enemies of rabbits of affection, ermine, ferret, fox - did not bring success. These animals switched to local marsupials and were themselves considered undesirable species. In the 50s of the XX century. rabbits in Australia began to be infected with a viral disease - myxomatosis. Myxomatosis is common in South America in local wire-haired rabbits (genus Sylvilaus), but it proceeds in their mild form. For the European rabbit, this disease is fatal. In Australia, periodic epidemics of myxomatosis kill 90% of rabbits, but surviving animals acquire immunity and soon their populations are growing again.

Only in recent years have they been able to completely destroy the rabbits or minimize their number in some areas in southern Australia (Victoria). And suddenly it turned out that after that the local species of eagles ceased to nest here - he already managed to specialize in feeding rabbits. A significant share is occupied by rabbits in the diet of the Australian wild dingo dog. Thus, by now rabbits have already partly fit into local ecosystems. Nature, if not disturbed, eliminates the consequences of human unreasonable activity itself. In new territories, the number of introduced species after a violent outbreak is gradually decreasing and stabilizing - they enter local communities, they have their own enemies and parasites.

Wild European rabbits now live in Western and Central Europe, Greece, on a number of islands, in North Africa, America, Australia and New Zealand. Even in conditions of relatively stable numbers, disputes by agronomists and hunters about the dangers and benefits of rabbits have

repeatedly arisen. Such discussions - whether to exterminate these animals, or to protect - took place, for example, in France, Chile and Argentina, where rabbits were also imported at one time.

In the 19th century, rabbits were also brought to the south of Ukraine, to Nikolaev, Kherson regions, in the vicinity of Odessa. But for 100 years, they have not spread far beyond the places where they were released. In the middle of the XX century. in Ukraine, 56 more releases to nature were carried out (32 thousand animals in total), but 80% of them were unsuccessful - animals died from predators, their habitats were destroyed. Now the number of rabbits in Ukraine does not exceed several thousand. In the Crimea, few rabbits were released in hunting farms, where they took root with the support of humans, but in the wild nature of Crimea they are very rare.

Modern urbanization has dramatically reduced the number of rabbits in Western Europe, but meanwhile at the beginning of the 20th century. their total number there reached 100 million heads, annual production amounted to several million. The future of rabbits near Odessa is also in doubt, since the plots occupied by them are actively being developed for dachas and other objects. Myxomatosis epidemics strongly influence the number of rabbits in Ukraine, as well as in France.

In Europe, rabbits prefer to settle in places with rugged terrain, light and dry sandy soil, in which they usually dig deep burrows, up to 2–2.5 m. In the absence of shelters, they often become victims of predators: foxes, marten, feral dogs and cats, rats, ravens, hawks, moons, eagle owl, marsh owl, white-tailed eagle. But the proximity of humans does not bother rabbits. Although these animals do not run as fast as their relatives - hares, but they are very nimble. In thick bushes and grass, they are difficult to catch even for a trained dog. In addition, the rabbits have good hearing and are very shy - hearing even the slightest rustle, they immediately run away and hide. Such caution helps them easily survive in wastelands and in parks near settlements. In the Crimea and the Nikolaev region, they settle even on the territory of factories, dig holes under buildings and in heaps of garbage and scrap metal. However, being caught, wild rabbits do not get used to people and are prone to escape from captivity.

Rabbits are usually active late in the evening and at night (where they are not disturbed, in the morning and before evening). During feeding, they usually do not move more than 50–100 m from their shelters.

Rabbits are very unintelligible in their diet and consume a wide variety of herbaceous plants (however, cereals almost do not touch). In

winter, they collect dry grass, seeds, rhizomes, gnaw branches of bushes. But if the layer of snow exceeds 5-7 cm, it is already difficult for rabbits to collect food. During snowy winters, dry and hot summers, when the grass burns out, they can starve.

Interestingly, these animals have a birth control mechanism - female rabbits have more embryos than give birth to developed rabbits. Some, if not all, embryos can spontaneously dissolve - primarily under the influence of stress arising under conditions of overpopulation. Rabbits are territorial - males do not tolerate other males on their site, and females expel females. Typically, conflicts over territory occur in rabbits without bloodshed, but, of course, are associated with nervous tension. When the density of animals increases, the number of conflicts increases, which leads to the resorption of part of the embryos. Moreover, in females of older age and higher rank more rabbits are born than in young individuals.

Under favorable conditions, rabbits are very fertile. The female is able to give birth all year, bringing 3–5 litters of 5–6 in Western Europe and even up to 12 rabbits in each. In Ukraine, rabbits annually bring 3-4 litters of 3-7 rabbits each year. And in Australia, a female rabbit can give birth to up to 40 cubs per year. Rabbits reach puberty at less than one year of age, and their life expectancy in nature is 5–6 years.

In captivity, rabbits, such as the Angora breed, survive to 15 years. Rabbit breeding, as already mentioned, arose about 2 millennia ago, and now about 200 breeds and forms of domestic rabbits are known. And if the average weight of a wild rabbit is 2-3 kg, then a giant flander, for example, can weigh 6.5-9 kg

Previously, rabbit breeding was popularized among young people in cities, but now they have somehow forgotten about breeding rabbits for meat and skins in urban conditions. But there was a new fashion for domestic rabbits as decorative pet animals. Such rabbits in the USA and Western Europe are recommended to be kept for children - especially pathologically closed or, on the contrary, very nervous, excitable, growing up in conflict families. It is recommended to keep rabbits and people with different psychological problems - as therapy, treatment by communication with animals. I must say that rabbits are very well suited for the role of pets - they are not aggressive, neat, easily communicate with people, like to be stroked. To keep the house, dwarf rabbits weighing 750 g were bred, but they turned out to be infertile and differed in poor health, often died.

Therefore, now the standard weight of the decorative rabbit is 1350 g, which is more natural for this species.

The history of the rabbit continues in a new role - a decorative family favorite in urban apartments of the XXI century. A domestic rabbit easily learns to defecate in one place, like a cat. Part of its bowel movements is dry lumps with dry plant debris. Other lumps contain protein, mucus, and many intestinal bacteria involved in digestion. The rabbit carefully collects and eats these lumps - protein, mucus and microbes return to the digestive system again and help to absorb new portions of food. Therefore, there is little dirt in the room from the rabbit. But we must remember that these animals have a need to constantly nibble something to grind the incisors, so they need to be given solid toys and make sure that the rabbit nibbles them, not furniture and shoes. It is advisable to keep him in a spacious cage, letting out for a walk only under supervision. It is better to have a cage with a retractable bottom (to make it easier to clean) and equip the animal with soft hay, rags for the nest. Rabbits generally love to lie on soft feather beds. The rabbit food should always be fresh, vegetables, grass and greens - dry and not moldy. It is better to give water in a bottle with a straw so that it does not get dirty and does not wet the food. Animals easily learn to drink from such a drinker.

Rabbit use

Rabbit breeding is an auxiliary branch of animal husbandry.

The biological characteristics of rabbits - high fecundity and early maturity - allow you to get cheap fur raw materials, fluff, skin and dietary meat in a short time.

Rabbit fur is used both in its natural form and imitated as a fur seal, nutria, otter, squirrel, sable, arctic fox, etc. The meat of rabbits is tasty and nutritious closer to chicken.

Leather is used for making suede, making light shoes and haberdashery. The effectiveness of rabbit breeding can be judged by the rabbit farm of the Kalityansky farm in the Kiev region, in which one female gives 30-35 rabbits a year, after fattening, which receive 70-80 kg of meat in live weight and the corresponding number of skins. Rabbits are widely used in laboratories for biological and medical research. Youngsters also breed them at stations for experimental work, in schools they are used to set biological experiments and familiarize students with some questions of zoology, anatomy and physiology, the basics of genetics and selection. Breeding rabbits on a school farm is of great educational importance for instilling labor skills in students.

Dozens of specialized state farms and a large number of collective farm farms are engaged in rabbit breeding. They are bred on personal farms.

The rabbit belongs to the class of mammals, the order of rodents (herbivores), the family of rabbits, and the species of rabbit. The hare belongs to a different species and does not give offspring with a rabbit. The duration of pregnancy in a rabbit is 30 days, and in a hare 50, rabbits are born naked and blind, rabbits are born and sighted.

The rabbit is the most prolific and precocious pet. For a year, the rabbit can give 4 bales and in each of them 6-8 and even 15 rabbits. The reproductive cycle (egg maturation) in unfertilized queens is repeated every 8–9 days, and females are capable of fertilization the very next day after the round-up.

Rabbits are born, as in all normal animals, underdeveloped - blind, unhappy, helpless. In the first three weeks they eat only mother's milk. In rabbit's milk, 13–27% of fat, 10–15% of protein, 1.8–2.1% of milk sugar, 2.6% of minerals. The high nutritional value of milk ensures the rapid development of rabbits: on the 5–7th day of life, they become covered with wool, on the 10–14th day they see clearly, on the 15–20th they begin to leave the nest.

At birth, the rabbit weighs 40–64 g, in the first week its mass doubles, by the age of 4 months it reaches 60% of the adult's mass
a rabbit. Puberty occurs in medium-sized breeds at 4–5 months old, and in large breeds at 5–6 months of age. Rabbits are well fed, reaching 2.5-3 kg by the age of 4 months. Slaughter yield of meat is 60-65%.

The rabbit is adapted to external contents.

Rabbit breeding in Kazakhstan

In the USSR, rabbit breeding began to develop in 1925. After the decision of Joseph Stalin, about 15,000 breeding rabbits from Western Europe were brought into the western republics of the USSR (Ukraine, Belarus, etc.). During these years, a number of pedigree rabbit-breeding state farms, collective farm farms and state nurseries were created. Collective farms and individuals involved in rabbit breeding were granted special benefits. In 1935, the procurement of rabbit skins amounted to about 38 million pieces. In the postwar years, the largest number of rabbit products was harvested in 1961 - 56.7 million skins (including 21.6 million pieces in the RSFSR and 26.4 million pieces in Ukraine) and 41.2 thousand tons of meat (including 13.9 thousand tons in the RSFSR and 24 thousand tons in the Ukrainian SSR). Household (individual) rabbit breeding was widespread in the USSR, giving in some years (until 1970) about 95% of rabbit breeding products. The development of individual rabbit breeding was facilitated by the partnership and society of amateur rabbit breeders, who helped the

population to purchase pedigree animals of the best breeds, grain feed, and organized zootechnical and veterinary services for individual farms.

Amateur rabbit breeders raise rabbits up to 4-5 months of age (when they give a full-fledged fur skin). They contain rabbits in individual or group cages made from local materials (wood, adobe, brick, etc.), in the summer in the open air, in the winter in adapted rooms.

