Comparative analysis of economic and biological features of Kalmyk and Mongolian cattle breeds

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Abstract The aim of the research is to compare and study the economic and biological characteristics of animals of the Kalmyk and Mongolian breeds of cattle, to identify related parameters and evidence of a common historical origin. Methods. The method of evaluating and comparing the characteristics of two breeds of cattle (Kalmyk and Mongolian) with a common origin has been improved, and methods of zootechnical, graphic and comparative analysis. Results. The authors made a comparative assessment of the economic and biological characteristics of the Kalmyk and Mongolian cattle breeds bred in the South of Russia, in the Bayangol-Mongol and Xinjiang Uygur autonomous regions of China. According to the results of the assessment, similar characteristics of the studied animal breeds were revealed, and their common origin from a single ancestor was proved. The factors that influence the high adaptive abilities of the two breeds and the similarity in their production and reproduction abilities are revealed. Studies of Kalmyk breed of cattle was carried out in the territory SPK "Prolific" of the Republic of Kalmykia, the Mongol breed cattle was held on the territory of the farm Baingol-Mongol Autonomous Region of China. The study of these cattle breeds will allow us to understand the origin of the Kalmyk breed of cattle, which was migrated with the Mongolian-Kalmyk tribes from the Western part of China more than 400 years ago.

1. Introduction
According to UN forecasts (FAO), by 2026, the world's population should increase the consumption of meat products, especially beef. Beef cattle breeding is actually deployed in arid areas, in the conditions of a sharp continental climate with severe winters and arid summer periods [1]. In such conditions, it is most advantageous to orientate beef cattle breeding in the absence of other areas of specialized activity in the region. Figure 1 presents statistics on the production of cattle for slaughter in live weight (figure 1).
Figure 1. Cattle production for slaughter in Russia for the period 2010-2018, thousand tons [2].

Statistics on the number of cattle raised for slaughter for the period 2010-2018 shows a decrease from 2010 to 2017, then we observe growth in 2018. Nevertheless, Russia does not belong to the leaders in beef cattle breeding, as such countries as India and Brazil remain leaders in cattle meat. Other countries are significantly behind in the number of cattle raised. Russia is on the 8th place in terms of livestock numbers. For Russia, such indicators are unsatisfactory, since in fact the country does not satisfy the domestic needs for beef.

An assessment of statistics on the production of beef and veal in the countries of the world at the end of 2018 demonstrates US leadership with a production volume of 12253000 tons per year, or 23% of the total production for 10 leading countries. In 2018, Russia entered the TOP 10 countries of the world of beef producers. The volume of production of Russian beef determined to 1336000 tons per year, which determined to 3% of the total mass.

Russia in world statistics has a meat consumption level of 64.5 kg per year per person. Today, most Russians consume meat varieties such as pork and poultry, the production volumes of which are increasing annually. According to the results of 2018, poultry meat and pork prevail in the structure of production of meat raw materials, while beef is in third place.

Obviously, it is necessary to increase the volume of beef production to meet the need for meat products, especially red meat, in accordance with established recommendations for nutrition. It is necessary to determine the most productive meat breeds of cattle suitable for cultivation in the arid terrain of the South of Russia, since it is in these territories that meat cattle breeding is developed. It should be noted that beef cattle breeding is the main activity and a source of income for the population of these territories. In the southern regions of Russia, animals live on year-round grazing, which ensures the production of environmentally friendly raw meat and the production of organic meat that is popular today. But cattle breeds adapted to extreme climatic conditions, such as the Kalmyk breed, are suitable for keeping under such conditions. This breed belongs to one of the oldest livestock breeds, which came to the territory of Russia together with nomadic Oirat tribes from Western Mongolia. Animals are very hardy, resistant to disease, have high meat productivity and fertility. It is not clear the origin of this cattle, but according to historical sources, the founders of this breed is the Mongolian breed of cattle, which today is kept on the territory of the Bayangol-Mongol and Xinjiang Uygur autonomous regions of China, where about 180 thousand Kalmyks live.

2. Research methods
The need for increasing productivity in beef cattle breeding was identified in the works of many domestic and foreign scientists, who in their studies proved the high adaptive abilities of Kalmyk cattle raised in arid conditions in southern Russia. The cattle of this breed has a high potential for the growth and production of high-quality beef, so it is interesting to study its origin and compare with a related breed of Mongolian cattle, bred in China in Xinjiang province.

To carry out scientific research work on a comparative analysis of animals of the Kalmyk and Mongolian breeds, the conditions of keeping and the economic and biological characteristics of animals
raised in Kalmykia and China were studied. The experimental groups of animals were formed at the age of 15-16 months, when they reached maximum growth and productivity.

Research on the Kalmyk livestock was carried out on the territory of the Fertile Council of the Republic of Kalmykia, and on the Mongolian livestock on the territory of a private farm in China. The basis of the data was the results of regular weighing of animals on farms, materials of livestock and breeding records. Comparisons were made on the external characteristics of animals of two breeds, measurements of articles of animals were carried out, live weight of animals was calculated as average by taking into account the results of weighing each animal in the experimental group.

The final processing and presentation of the research results was carried out using methods of dynamic, statistical, graphical data analysis, using the Microsoft Office software package. To evaluate the results, methods of generalization, systematization, and logical analysis were used.

3. Results

3.1 Comparative characteristics

Today, Russia satisfies the domestic demand for poultry and pork almost completely. The unresolved problem of producing the required amount of beef, which is prescribed by medical recommendations for the full growth, development and maintenance of a person's high working capacity. It is this kind of meat like beef that contains unique CLA (conjugated linoleic acids) produced exclusively in the stomachs of ruminants. The value of these acids lies in their ability to form and maintain immunity, reduce the risk of cardiovascular diseases, some types of cancer, diabetes, etc. Artificial analogues of such acids cannot be obtained, therefore, high-quality beef should be regularly present in the diet of the population.

Maintaining and further developing beef cattle breeding in Russia today is becoming a strategic objective of state food policy. Livestock today must rely on the latest achievements of genetics and breeding, as well as constantly search for new ways to improve the existing gene pool of farm animals. The growing demand for raw meat dictates the need for the development of intensive cattle breeding with the shortest possible period of production of domestic agricultural products. In addition, the industry's high (up to 30%) dependence on the import of raw materials, genetic material, and various premix ingredients undermines the foundations of national security. In this connection, the search and implementation of innovative developments to intensify beef production based on improving the genetic potential, optimizing the feeding and keeping conditions of animals, needs to be supported and developed. For the production of competitive beef, the most promising at the present time is the Kalmyk breed of cattle, which has a high growth rate and good meat productivity. This is practically the only domestic livestock breed adapted for the arid and sharply continental climate of various regions of Russia, for year-round pasture maintenance, and high ecological