In Soviet times, rabbit-breeding farms of collective farms and state farms had meat-and-fur and downy directions, some farms were engaged in raising rabbits for meat. On meat-skin farms, each female of the main herd received an average of 20 rabbits, that is, 50 or more kg of meat and 20 skins per year. Farms that fed broiler rabbits, raised them under the uterus up to 2-2.5 months of age and sold with a live weight of about 2 kg On farms that breed down rabbits, 350-700 g of fluff per year from each adult rabbit was received. The number of collective farm and state farm rabbit breeding farms in the country grew rapidly. In 1970 in the USSR there were about 400 rabbit farms producing up to 5% of rabbit breeding products, in 1972 about 4 thousand collective farms and state farms had such farms, whose production accounted for 10-15% of its total harvest in the country. In 1971, 47 million rabbit skins and 38 thousand tons of meat were harvested in the USSR.

The main amount of rabbit meat in the USSR was produced in traditional areas - the RSFSR, the Ukrainian SSR, the Moldavian SSR, the Uzbek SSR and the Kazakh SSR. To provide commercial rabbit farms with pedigree rabbits, there were 400 pedigree farms on collective and state farms, including more than 40 farms such as pedigree farms that raised the best rabbit breeds: Soviet chinchilla, white giant, gray giant, silver (rabbit breed), Viennese blue, black -brown, white downy, white New Zealand, California. The Biryulinsky fur farm of the Tatar Autonomous Soviet Socialist Republic has the most highly productive number of rabbits. The end of the 80s of the XX century, according to the World Association of Scientific Rabbit Breeding, the Biryulinsky breeding plant was the largest rabbit breeding farm in the world.

The development of scientific problems in rabbit breeding is carried out by the Research Institute of Fur Breeding and Rabbit Breeding. To this day, the journal "Rabbit and Animal Breeding" is being published.

Breeds of rabbits In the world there are over 60 breeds of rabbits. However, the practical value of most of them is small. Breeds of rabbits having household. value, much less. To obtain skins, meat and fluff, only 12-15 breeds are used. The scientific classification of rabbit breeds has not yet been developed. According to the conditional economic classification, all

breeds of rabbits are divided into fur and down. Fur breeds, in addition, are divided along the length of the hairline into normal-haired and short-haired, and according to the nature of the products received from them - into skin, meat and skin and meat.
The following are brief characteristics of the most promising rabbit breeds, which can be recommended for breeding in private farms and farms.

White Giant Breed

This breed includes large fur rabbits of a meat-skinned direction of productivity. They have a gentle, but strong constitution. They have a long body, a straight narrow back, sometimes with a slight interception behind the shoulder blades, a round croup, a deep chest, an elongated, medium-sized light head with wide long ears, long, widely set legs. The type of constitution is leptosomal.
Rabbits have an excellent pure white hairline, without marks and impurities of a different shade of hair, and therefore it is advisable to grow them mainly for slaughter on the skin.
The average live weight of adult rabbits is 5.1 kg, the length of the trunk is 60 cm, the chest circumference is 38 cm, and the fertility rate is 8 rabbits. White giant breed rabbits are bred everywhere.

Soviet chinchilla
New highly productive fur breed of large rabbits of the meat-and-pellet productivity direction. They have a strong constitution of the Mesosomal type and are well acclimatized in various regions of our country. Their body is slim and wide

enough. The head is small with straight ears of medium size. The main color tone of the hairline on the back, sides and rump of silver-gray-blue. On the abdomen, neck, lower part of the tail and the inner side of the legs, the hairline is almost white with a slightly darkish undercoat.

Rabbits are unpretentious, hardy, give a good large skin with a thick and well-balanced hairline and, in addition, have high growth energy and good meatiness.

The average live weight of these rabbits in adulthood is 5 kg, the body length is 60 cm, the chest circumference behind the shoulder blades is 40 cm

Rabbits are distinguished by good maternal qualities. With proper feeding, they are able to feed seven to eight rabbits.

Gray giant

Breed of fur normal-haired rabbits of large sizes. They have a long massive body, a wide and deep chest with a small underbelly, a large, rough head with long ears, and relatively short massive legs. The type of constitution is leptosomal. The color of the hair in the mass of gray-hare, rarely dark gray, glandular gray and even less almost black. The mass of adult rabbits varies from 4 to 6 kg, the average breed weight is 5 kg, the body length is 61–62 cm, the chest circumference behind the shoulder blades is 37 cm. Individual rabbits of this breed weigh up to 7 kg

When slaughtered in an adult state, rabbits of this breed usually receive skins of especially large sizes. However, in terms of hair thickness, they are somewhat inferior to the skins of such breeds as the Soviet chinchilla, white giant, Viennese blue and black-brown. Meat quality is average.

Rabbits of this breed are characterized by high fecundity and good milk production. The average litter size is seven to eight rabbits.

Rabbits of the breed of gray giant are adapted to a mild and temperate climate, so they are mainly found in the southern and southeastern regions of the country and only partially in the middle zone in

the Tatar Autonomous Soviet Socialist Republic, Tula Oblast and some other places.

Vienna blue

Fur breed of medium-sized meat-skinned rabbits. The body is slender, slightly elongated, the skeleton is strong, the head is small with ears of medium length. Type of constitution is mesosomal.

The hair is thick, soft, with a good shine, bluish-blue, from dark to light. Aost and underfur are evenly colored. The skins of these rabbits are usually used in kind, without staining.

The average weight of adult rabbits is 4.3 kg, the average body length is 57 cm, the chest circumference is 36 cm

Rabbits are distinguished by good maternal qualities and high fecundity. On average, they bring eight or more rabbits for a brawl.

Viennese blue rabbits are very hardy and adapt well to the natural and feed conditions of various zones of the country.

Silver

Fur breed of medium-sized rabbits of meat-and-peel direction of productivity.

They are distinguished by a wide, compact, expanding to the back of a tightly knocked-down body. The head is small, the ears are short and straight, the chest is deep with a small under-chest, the croup is wide and round, the legs are muscular and strong, proportional to the body in size. Type of constitution is mesosomal.

The hairline is quite thick, the color of old silver. The directing hair is black, the spine is pure white, the undercoat is bluish blue. The tip of the muzzle, ears, limbs and the top of the tail are darker in color.

In suckling rabbits, up to one month of age, the hairline is black. Silver formation ends at 4 months of age. The average live weight of adult rabbits is 4.5 kg, the body length is 57 cm, the chest circumference is 36 cm

The fertility of rabbits is good - an average of eight rabbits per round. Rabbits of this breed are distinguished by good early maturity and excellent meatiness, due to which they can be recommended for cultivation mainly for meat.

Black-brown fur breed of large meat-skinned rabbits.

They are distinguished by good health. The backbone is strong, the body is slightly elongated, the head is large, rounded with long ears, the chest is wide and deep, the chest is small, the legs are long and massive. The type of constitution is leptosomal.

The hair is thick and lush. According to the thickness of the hair, this breed takes one of the first places. Up to 4 months of age, hair color is black, in adult rabbits - black-brown foxes. Skins are used in their natural form, without staining.

The average live weight of adult rabbits 4.9 kg, body length 61 cm, chest circumference 37 cm, fecundity eight rabbits per round

California and White New Zealand

Fur breeds of rabbits of meat production direction, imported to our country from the USA, where they were created.

They have a strong constitution of the iris type, a compact body of a cylindrical shape, a deep and wide chest, thick legs. The hair is thick, elastic, white. In California rabbits, the tips of the muzzle, ears and tail are dark in color. The live weight of adult rabbits is 3.7-4.5 kg,

sometimes up to 5 kg. They have a high growth rate at an early age and excellent meatiness.

By the age of 2 months, rabbits weigh about 1.8 kg with good feeding, and by the age of 3 months they weigh about 2.7 kg. It is recommended that they be mainly used for the production of meat broiler rabbits with up to 60-75- meat content before slaughter. daytime.

Down rabbit

Domestic breed of down rabbits. They have a thin, but strong skeleton, a bent trunk of a cylindrical shape, a medium-sized head, a broad chest, a broad back with a rounded top line, a wide and rounded croup, and muscular legs of medium length.

A characteristic feature of the breed is the absence of tassels on the ears, which are present in Angora downy rabbits.

The average annual collection of fluff from one adult rabbit is 350–400 g, the best individuals give up to 600 and even up to 700 g. The length of the fluff is 6–7 cm. Its color is pure white, although black and blue rabbits are sometimes found.

The average live weight of adult rabbits is 4 kg, the average body length is 54 cm, the chest circumference is 34 cm. The type of constitution is airy. Fertility - on average seven rabbits per bunny Rabbits are quite hardy, and therefore they can be successfully bred in almost all areas of our country.

Breeds bred in Kazakhstan. Today, Flemish rabbits, or flanders, are one of the oldest and most famous breeds in the world. The clear origin of the flanders is not fully understood, therefore, today there are several theories of the origin of this breed. Some scientists believe that the flanders came from Patagonian rabbits, which were brought back by Dutch sailors from South America, specifically from Argentina, in the 16-17th centuries. True, opponents of this hypothesis claim that the weight of Argentine rabbits does not exceed 1 kg, while flanders can weigh much more.

Rabbits breed Flanders

Currently, the Flanders breed is considered the largest among the rabbits. Therefore, this rabbit is also called the Belgian giant, since in some cases the live weight of adults exceeds 7 kg Outwardly, rabbits of this breed are distinguished by a long, powerful and muscular body with strong limbs. At the same time, the ears of the flanders are completely straight. This breed is quite picky about the conditions of feeding and feeding, so it will need spacious cells.

Features of breeding rabbits breed flanders. Flanders are meat, heavy rabbits, the average weight of which is 6-8 kg, in some cases reaching 10 kg. One of the main problems with their breeding is that these animals ripen late for pregnancy. This usually occurs no earlier than 8 months, while most females of other breeds mature in 3-4 months. As for the domestic breeds of flanders, our breeders partially eliminated this drawback, while the Americans did it much worse.

Tips for feeding rabbits Flandre. Flandre rabbits need careful care, one of the main elements of which is proper feeding. If this is not taken into account, then these animals will often get sick and even die before the age of three months due to bloating. In order to somehow counter this, experts recommend adding biomycin to the rabbit diet. In this case, the number of feedings of adult Flandre rabbits should be about two times a day. Hay to this breed of rabbits is given only on demand. Every day it is advisable for them to give grains of about one handful, that is, 30 g per individual. For lactating females, the amount of grain increases to 2-3 handfuls per head. Also, special wet mixers must be added to the food.

Gray giant

The gray giant is a highly productive breed of large rabbits of gray-hare (agouti) color (less often dark gray, ferruginous gray, black and white). The breed was bred by reproductive breeding of local outbred rabbits with Flandre rabbits. The rabbit rabbit of the Gray Giant breed is characterized by high milkiness and fecundity. The live weight of full-aged individuals is from 4.1 to 7.5 kg. Rabbits of this breed have a strong constitution, gravitating towards the rough. Often, individuals with a strong and massive skeleton stand out in the herd. Their head is large and rough, with long thick ears, set in the form of the Roman numeral V. The body is massive, long - up to 66 cm; the chest is deep and wide, often with a small breast (chest circumference behind the shoulder blades is 37-39 cm); the back is long, straight and wide; croup wide and round; legs are strong, straight and thick.

Lop-eared rabbit (ram)

From the history of the breed: The basis for the creation of the "sheep" breed was a large breed of the same name of the rabbits, grown as fur and meat. Attractive appearance led zoologists to try to achieve miniaturization of animals. It succeeded in the middle of the 20th century. These rabbits with touching ears hanging were a major success among European lovers of decorative animals. At the turn of the millennium, the first “lamb” were brought to Moscow from the Czech Republic, Poland and Austria. Not so long ago in Russia they began to cultivate the “lambs” of chinchilla and Siamese blue color introduced from Sweden.

General characteristics: The dimensions of dwarf sheep correspond to the status of a small decorative rabbit, somewhat exceeding the mass of colored dwarf rabbits. Sheep got its name for drooping ears, which allow them to give the impression of an apologizing and timid animal. The ram’s character is affectionate and peaceful. Between the ears of the sheep there is a downy roller that looks like a small crown. Newborn rabbits are characterized by rapid development, good appetite. As they grow older, the ears of young sheep fall, their final drooping can be observed in the fifth week of life. In some cases, the rabbit may have one ear sticking up to the top, this is not a problem, after two months this “teenage effect” usually disappears. Sheep rabbits are very affectionate and affectionate for their owners, real tame animals.

Maintenance and care: Rabbits become pets in the homes of our fellow citizens quite often. It is important to remember that domestic

rabbits, like their wild counterparts, need a fairly large amount of plant food. In fact, the rabbit devotes all his free time to food. In nature, this is also a search for food, and in captivity - food itself. Therefore, food should be quite diverse and at the same time useful for your pets. So, the basis of the diet of rabbits is grass and young shoots. In winter, grass gives way to hay. Moreover, in the case of grass, and in the case of hay, it is important where the greens grew. In no case should grass be used in polluted places, as well as from roadsides. The increased lead content makes such food deadly for rabbits. In addition to the grass itself and other green food, other products must be present in the diet of domestic rabbits, especially fruits and vegetables. So, carrots, apples, fodder beets, cauliflower - great products for your pets. Oats, sunflower seeds, flaxseed and other complementary foods are also very useful. You can also give raisins.

The weight of adult "sheep" - usually 1.5 - 2.0 kg

Chapter 7: Breeds of poultry and their genetic potential

Poultry farming is one of the most precocious, intensive and dynamic sectors of the agro-industrial complex, which should make a significant contribution to the saturation of the market with dietary food products. The possibility of applying modern breeding methods in order to create highly productive poultry and the concentration of large stocks of birds in limited areas, as well as the possibility of mechanization and automation of the main production processes, have caused the poultry industry to benefit most from the development of modern technology. The development of intensive poultry farming is possible only in the presence of highly specialized breeds and lines, on the basis of which they produce a highly productive hybrid bird. The creation of the initial combining lines and obtaining a hybrid bird is the main task of poultry breeders. To solve this problem, it is necessary to involve not only geneticists, but also physiologists, biochemists, zoohygienists, technologists, veterinarians, whose joint efforts should ensure the full manifestation of the genetic potential of birds in the intense conditions of industrial poultry farming.

Breeding work with poultry is an integral part of the overall technological process for the production of poultry products on an industrial basis. Based on this, methods of breeding and organizing the production of breeding products should be aimed at creating forms of highly productive poultry adapted to intensive conditions.

The integrated system of breeding poultry farms includes, as a rule, the following enterprises.

Research institutes develop new and improve existing methods and techniques of breeding work with poultry, create new lines and crosses of poultry, and carry out methodological management of breeding work with poultry at poultry plants.

Experimental and experimental farms of research and educational institutions, taking into account zonal conditions, create cross-lines of specialized combined lines and after state tests transfer them to pedigree plants.

Pedigree poultry farms maintain and improve the economically useful qualities and compatibility of industrial cross lines, propagate the initial cross lines, pass hatching eggs (young animals) to breeding farms - first-order reproducers, and carry out methodological management of breeding work in these farms. Separate pedigree plants working with highly productive populations of agricultural birds and having the necessary material and technical base, under the guidance of research institutes, can work on the development of new combining lines.

Pedigree reproductive farms and breeding farms of hatchery and poultry stations (IPS) and poultry farms produce parental forms of hybrids and hybrid material

Pedigree reproductive farms, depending on their functions, can be of various types.

The first-order reproductive farm receives from the plant progenitor forms of a certain cross-country and produces parent forms of hybrid poultry for second-order reproductive farms.

A second-order reproductive farm receives parental forms of hybrids from a first-order reproductive farm, crosses them and provides industrial poultry workshops with a hybrid bird, and through the hatchery and poultry stations, commodity farms of poultry farms that do not have their own breeding farms, and the population.

In some cases, reproductive farms that combine the functions of farms of the first and second order can be organized. They provide other reproductive farms and second-order farms with the parent forms of the hybrid bird, and industrial farms producing commercial products with the hybrid bird.

In first-order reproducers of the egg direction, one and a half day old chickens are taken for cultivation to one young flock transferred to an adult herd, and three day-old males for one male.

In meat reproducers, for each head transferred to an adult herd of paternal maternal juveniles, two day-old chickens are taken for rearing and

four day-old males for one male paternal flock, and the maternal form young darling is transferred to an adult flock for 1.7 daily chicken and one male - three daily cockerels.

When importing hatching eggs of progenitor or parental forms of a hybrid bird in the farm - reproducer, it is necessary to provide separate incubation of eggs of different lines and parental forms, and when hatching, marking of young animals of each line and parental form.

The selection of repair young animals should be carried out taking into account the requirements recommended by the plant.

For uniform production throughout the year, the breeding herd is completed at least twice a year in the first-order reproducers, and four to six times in the second-order reproducers.

Reproductive farms can sell tribal products in the form of hatching eggs or daily young animals divided by sex.

When growing young animals and keeping poultry in reproductive farms, one should strictly adhere to the recommendations of the breeding farm, to which the reproductive farm is assigned.

Every year, it is also necessary to carry out appraisals of birds.

Incubator-poultry stations (IPS) provide non-specialized farms and the population of the served zone with young highly productive birds. IPA, on the basis of contracts, purchase hatching eggs in reproducers or in poultry farms (from poultry of parent herds located isolated from industrial workshops).

IPS annually develop and implement zootechnical measures to increase the quantity and improve product quality, improve the use of the hatchery park, and improve zootechnical and veterinary work in poultry farms of various ownership forms.

Testing stations and competitive farms conduct state tests and give an objective assessment of linear and hybrid birds. The forms and methods of breeding in these categories of farms are determined by the tasks facing them and are carried out in accordance with existing instructions and recommendations. The breeding and productive qualities of the bird are evaluated in accordance with the approved standards.

CROSSES OF SPECIALIZED LINES OF CHICKEN FOR PRODUCING EGGS

CROSS COURS "ALATAU"

The Alatau cross includes two lines of the White Leghorn breed: A-1 - paternal and A-2 - maternal. Lines A-1 and A-2 according to the constitution and exterior are a pronounced egg type of white leggorn hens.

Crossbreeding to obtain hybrids is carried out according to the scheme:

Paternal Maternal Baseline

and ancestral forms ♂A-1 x♀A-1 ♂A-2 x♀A-2

Parent forms ♂♀A-1 x♀A-2

Two-line hybrids♂♀A (1 x 2)

Line A-1 is characterized by a higher intensity of oviposition in the first months of the productive period and by early puberty and peak oviposition (28-30 weeks of life).

A-2 is the maternal line, characterized by a high egg mass, long stable egg laying, high egg yield, good viability of young and laying hens with cell content. Compared with the A-1 line, it has advantages in reproductive quality and breeding output.

The hybrid from crossing the lines A-1 and A-2 is distinguished by its large-ladenness and, by this criterion, exceeds the existing crosses.

Table 1. Productive qualities of lines and industrial hybrid of the cross "Alatau"

Indicators	Line A-1	Line A-2	Hybrid A- (1-2)
1	2	3	4
Live weight, weeks, kg:			
18 weeks.	1,35	1,38	1,34
72 weeks.	2,05	2,05	2,01
Puberty, days	167	166	160
Age of laying a standard egg, days	183	180	195
Egg laying per medium layer per 72 weeks of life, pcs.	245	242	260
Egg laying on the initial laying hen for 72 weeks of life, pcs.	217	215	232
The mass of eggs at 52 weeks of age, g	61,4	63,8	62,2
The output of egg mass per average layer, kg	15,1	15,4	16,2
Feed costs, kg: per 10 eggs	1,5-1,9	1,6-1,75	1,5-1,7
per 1 kg of egg mass	2,56-3,02	2,60-2,89	2,7-2,99
Egg Fertilization,%	85,2	83,3	93,9
The output of chickens,%	89,5	88,0	85,6
The safety of young animals (up to 18 weeks),%	96,7	93,8	98,9
The mortality of adult birds,%	10,3	5,0	7,4

CROSS "BOWANCE"

Introduced to Russia from the Netherlands (Hendrix company) in 1998. Four-linear. At the age of one day, chickens easily differ in the rate of feather growth. The accuracy of the division of young animals by sex in daily age reaches 99%.

Table 2 Productive quality of chickens cross "Bovans"

Indicators	Paternal form (White)	Maternal form (brown)
Live weight of chickens (g) at the age of (weeks) 4 weeks	264	268
16 weeks.	1145	1220
35 weeks.	1551	1586
Herd homogeneity in live weight chickens at 16 weeks.%	82,0	84,0
The safety of young animals up to 16 weeks.,%	99,8	99,5
Intensity of laying of hens in 40 weeks. life,%	80	81
The mass of eggs is 35 weeks. chickens, g	56,6	57,4
Egg production for a period of 21-80 weeks	335	331
Feed consumption, kg	2,10	2,25
The output of egg mass, kg	20,6	21,0
The safety of adult hens,%	95	94

CROSS "LOMAN BROWN"

Introduced from Germany in 1989-1992, four linear, AB - brown plumage, CD - white plumage, line C - fast-moving, line D - slow-moving, sexing accuracy 98-99%. The age of reaching 50% of egg production is 23-24 weeks, the peak of egg production (26-32 weeks) is 86-90%, egg production for the initial laying layer is up to 72 weeks. life 265-295 pcs. eggs. The output of incubation eggs in the initial layer is 230-240 pieces. The output of young animals is 81-83%. The safety of young animals is 96-98% and adult birds 94-96%.

CROSS "RODONIT"

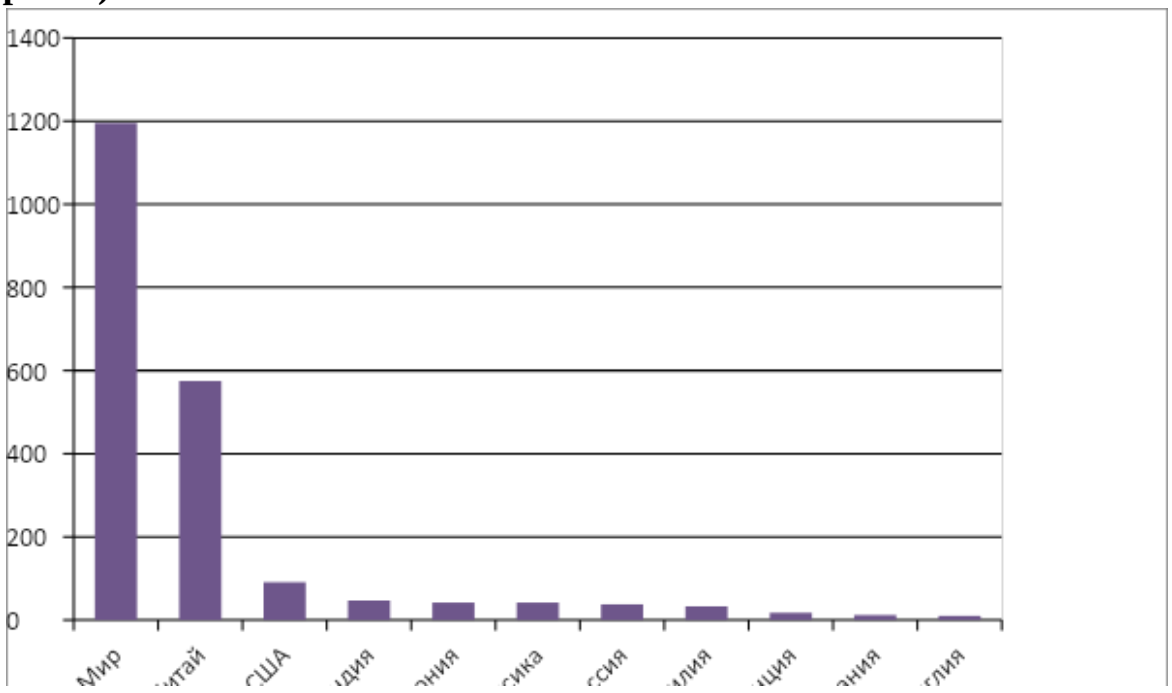
Autosex cross, four-line. The bird is characterized by a high genetic potential for productivity.

P1 is the paternal line of the paternal form, P2 is the maternal line of the paternal form with brown plumage. P3 is the paternal line of the maternal form and P4 is the maternal line of the maternal form with white plumage.

Table 3. The performance indicators of the cross "Rhodonite"

Indicators	Options
Egg production of hybrids in 80 weeks. at the beginning layer, pcs.	315-330
The average weight of eggs, g: for 30 weeks.	58,2
for 52 weeks	68,8
Egg mass in 68 weeks. kg, per initial layer	18,9
on the average layer	19,2
Egg Fertilization,%	95
Egg production,%	93
The output of young animals,%	98
Preservation up to 16 weeks. %	97
from 17 to 68 weeks	98
Feed costs, kg: per 10 eggs	1,54
per 1 kg of egg mass	2,29

World production of chicken eggs in 2008 (gross production, billion pieces)



World China the USA India Japan Mexico Russia Italy Greece France

Cross sections of specialized chicken lines for broiler production

Currently, the following crosses of poultry have become widespread in the CIS: Baros (Bolshevik PPZ), Smena-2 (GPPA Smena), Competitor2 (GPPZ Competitive), SK-Rus other.

Cross "Baros"

A new three-line cross created on the basis of the gene pool of several crosses: Broiler-6, Ross and ArborEikers. The final broiler "Baros-123" is characterized by high adaptive ability in various conditions. In 1998, in competitive tests, this cross showed high results. So the live weight of broilers in 50 days of fattening was 2342 g, the average daily gain is 45.9 g, feed consumption per 1 kg of growth of 2.29 kg and the safety of the livestock is 98.5%. Productive indicators of this bird in a production environment are presented in tab. four.

Table 4 Productive indicators broilers cross "Baros"

Indicators	unit of measurement.	Poultry farms		
		Lomonosovskaya, (Leningrad region)	Severo-Pskov, (Pskov region)	Krasnaya Polyana, (Kursk region)
Broilers grown	million of heads	4,0	1,0	8,0
Feeding Times	days.	48	43	46
The average live weight at slaughter	gr	1866	1873	1849
Daily average gain	gr	38,0	42,0	41,1
Feed consumption per 1 kg of growth	kg	2,30	1,96	2,15
Safety	%	94,9	97,8	97,7
The output of meat of the first category	%	71,6	92,0	87,8

Cross "Change-2"

It was created on the basis of the Smena cross using genetic material of the paternal form of the Ross-208 cross through a one-time “blood flow” and strict selection. Final hybrids are characterized by high viability and growth rate, good feed conversion. The cross consists of 4 lines: two lines of the Cornish breed C5, C6 and two lines of the Plymouth rock breed C3 and C4.

The scheme for obtaining broilers cross "Change-2":

Initial lines ♂C5x♀C5 ♂C6x♀C6♂C3x♀C3 ♂C4x♀C4

Ancestral ♂C5 x♀C6♂C3 x♀C4
forms

Parent forms ♂C56 x♀C34

Broilers C 5634

The live weight and feed costs of broilers are shown in table 5.
Table 5. The live weight of broilers cross "Change-2" and the cost of feed per 1 kg of growth

Age, weeks	Live weight, gr			Average daily gain, g	The cost of feed per 1 kg of growth, kg
	cocks	hens	average		
1	175	165	170	18,6	1,23
2	410	390	400	32,9	1,38
3	800	700	750	50.0	1,63
4	1250	1050	1150	57,1	1,66
5	1750	1450	1600	64,2	1,86
6	2250	1850	2050	64,3	1,98
7	2700	2260	2480	61,4	2,24
8	3150	2650	2900	60,0	2,34

Cross "Competitor-2"
A two-line cross of meat chickens, launched at the GKPZ "Competitive" in the Moscow region. It includes the paternal K6 line of the Cornish breed and the maternal line K7 of the Plymouth breed.
The scheme for producing hybrids.
Initial lines ♂K6 x♀K 6 ♂K 7 x♀K 7

Grandparents ♂K 6 ♀K 6 ♂K 7 x♀K 7
forms

Parent Forms ♂K 6 ♀K 7

Hybrids K 67
The use of this cross allows you to get broilers with live weight in the 7-week age of 2500-2550 g, high average daily growth of broilers (48-51 g)at low feed costs per 1 kg of growth (1.9-2.0 kg). The safety of poultry is 97-98% for the growing period. Egg production of chickens of parental forms in 60 weeks. life is 164-166 pcs. eggs.
Cross "SK-Rus"
Selected at the GPP "Rus" on such grounds as growth rate, feed conversion, muscularity of the chest and legs, bone development, vitality and reproductive qualities. The main indicators of the parent herd are as

follows: egg production for the initial laying hen in 60 weeks. life 160 pcs., the yield of hatching eggs 90%, fertilization of eggs 92.3%, the output of young 80-83%.
The test results of the broilers of this cross are presented in table6.
Table 6. The productivity of broilers cross "SK-Rus"

Age of chicks weeks	Live weight, g	Average daily gain, g	Feed conversion, kg
1	169	18,0	1,2
2	395	38,0	1,3
3	750	50,7	1,6
4	1160	58,6	1,65
5	1610	64,3	1,85
6	2070	65,7	1,95
7	2520	64,3	2,25
8	2960	62,9	2,35

Mini chicken meat

They are carriers of the dwarfism gene (dw). The live weight of females under the influence of this gene is reduced by 25-30%, and of males by 30-40% compared with the bird of maternal forms of industrial crosses, which has a normal body weight. At 52 weeks of age, hens weigh 2.4-2.6 kg, roosters 2.8-3.1 kg. They consume less feed per unit of production than their regular peers. When rearing young animals, the feed saving reaches 22-25, and when keeping an adult bird, it is 25-27%. The dwarf gene inhibits not only the growth rate, but also affects the size of the limbs. The length of the metatarsus in such hens, conventionally called "mini", is shorter by 20-22%. Low live weight and compact physique can significantly (30-40%) increase the density of their landing in cell batteries. The dwarf gene does not adversely affect egg production and egg quality: in 64 weeks of life, 165-170 eggs can be obtained from one laying hen. Mini chicken can be used as the maternal parent form for broiler production. They are kept either with Cornish roosters or artificially inseminated. The broilers obtained from them are not carriers of the dwarf gene, they have a normal body weight and metatarsal length, but at the same time, feed saving is 4–6%, and safety is 96–98%. Work with lines B66, B77, A77 is carried out by specialists of the All-Union Research Institute of Poultry. Below is a diagram of obtaining broilers by crossing chickens of “mini” form B76 with roosters C1C2 of the cross “Change”.
Hybrid Production Scheme

Initial lines ♂C1x♀C1♂C2x♀C2 ♂B7x♀B7 ♂B6x♀B6

Ancestral ♂C1x♀C2 ♂B7 x♀B6
Forms DwDwDw- dwdwdw-

Parent forms ♂C1C2 x♀ B76
Dwdwdw-

Broilers C12B76
♂Dwdw; ♀Dw-

BREEDS AND CROSSES OF DUCKS

Most duck breeds belong to the meat type and are intended for the production of broiler ducklings, killed at the age of 45-60 days for meat. One of the few breeds of egg production is Indian runners.

Indian runners - a breed created in India and is characterized by high egg production, which reaches up to 220 eggs per laying hen. The live weight of adult females is 1.75 kg, drakes - 2 kg. A characteristic feature of ducks is an almost vertical setting of the body. The color of the plumage is mostly white.

The Beijing breed of ducks - distributed in various countries around the world and is used to obtain duck meat. Bred in the USA based on ducks of Chinese origin. The bird is large. The body is slightly elevated, wide and deep. The plumage is white with a light cream tint. Ducks weigh 3.5 kg, drakes weigh 4 kg. Egg production 130-150 eggs or more. Half-bred crossbirds using Peking ducks weigh 3.5 kg by the age of 49 days old

Two-line cross "Arman" - created on the basis of the cross "Medeo" by scientists of Kaz.NIIP. The paternal line A1 is specialized in the high growth rate of young animals at an early age and low feed costs per unit of increase in live weight. The A2 maternal line is specialized in reproductive quality.

Hybrid Production Scheme
Initial lines ♂A1x♀A1 ♂A2 x ♀A2

Parent forms ♂A1x♀A2

Hybrids A 12
The productive qualities of Arman cross-country ducks are shown in Table 7.
Table 7. Productive qualities of ducks cross-country "Arman"

Indicators	Unit.	"Arman"
Egg production for the initial laying layer in 40 weeks. productive period	PC.	190
The conclusion of the hybrid young	%	75
Preservation of ducklings in the period 1-7 weeks. of life	%	98,8
Live weight of duck broilers at 7 weeks of life	g	3300
Feed costs per 1 kg of growth	kg	3,0

Two-line cross-duck “Temp” - created on the basis of cross-country X-11 of English origin by scientists of the Belarusian zonal poultry experimental station. The paternal T1 line was selected for growth rate, egg fertilization, and meaty body shapes. The maternal line T2 was selected for egg production, egg hatchability, growth rate and viability. The maximum egg laying capacity of ducks per average laying hen of the T1 line was 207 eggs, T2 - 227 eggs per 9-month cycle. The live weight of hybrid ducklings at 49 days of age is 3.0 kg at a cost of 2.9 kg of feed per 1 kg of growth.
Cross "Blagovarsky" - a two-line cross of ducks created at the Blagovarsky PPZ (Bashkortostan) on the basis of the Kazakhstan cross "Medeo". The productive qualities of Blagovarsky cross bird are as follows: - live weight of ducklings at the age of 7 weeks. - 3.4 kg; feed consumption per 1 kg of gain in live weight for a period of 1-7 weeks of life -2.8 kg; the safety of duck broilers is 98%. Egg production per average laying layer in 40 weeks. the productive period in the line B1 is - 188 pcs. eggs, in line B2 - 209 pcs.

The scheme for obtaining duck broilers
Initial lines ♂Б1х♀Б1 ♂Б2 х♀Б2

Ancestral forms ♂Б1х♀Б1 ♂Б2 х♀Б2

Parent forms ♂Б1 х♀Б 2

Broilers B1

Musk duck (voiceless, barbarian, indigo) is a species originating from South America, and differs significantly from other ducks in that it nests in trees and does not require the presence of conditions for swimming. The bird has a characteristic appearance: a red thickening around the eyes, a crest on the head and various plumage. A distinctive feature of the musky duck is a pronounced sexual dimorphism: the drakes are much heavier than ducks.

The meat of musky ducklings is tender, juicy, with a characteristic flavor of game, contains a small amount of fat, which is very different from Peking ducks. It contains about 54% of muscle tissue (against 41% in Beijing), fat about 22% (against 37% in Beijing).

In addition to breeding in "yourself", musk drakes are crossed with ducks of the Beijing breed. The so-called “mulard” obtained as a result of crossing have a higher live weight (3.2-3.6 kg), lower fat content in the carcass, higher muscle yield and good taste compared to Peking ducks. In addition, moulards are used for fattening on a fatty liver, reaching a mass of 400-800 g and widely used in the preparation of gourmet foods.

Cross "Jubilee" - selected by scientists of Kaz.NIIP on the basis of genetic material of French and German origin, has 3 lines: U1, U3 - paternal, U2 - maternal.

Hybrid Production Scheme

Initial lines ♂YU1h♀YU1 ♂YU2 x♀YU2 ♀YU3 x♂YU3 ♂YU2 x♀YU2

↓↓↓↓

Parent ♂ЮО1x♀ЮО2 ♂ЮО3 x♀ЮО2

↓↓

Hybrids Yu12 Yu32

BREEDS AND CROSSES OF TURKEYS

Bronze broad-chested breed of turkeys.

The homeland of these turkeys is the United States. Bred by prolonged selection of the standard bronze breed for rapid growth, good pay for food and good physique, including chest width and mass of pectoral muscles. Turkeys grow relatively slowly, the optimal age for slaughter of females is 22-23 weeks, males - 23-24 weeks. The record achievements of the mass of adult turkeys (35.7 kg) belong to this particular breed. Turkeys weigh 9-11 kg, turkeys 16-22 kg. The egg production of turkeys is 100 or more eggs. Turkey poultry weighs 3.5-4 kg at 110-120 days of age

North Caucasian bronze breed of turkeys. This is the oldest and most widespread breed of turkeys, which is characterized by good

adaptability to various climatic conditions. Combines the positive qualities of a bronze standard breed and local turkeys. When slaughtered at 120 days of age, the weight of turkeys is within 5 kg, females - 4 kg. Adult turkeys weigh 6-7 kg, turkeys - 12-14 kg. Egg production more than 90 eggs per year; the best laying hens produce over 150 eggs.

North Caucasian white breed. Created by employees of the North Caucasian ZOSP by crossing females of the North Caucasian bronze breed with males of a white broad-chested breed of English origin. The bird is well adapted to both semi-intensive and intensive cellular content. By 120 days of age, the live weight of males reaches 5.8 kg, females - 4.3 kg. The cost of feed per 1 kg of live weight is 3.6-3.8 kg

Moscow bronze and white breed groups. Created under the leadership of the staff of the poultry department of the Timiryazev Agricultural Academy. They are distinguished by high fecundity and vitality, good meat qualities. The live weight of turkeys at 17 weeks of life is 5.1-5.5 kg, females - 3.5-3.8 kg. Egg production of turkeys - 92-93 pcs. eggs, poultry hatching - 71%.

Cross "Khidon" - four-line, the original lines were imported from the company "Eurybrid" (Netherlands).

The paternal parent form is characterized by a high growth rate of young animals, a high yield of gutted carcass (over 80%). The live weight of adult males reaches 18-20 kg. The maternal parent form has a high egg production - 90-100 eggs in 24 weeks of the productive period. The puberty of turkeys occurs at the age of 220-230 days in the maternal parental form and 245-250 in the paternal one.

Hybrid Production Scheme

Initial lines♂Ax♀A♂Bx♀B♂Cx♀C♂Дx♀Д

Grandparents

forms♂Ax♀B♂Cx♀Д

Parent forms ♂ABx♀CД

AWSD Hybrids

The live weight of 4-linear hybrids at 12 weeks of age is: males - 5.3-6.0 kg, females - 4.3-4.7 kg at a feed cost of 2.1-2.3 kg per 1 kg of growth.

Cross "O-24" - two-line, selected at the North Caucasian ZOSP. The father's O2 line was selected on the basis of line B, and the maternal O4 - on the basis of line D cross "Khidon". According to the North Caucasian

ZOSP, at 12 weeks of age, the live weight of turkey poultry is 4.2 kg, at 17 weeks of age - 7.1 kg at a feed cost of 3.2 kg per 1 kg of growth.

GOOSE BREEDS

In total, there are about 25 breeds and pedigree groups of geese in the CIS, the best of which are Kholmogory Gorky, Kuban, large gray and Lind.

In recent years, highly productive breeds of geese have been imported to the CIS countries, such as: Rhine, Italian, Landesh, Toulouse which, with a certain cross between themselves, as well as with some local groups, produce offspring that are well fed for fatty liver.

The breed of large gray geese was bred by employees of the Ukrainian Research Institute of Poultry and Breeding "Arzhenka" in the Tambov Region by crossing Romance geese with Toulouse. Adult gander weigh 6.5-7 kg, geese about 6 kg. Reproductive qualities of geese are low 35-45 eggs with a hatchability of 55-60%. Geese of this breed are used for breeding “clean” and when crossed with other breeds as a paternal form.

The Kuban geese were created by the staff of the poultry department of the Kuban Agricultural Institute. The color of the plumage is distinguished by two varieties - gray and white. Kuban geese have high egg production (85-95 eggs) and good hatchability (78-82%). The mass of adult gander is 5-6 kg, the geese is 4.5-5.5 kg, the weight of goslings reaches 3.4-3.7 kg by the age of 60 days. The safety of young animals up to 90 daysof age is 95-97%.

The Gorky geese were created by crossing the local geese of the Nizhny Novgorod region with the Chinese and Solnogorsk breed groups. Geese have a white and gray plumage, and pied pigeon geese are sometimes found. Adult males weigh 7-8 kg, females - 6-7 kg. The live weight of 9-week-old young animals reaches 3.8-4 kg. Egg production of geese - 45-50 eggs (sometimes up to 60 eggs), geese hatching - 70-80%. Gorky geese are used as the paternal parental form.

Italian geese in recent years are becoming more widespread. Egg production of geese is 43-45 eggs, according to the best laying hens - 60 eggs, geese hatching - 55-60%; live weight of an 8-week-old young: males - 3.3 kg, females - 2.9 kg. This breed of geese is used as the maternal parent form when crossing with the Rhine geese.

A breed of Rhine geese created in Germany on the basis of Emden. Geese have white plumage. Egg production of geese is 40-45 eggs, hatchability of eggs is 70%. By 8 weeks of age, the live weight of young animals reaches 3.0-3.5 kg. The weight of adult males is 6.5-7.0 kg,

females 5.5-6.0 kg. The Rhine geese are used as the paternal parent form and bred "Clean."

BIRD OF OTHER SPECIES

The most important for the production of meat are gray-speckled, Zagorsk white-breasted and Siberian white guinea fowls.

Gray-speckled guinea fowl is the most common variety. The egg production of guinea fowls is 90-95 eggs, the mass of eggs is 44-45 g, the output of guinea fowls is 55-60%. The live weight of young animals by the age of 10 weeks reaches 900-920 g. Guinea fowls of this variety of cocks and beak are ash, the carcass is bluish in color.

Zagorsk white-breasted guinea fowls were created at the All-Russian Research Institute of Poultry. Poultry egg production - 100-110 eggs, egg mass - 45-46 g, live weight of young animals at 10 weeks - 950-1100 g. Preservation of young animals up to 10 weeks of age is 99-99.5%. The skin color of these guinea fowls is much lighter than that of gray-speckled ones.

Volga white guinea fowls were created by the employees of the poultry department of SibNIPTIZh on the basis of gray-speckled guinea fowls. The egg production of Siberian guinea fowls averages 100-110 eggs, and the live weight of 13-week-old guinea fowls is 1.1 kg. Volga white guinea fowls have white plumage.

The most promising varieties of quail: English white, Australian tan, Manchu golden, tuxedo, Estonian and meat pharaohs.

English white quail - have white plumage, (individual black feathers may occur), dark eyes. The live weight of females is about 142 g, egg production is about 280 eggs per year.

English black - dark colored birds. Plumage from almost black to light brown. The live weight of females is 145 g, and egg production is about 280 eggs per year.

Manchu golden quail - mixed plumage. The color of the feathers is yellow to brown. The combination of these colors gives the impression of a golden color. The live weight of females is about 136 g, egg production is about 290 eggs.

Tuxedo quail - have a brown back and wings, a white chest. It is possible to obtain a bird with such a color when crossing white and black English quails. The live weight of females is 142 g, egg production is 280 eggs.

Japanese quail. Domestic quails have the same plumage as wild ones. The live weight of males is 115-120 g, sometimes up to 130 g.

Females weigh 138 g, in some cases up to 150 g. Egg laying begins at the age of 30-40 days, and up to 300 eggs or more weighing 9 are received from a female in a year -11 g Egg fertility reaches 80-90%, hatchability - 70, sometimes 92%. The disadvantage of this breed is a small live weight.

Quail Estonian breed. A distinctive feature is high viability. Safety quail during the growing period - at 98%. The egg production of females begins at the age of 37-38 days and reaches 50% by the age of 55 days. The average egg production rate is 80% and is maintained at this level for 7 months. Average egg weight - 12 g. Live weight of an adult female - 190-200 g, males - 160-170 g. Feed intake - an average of 33 g per day per head.

Pharaohs have the same color of plumage as Japanese quail. The live weight of females averages 235 g with a variation from 160 to 310 g, males from 160 to 265 g. Females begin egg laying at the age of 42-50 days and during the year they lay down to 220 eggs weighing 12-18 g. These birds are effectively used for production quail broilers. At 45 days of age, they reach a live weight of 150-180 g

Chapter 8 Expansion of the global gene pool, and the organization of its attraction for the qualitative development of livestock in Kazakhstan.

The problem of the targeted management of the biodiversity of genetic resources in agriculture is becoming increasingly important for the world community. The constantly growing large-scale demand for meat, dairy and egg products is determined by the fact that it is in the field of animal husbandry that the most alarming changes are associated with this issue. A wide variety of livestock genetic resources is critical to the adaptation and development of agricultural production systems. The need to maintain this potential is due to such reasons as climate change and the danger of the emergence of new, including infectious, animal diseases. For hundreds of millions of poor peasant farms, livestock is a key source of livelihood, satisfying the basic needs of the population and making it possible to live in the most adverse environmental conditions. Livestock products make a decisive contribution to solving the problems of overcoming hunger and livelihoods, which was reflected in the definition of development goals in the new millennium at the United Nations conference. The significance of these goals will increase in the very near future.

However, the challenge of maintaining genetic diversity is at stake. Of paramount importance in this regard are data on the rate of extinction of animal breeds, but even more disturbing is the fact that genetic livestock resources that are not established by specialists and their characteristics and potential are not known, need concentration and stress on all efforts to understand, prioritize and protect the world's animal genetic resources needed to support food production and agricultural needs. Actual proposals for their application should be determined. As a rule, animal owners - often poor people in poor conditions - provide most of the genetic diversity of animals. We must not ignore their role and neglect their needs. It seems necessary to organize their support and ensure wide access to resources. It is imperative to create a system of concerted international action to manage these resources.

This publication represents the first attempt at a global assessment of the status and trends of animal genetic resources, as well as the organization of a structural and technological base for managing these resources. This provides the basis for renewed action to guarantee the implementation of the identified steps to improve the management of genetic resources announced at the World Food Summit Plan of Action. It is also a definite achievement in the work of the Commission on Genetic Resources for Food and Agriculture.

Of particular hope is the support provided by state executive bodies, which was reflected in the preparation of reports of 169 countries submitted to the Commission.

The main directions of breeding in cattle breeding and horse breeding in Kazakhstan.

The gene pool resource of cattle in Kazakhstan is represented by 13 breeds, 1 zonal and 4 plant types, bred in various regions of the republic, according to recommendations on breed zoning.

According to the Ministry of Agriculture of the Republic of Kazakhstan, as of 01.01.2004, there were 4 million 855 thousand heads of cattle in all categories of republican farms, of which the breeding stock occupied 3.3% or 159539 goals

Breeding work with this gene pool is carried out in 96 tribal formations of the republic, of which 15 have the status of breeding plants, 81 - of breeding farms.

Two directions are distinguished in dairy cattle breeding: dairy breeds, which include black-motley, red steppe, Aulieatinsky, Aishir and brown Latvian; milk and meat breeds, which include Simmental, Alatau.

The main chain for improving livestock of dairy and dairy and meat breeds is the creation of 4 in-breed intensive dairy types (brown, black-motley, red, red-motley) with a productivity level of more than 5.0 thousand kg of milk for lactation with a fat content of 3.72-3.80%.

Currently, the black-motley breed, which plays the most important role in creating an intensive milk production zone around large cities and towns, occupies a leading position in the dairy direction of livestock breeding. It accounts for more than 30% of the breeding stock out of 108526 of their presence.

Black-and-white cattle gained distribution in Akmola, Almaty, East Kazakhstan, Kostanay, North Kazakhstan, South Kazakhstan regions.

Animals of this breed, having a sufficient productivity potential, show it only in good feeding conditions. The leading pedigree factories (PK Rodina, LLP Bayserke-Agro, KT Zenchenko and Company, LLP Yasnaya Polyana) have cows with a productivity of 5-7 thousand kg of milk per lactation, live weight 550-600 kg In general, a herd in these farms receives from 3.8 to 4.8 thousand kg of milk, which is a good basis for breeding a new black-motley type of cattle using Holstein bulls from the USA, Canada and Germany with a productivity of their mothers from 7 thousand kg and above.

The creation of an intense red type of dairy cattle based on red steppe breed at an early stage was associated with the use of a brown, Latvian, Danish, Angler brown gene pool and, in the last decade, Holstein-Friesian breeds. Red cattle are bred in Aktobe, Atyrau, Karaganda, Kostanay and North Kazakhstan regions. The breeding base of the breed is represented by 13 tribal formations, including 1 pedigree plant and 12 tribal farms. Currently, there are 22104 heads of breeding animals in the republic, including 6580 heads of cows. The largest number of breeding animals of the red steppe breed is in the North Kazakhstan region (1,0803 goals, including 3,734 cows). The average annual milk yield in the pedigree farms of this region for full-age cows is 3247 kg of milk with a fat content of 3.80-3.86%.

The genetic structure of the breed is based on 4 planned lines: 1973 ASNM-112 Record, Analysis-576 OMN-324, Linson ZAN-24, Skromny 2769 ASNM-113, and 2 related groups - Ubar ASM-88 and Agrippa ASN-90 .

Milking of cows of the breeding kernel in breeding herds averages 4242 kg of milk with a fat content of 3.86%, which allows for the next 2-3 years to successfully carry out breeding work to create an array of cross-breeding animals with milk yield above 4.5 thousand kg of milk per

lactation, and in the long term to create intensive milk type of red cattle with a productivity of more than 5.0 thousand kg of milk.

Aulieatinsk domestic breed of dairy cattle was created in 1950 and gained distribution in the Zhambyl and South Kazakhstan regions. The breeding stock of this breed accounts for only 5.3% of the availability of breeding stock in the republic. Based on this breed, a southern black-motley type of dairy cattle is created. The breed is interesting in that it is well adapted to the hot climate, resistant to theileriosis and pyroplasmosis. In the structure of the breed, there are 6 factory lines. In the herd of the leading Yunchi breeding farm, the yield of full-age cows is 4792 kg, in the breeding core 5321-5752 kg of milk for lactation with a fat content of 3.69-3.71%.

Observations of the livestock obtained from the Aulie-Ata and Holstein breeds showed that, along with maintaining the adaptive qualities of the original breed to the breeding conditions, in the second generation, animals have an increase in milk productivity up to 35%, milk production intensity up to 10%.

Breeding work with Ayrshire and brown Latvian breeds is associated with preserving the gene pool, increasing their milk productivity and increasing the number of animals in their breeding places.

The Alatau domestic breed of cattle of the dairy-meat direction of productivity, after its testing (1950), has spread in the foothill zone of Almaty, Zhambyl, and East Kazakhstan regions. On its basis, a brown type of cattle is created using Schwyz breed of American selection. Currently, in Kazakhstan there are about 470 thousand heads of cattle of the Alatau breed and its crossbreeds, including - 220 thousand goals of cows.

In the best pedigree herds (5 pedigree plants, 14 pedigree farms) from cows receive 4.0-5.0 thousand kg of milk for lactation. In the breeding factories of PZ Aksay LLP, SKHPK Almaty, FoodMasterAgro Company LLP and Kamenskoye there are animals with milk yield from 6 to 9 thousand kg of milk per lactation.

The accumulated mass of animals of the desired type and their productivity allow testing a new inbreeding dairy type of brown cattle.

The red-motley type of cattle in the north-east of Kazakhstan is selected on the basis of Simmental breed. In the initial version, breeding bulls of the Montbeliard, German red-motley, German breeds and, more recently, red-motley Holstein participated in the crossing. A large array of cross-breeding animals has been accumulated (11 thousand goals, including

4 thousand cows), and a genealogical structure of the type is being formed. In breeding factories and 15 breeding farms, the milk production of herds ranges from 3.2-3.6 thousand kg of milk per lactation, and 5.5-6.0 thousand kg of milk is infused from cows of the breeding group with a fat content of 3.8-4.0% of 27968 animals of pedigree animals 34% are animals a new desirable type of red-motley cattle (more than 9.5 thousand animals).

In general, the improvement of Simmental cattle and the creation of a new red-motley dairy type of cattle is proceeding at the planned pace and volume.

In the industry of beef cattle breeding and breeding work is carried out in 43 breeding formations, including 10 pedigree factories and 33 pedigree farms, with 6 cattle breeds (Kazakh white-headed, Auliekol, Hereford, Santa-Gertrude, Galloway and Kalmyk).

The number of breeding animals of the meat direction of productivity in the republic is 51013 goals, 84% of which falls on the Kazakh white-headed and 11.3% on the Auliekol breed. The next places are occupied by Hereford rocks (3.4%), Santa-Gertrude (0.9%).

The priority for the development of specialized meat cattle breeding in the Republic of Kazakhstan is due to the presence of vast arrays of pasture land, which makes it possible to efficiently produce high-quality environmentally friendly beef. But due to specific features - the production of single products, this industry proved to be poorly protected in the process of transition to a market economy. As a result, the number of livestock was significantly reduced (from 2 million to 500 thousand), including breeding. There was a problem of preservation of the gene pool of small breeds.

The largest Kazakh white-headed cattle (95% of the meat stock) is bred in almost all regions of the republic in the steppe, dry-steppe and semi-desert zones. Auliekol breed is distributed in the north of Kazakhstan, mainly in the Kostanay region. Santa gertrude is regionalized in the southeastern region in the Balkhash region, as it is well adapted to the conditions of hot summers, consumption of coarse vegetation and resistant to blood parasitic diseases. Here, but in a mountainous region, the Galloway breed of beef cattle is bred. The Kalmyk breed is currently localized in the South Kazakhstan region. Hereford reproductive herds are located in West Kazakhstan (Ural SChOS) and Akmola (Shortandinsky SChOS) regions.

In order to preserve and further improve the gene pool, the development of the livestock industry, including beef cattle breeding, a number of measures have been taken at the national level. The Law on

Breeding Livestock has been adopted. To strengthen the material and technical base of pedigree farms, subsidies are provided for the production and sale of pedigree products at the expense of the republican budget. Preferential lending and subsidizing of pedigree products from local budgets are provided.

At the same time, increased requirements for pedigree farms, the focus of their activities. For this purpose, the Ministry of Agriculture of the Republic of Kazakhstan, together with scientists, determined the parameters for approving the breeding category of farms, including the number of livestock and its productivity, production and breeding indicators, veterinary status, the availability of breeding plans, the creation of their own genotypes. Connection with science. Existing pedigree plants (farms) periodically undergo re-certification, and those claiming approval of tribal formation categories undergo certification.

The effectiveness of the measures taken had an effect on improving the tribal base of the republic. The needs for bulls of producing farms are provided. Demand for breeding stock has not yet been satisfied, since the activity of many breeding farms is aimed at expanded production.

The State Program "Gene Pool" is subordinated to the solution of the problem of conservation, use and improvement of genetic resources. Within its framework, the Asyl-Tulik republican cattle breeding center was organized, whose tasks include the formation of its own pedigree base in the cattle breeding of the republic.

As part of the program for completing the pedigree center with the tribes of the desired gene pool, custom-made mating and transplantation of embryos is carried out.

An automated breeding system based on the Selex program is being introduced with the aim of introducing large-scale breeding in the cattle breeding industry using pedigree gene pool of dairy and meat breeds from Russia and abroad.

In recent years, relations on the conservation and use of the animal gene pool have noticeably revived in dairy farming with Russia. Genresur from dairy cattle replenished with the best breeding animals from the Moscow region, an agreement was reached on the purchase of bulls from breeding cents of the Leningrad Region with a mother productivity of more than 10 thousand kg of milk.

For 2003, the number of animals covered by breeding and breeding work by YGW scientists? Increased three times. Research and supervision of selection is carried out in 15 breeding farms for breeding beef cattle. The number of breeding core breeding stock in the Kazakh white-headed breed

increased by 77%, and the number of pedigree sold by 27%. Created and in the stage of formation of subsidiary breeding herds of meat breeds in 19 farms of various regions of the republic.

The gene pool of the Kazakh white-headed breed is represented by 11 factory lines of cattle and hornless types and numerous related groups of bulls. As a result of many years of selection by growth rate, bulls with improvement potential of an average daily gain of 1000 g or more were identified in the basic breeding plants. Their use allowed the creation of new lines with a good development of this feature. In particular, the bulls of the August 1074 factory line, tested in 2000, surpass their unrelated peers in growth rate by 10.6 - 12.1%.

Work with the Auliekol breed is carried out in two directions: improving the gene pool, increasing the number of livestock and expanding the breeding area. The breeding program is being implemented by improving the genealogical structure. In the process of work, 9 bulls were evaluated according to the quality of the offspring, out of 130 bulls tested for productivity, 50 improvers with a live weight of 15 months were identified. 422-455 kg, average daily gain of 1018-1081 g, feed consumption 6.5-7.3 feed units Two breeding lines of gobies are in the testing phase. The second direction of work with the breed is through the creation of subsidiary breeding farms and custom herds.

For many years, work with imported breeds was aimed at breeding animal types well adapted to living conditions, based on the reproductive crosses of Santa Gertrude bulls and Galloway breeds with cows of local populations. Arrays of purebred and litter animals with increased meat productivity were created, in 2000 the zonal type Zhetisu of the Santa Gertrude breed was tested. The task is to improve the gene pool of breeding reproducers with the prospect of breeding a new breed and creating meat herds in the South-East and South of Kazakhstan.

At present, only one reproductive farm (about 200 animals) in the Almaty region has been preserved in the Galloveian breed. These are animals of a new genotype, obtained from reproductive crosses and bred for many generations “inside themselves”. The purpose of research and practical selection is the preservation and reproduction of the gene pool with the subsequent creation of an array of beef cattle in the mountain regions of Almaty, Zhambyl, East Kazakhstan regions.

Given the specifics of the beef cattle industry, associated with the production of beef with the maximum use of pasture feed, there is a need to slightly change the approach to the selection process.

The direction of selection of beef cattle that has been used so far in terms of the growth rate of young animals at the stall content has its flaws. Improving bulls selected in this way are used in reproduction in the pasture-stall system, which, due to the interaction of the genotype and the habitat, does not provide a full manifestation of genotypic properties.

In this regard, there is a need to assess the growth rate of young growth in two directions: with traditional stall keeping and in conditions closest to those in which the test producer can be used, i.e. pasture-stall or purely pasture.

Horse breeding. At present, Kazakhstan has concentrated a very valuable gene pool of such breeds of global distribution as thoroughbred horse, Arab, Akhal-Teke breeds. They are successfully used in the reproduction of national and classical species.

Now the country has 28 breeding farms for these breeds, including 16 stud farms. Breeding work with these breeds is aimed at improving the horse's horse-drawn qualities, while reducing pedigree, the characteristic features of the exterior and elegance of the Arab and Akhal-Teke horses.

In order to effectively use the gene pool of Kazakhstan racehorse populations, we consider it expedient to create associations for the named breeds in the republic.

In the stud farm "қазақ-Тұлпары" is the best livestock of horses of the Kostanay breed of riding type. On the basis of it and the blood rushing of purebred English and Arabian stallions of the best lines, a new breed “Kazakh horse” is created.

The steady demand for horsemeat and koumiss determines the progressive development of productive horse breeding. It should be emphasized that Kazakhstan is the only one in the world where specialized meat and dairy breeds are created - Kushum and Mugalzhar, as well as the Cuban meat type of Kazakh horses. Work with these breeds is carried out to increase their meat and dairy productivity and the reproduction of animals of the desired type.

To increase the live weight of herd horses of cross-breed origin, stallions of heavy-breed breeds - Russian, Soviet and Vladimir are successfully used.

Purposeful breeding work is underway with horses of the Kazakh breed such as djebe, Adaevskiy spawn, horses-pacifiers and other local populations.

In Kazakhstan, amble horses (Zhorға) have traditionally been in special demand. They well withstood long crossings over long distances, without changing the gait and without tiring the rider. Therefore, as a rule, a thoroughbred ambler was valued 2-3 times higher than a horse of ordinary gait.

In connection with the revival of national equestrian sports in the republic, in particular, “zhorға zharys” (competition of amblers), the need arose to create a population of these horses by organizing breeding work on a scientific basis, which no one has been seriously engaged in until now.

It is known that not more than 1% is born among local horses of amblers, but they do not differ in agility. Among the Oryol and Russian trotters, the appearance of amblers is a very rare occurrence, although these individuals are superior in agility to local amblers. The horses of the American standard-bred breed are distinguished by the world's best frisky amble. Based on this, in the future we plan to create a Kazakh population of amblers by crossing local and trotting mares of the corresponding gait with American standard-bred stallions. At the same time, we will be effectively used in breeding and breeding, both world and domestic gene pools.

A feature of the implementation of breeding work in recent years is that it is carried out in the livestock industries on a larger scale. The number of animals involved in the breeding and breeding process during this period increased from 30% to 3 times. This made it possible to increase the number of cattle selected in the breeding core by 63%, sheep by 70, horses by 61%, etc. The aforementioned contributed to an increase in the number of cows of the desired type in the brown by 83%, red and white by 16%. The productivity of the desired type of cows for the same period increased by 5-16%.

Thus, the main direction of breeding research in the livestock sectors of Kazakhstan is carried out in line with large-scale breeding with the maximum use of the capabilities of the republic’s breeding base.

Literature:

1. The State of the World Animal Genetic Resources for Food and Agriculture. - Commission on Genetic Resources in Food and Agriculture. Food and Agriculture Organization of the United Nations. All-Russian Research Institute of Agricultural Sciences. - Rome-Moscow, 2010.

2. Veniaminov A. A. Breeds of sheep of the world. - Moscow, Kolos, 1984-207s.

3. Rosenfeld S.B. The most popular breeds of horses and ponies. - Moscow, Aquarium, 2007 - 95s.

4. Nechaev I, Zhumagul A., Kikebaev N. et al. Kazakh horse - past, present, future. - Almaty, 2005 .-- 198 p.

5. Borisenko E. Ya. Breeding of farm animals. - M.: Publishing. The Colossus, 1967. - 459 p.

6. Sadykulov T. S. Breeding and selection of farm animals. - Almaty, 2003 .-- 376 p.

7. Aripov U.Kh., Vinogradova V.M. other. Sheep and goat breeding. Directory. - M .: Agropromizdat, 1990 .-- 335s.

8. Nikolaev A.I. and other breeds of agricultural animals. Album. - M.: Ministry of Agriculture, 1958. - 80 sheets.

9. Levantin D.L. The dynamics of the number of sheep and goats by country and continent // Sheep, goats, wool. - 1998. - No. 6. S. 24-27.

10. Veniaminov A.A. Goat breeding of foreign countries. - M. 1981. - 63 p.

11. Erenetsogg N., Minzhigdorzh B., Olanbayar M. The gene pool of farm animals and the results of their use in breeding // Problems of stabilization and development of agriculture in Kazakhstan, Siberia, Mongolia: Abstracts. Part 1. - Almaty. RNI "Bastau". 2000. - S. 41-42.

12. Musaev Z., Torekhanov A., Seydaliev B. Түуе sharuashylyy. Almaty, 2007 .-- 135p.

13. Volkopyalov B.P. Sinovodstvo. - Leningrad, Kolos, 1968. - P. 15-64.

14. Arya, H.P.S., Yadav, M.P. & Tiwari, R. 2002. Livestock technoloqies forsmall farmsystems In P.S. Birthal & P.P. Rao, eds. Technology options

for sustainable livestock production in India.

15. Proceedings of the Workshop on Documentation, Adoption, and Impact of Livestock Technologies in India, 18-19 Jan 2001, ICRISAT-Patancheru, India, pp. 8–89. New Delhi / Patancheru, India.

National Center for Agricultural Economics and Policy Research / International Crops Research Institute for the Semi-Arid Tropics.

16. Dorward, A.R., Anderson, S., Paz, R., Pattison, J., Sanchez Vera, E., Nava, Y. & Rushton, J. 2004. A guide to indicators and methods for assessing the contribution of livestock keeping to the livelihoods of the poor. London DFID (also available at http://www.ilri.cgiar.org/html/

17. Flock, D.K. & Preisinger, R. 2002. Breeding plans for poultry with emphasis on sustainability. In Proceedings of the 7th World Gongress on Genetics Applied to Livestock Production, held August 19–23, 2002, Montpellier, France.

18. Gueye, E.F. 2005. Editorial: Family poultry must no longer be a 'hidden harvest'. INFPD Newsletter, 15 (1): 1.

19. Hanset, R. & Michaux, C. 1985a. On the genetic determinism of muscular hypertrophy in the Belgian White and Blue cattle breed. I –Experimental data. Genetics Selection Evolution 17: 359–368.

20. Hanset, R. & Michaux, C. 1985b. On the genetic determinism of muscular hypertrophy in the Belgian White and Blue cattle breed. II - Population data. Genetics Selection Evolution, 17: 369–386

Test questions on the global animal gene pool

1. In what year was the term "G" introduced?
A. 1928
B.1926
C.1920
D.1931
E.1933
2. What is the gene pool?
A. The totality of unequal genetic relationships of individuals
B. A heterozygous system that conceals a reserve of hereditary variation
C. The totality of all genes and their alleles of individuals in a population
D. Universal Genetic Code
E. The law of homologous series of hereditary variation
3. What are the types of mutation?
A. Genomic, homologous, gene
B. Genomic, chromosomal
C. Chromosomal, gene
D. Chromosomal, homologous, gene
E. Genomic, chromosomal, gene
4. Founder of modern ideas about centers of domestication of plants and animals, the emergence of agrarian civilization
A. Stolovsky Yu.A.
B. Vavilov N.I.
C. Kuleshov P.N.
D. Popov N.K.
E. Andropov Yu.N.

5. Due to what will intensification of reproduction of highly productive animals, conservation of the gene pool and reproduction of endangered local livestock breeds be carried out?

A. Effective biotechnological methods
B. Biotechnical methods
C. Biological methods
D. Transplantation of embryos
E. Ecological methods

6. One of the risks of the global trend of agricultural industrialization

A. The problem of control and management of livestock breeds
B. Reduction of national animal and plant genetic resources
C. Economic conditions
D. Preservation of cultural traditions
E. Unsustainable agricultural development

7. What is the essence of inbreeding?

A. In the aggregate of all qualitative characteristics
B. In obtaining highly productive uterine families
C. In the recombination of genetic information coming from a common ancestor and in obtaining a new genotype
D. In preserving the progeny of the valuable qualities of the ancestor
E. In targeted selection based on blood groups

8. Is the efficiency of cow selection for productivity for the first lactation to a large extent dependent on?

A. From a break in fertilization
B. From physical signs
C. From the constitution
D. From repeatability of breeding traits
E. From animal welfare

9. A prerequisite for creating Hunter line 585

A. Use of reliable material based on blood groups
B. Increasing the population of new types of livestock
C. Use of highly productive animals
D. Use of domestic livestock
E. Individual selection of animal pairs

10. An important element of breeding work with the breed is the correlative relationship between the individual traits. How many times will the selection of cows for milk fat increase the effect in breeding for milk without reducing the fat content of milk in cows?

A. 1.5 times
B. 3 times
C. 2 times
D. 4 times
E. 5 times

11. Cows are heterozygous, according to which transferrin in almost all herds have superior milk yield for the first highest lactation?

A.AA
B.AB
C.BD
D.AC
E.AD

12. What is called allele frequency?

A. The ratio of the quality of these alleles of all individuals to the total number of alleles in the population
B. The ratio of the quality of these alleles of all individuals to the overall quality of alleles in a population
C. Ratio of the data alleles of all individuals to the total number of alleles in the population
D. Continuous natural selection
E. The combination of genes

13. The reason for the change in the gene pool of the population

A. Regressive genes
B. Mutations
C. Gene recombination
D. New alleles
E. Genetic recombination of genes and mutations

14.Who was the term "G" coined?

A.N.I. Vavilov

B.YU.N. Andropov
C.YU.A. Stolovsky
D.A.S. Serebrovsky
E.P.N. Kuchinova

15. What is called the simultaneous action of the same gene on different signs of the body

A. Populations
B. Pleiotropia
C. Allele frequency
D. Understanding the gene pool
E. Heredity

16. The main purpose of line breeding

A. Saturation of the breed with new individual heredity
B. Improving the productive qualities of animals
C. Obtaining purebred animals
D. Improvement of animal breeds
E. To increase the number of animals

17. A group of rare animals that define breeds and are endangered

A. Tribal animal
B. Honoring
C. Breeding small breed
D. Tribal Numerous Breed
E. Gene pool

18. What is the breed of horse bred by crossing ancient Parthian horses with North African

A. Arabian horse
B. Oryol Trotter
C. Akhalteke
D. Hutsul
E. Kabardinskaya

19. In what century was the Oryol trotter breed of horses bred

A. 19c
B. 17c
C. 20v
D. 18c
E. End 19 early 20 centuries

20. The breed of cows bred in Kazakhstan by crossing bulls of Hereford breed with a breeding stock of Kazakh and Kalmyk cattle

A. Black-and-white
B. Auliekol meat
C. Kazakh White-headed
D. Hereford
E. Kalmyk meat

21. One of the most popular beef cattle breeds in the world.

A. Kazakh White-headed
B. Black and white
C. Kalmyk
D. Hereford
E. Auliekol

22. What are the double-breed cows?

A. Shvitskaya
B. Auliekol
C. Kalmyk
D. Hereford
E. Kazakh White-headed

23. Sheep breed obtained by crossing Astrakhan coarse-haired sheep with fat tail Kazakh sheep

A. Edilbaevskaya
B. Romanovskaya
C. Kuibyshevskaya
D. Tsigayskaya
E. Gruzinskaya

24. What are the fine-fleeced breeds of sheep?
A. Kuibyshevskaya
B. North Kazakhstan, Soviet Merino
C. Romney March
D. Tsigayskaya
E. Latvian dark-headed
25. One of the world's tallest sheep breeds.
A. Romanovskaya
B. Kalmyk
C. Nedzhda
D. Romni march
E. Latvian dark-headed
26. In what territory of the Republic of Kazakhstan for the first time the efficiency of crossing pigs of large white breed and Yorkshire was studied
A. South Kazakhstan
B. Western Kazakhstan
C. North East Kazakhstan
D. East Kazakhstan
E. Northern Kazakhstan
27. Under whose leadership were two new breeds of pigs created (Poltava meat and Ukrainian meat) approved in 1993?
A. A.I. Ovsyannikov
B. V.T. Gorin
C. A.I. Filatov
D. B.V. Bankovsky
E. V.A. Kovalenko
28. In what territory of Kazakhstan is camel breeding predominantly developed
A. Southeast region of Kazakhstan and Almaty region
B. Southwest region of Kazakhstan and Almaty region
C. Northern Kazakhstan
D. East Kazakhstan

E. Western Kazakhstan

29. The gene pool on the basis of which new breeds are created

A. Advanced
B. Converting
C. Reserve
D. Collection
E. Promising

30. A group of animals of local or native breeds allocated to preserve the breed gene pool

A. Gene pool
B. Reserve herd
C. Collection Herd
D. Promising herd
E. Gene pool

31. The variety of genes and alleles available in a population is:

A. Gene Pool
B. Phenotype
C. Genotype
D. Evolution
E. Selection

32. How many horse breeds are there in the world?

A. 100
B. 200
C. 300
D. 400
E. 500

33. How many horse breeds are bred in Kazakhstan?

A. 13
B. 14
C. 15
D. 16
E. 17

34. A record amount of milk received from a cow per day?

A. 90
B. 100

C. 110
D. 120
E. 130

35. In which country is a record amount of milk obtained?
A. Germany
B. Chile
C. Jamaica
D. Argentina
E. Cuba

36. Wild ancestor of livestock?
A. Tour
B. Buffalo
C. Yak
D. Bunteng.
E. Gaur

37. How many species of farm animals can a person live without?
A. 5-6
B.7-8
C. 8-9
D. 10-11
E. 3-4

38. In which country is a cow considered a sacred animal?
A. Malaysia
B. India
C. China
D. Mongolia

39. The average weight of chickens is (kg)?
A. 3
B. 4
C. 5
D. 6
E. 7

40. How many approximately billion chickens are there around the world?
A. 22
B. 24
C. 26
D. 28

E. 30

41. What is the name of the room for a domesticated horse?

A. Konur
B. Stable
C. Stall
D. Dennik
E. Saray

42. What finger rudiments do the horses have?

A.1,3,5
B. 2,3,4
C.1,2,3
D. 1,4,5
E. 2.4

43. How is camelus translated from Latin?

A. Camel
B. Horse
C. Cow
D. Sheep
E. Yaki

44. What is the color of a two-humped camel?

A. Brown
B. Reddish gray
C. Gray
D. Dark brown
E. Black

45. What is in the humps of a camel?

A. Water
B. Fat
C. Meat
D. Bone
E. Tendons

46. How many types of camels are there?

A. 5
B. 3
C. 4
D. 2
E. 6

47. How many times a year can a female pig get farrowing?

A. 1
B. 2
C. 3
D. 4
E. 5

48. The natural habitat of pigs?

A. Eurasia
B. America
C. Australia
D. Africa
E. China

49. The weight of an adult female sheep is?

A. 45-100
B. 35-44
C. 100-110
D. 90
E. 75

50. Nickname of the first cloned sheep?

A. Dolly
B. Molly
C. Suliko
D. Yarochka
E. Pupa

51. How many areas of productivity does sheep breeding have?

A. 2
B. 4
C. 6
D. 8
E.10

52. Which country has the largest number of sheep?

A. Japan
B. Russia
C. Kazakhstan
D. Holland
E. China

53. How many breeds of sheep are there in the world?

A. 200
B. 300

C. 500
D. 600
E. 550

54. Where does more than half of the world's rabbit population live?
A. North America
B. Europe
C. Asia
D. Africa
E. Australia

55. In which country in 1856 a biological disaster occurred due to rabbits?
A. China
B. Japan
C. India
D. Germany
E. Australia

56. Average life expectancy of goats (years)?
A. 5
B. 10
C. 11
D. 6
E. 15

57. How many types of productivity are goats divided into?
A. 2
B. 3
C. 4
D. 5
E. 6

58. How many duck breeds are there?
A. 2
B. 4
C. 6
D. 5
E. 3

59. Which country has the largest duck population?
A. France
B. China
C. India

D. Thailand
E. America

60. When was the breed Kazakh argali merino bred?

A. 1934-1950gg
B. 1941
C. 1946
D. 1900
E. 2000

61. Where was the breed of prekos sheep bred?

A. France
B. Italy
C. England
D. Spain
E. Norway

62. The oldest breed of horse?

A. Akhaltekinskaya
V. Orlov Trotter
C. Arab
D. Adaevskaya
E. English

63. The oldest fine-fleeced breed of sheep?

A. Spanish Merino
B. North Kazakhstan Merino
C. Caucasian Merino
D. Archaro-Merino
C. French ramboule

64. Who owns the words: "Breeders should study and consider in their work the following main factors 1. The species diversity of plants and animals. 2. Inherited variability. 3. The role of the external environment in the development of the main features, etc. "

A. Vernadsky
B. Vavilov
C. Sukachev
D. Mechnikov
E. Pavlov

65. What is the theoretical basis of selection?

A. Genetics
B. Physiology

C. Valuation
D. Hybridization
E. Tribal selection

66. The agricultural sector, aimed at providing the population with food and raw materials, a number of structural links in the industry?

A. Forestry
B. Industry
C. Breeding economy
D. Livestock.
E. Crop production

67. Classification of cattle breeds in the direction of productivity

A. Meat, greasy, dairy
B. Meat, plentifully dairy, low-dairy
C. Meat and dairy
E. Dairy, combined, meat

68. Is the harmful effect of related mating called?

A. Breeding depression
B. **I**nbreeding depression
C. Heterosis
D. Genesis
E. Causal Genesis

69. In what century did the concept of "breed" first appear?

A. 7-8 century
B. 13-14
C. 12 century
D. 11th century BC
E. 20th century

70. According to the establishment of D. A. Kislovsky, in order to avoid related mating, the minimum in the breed should be:

A. 4,500 queens and 150 manufacturers
B. 2000 uterus and 500 manufacturers
S. 1,500 queens and 1,500 manufacturers
D. 1000 uterus and 100 manufacturers
E. 100 queens and 10 manufacturers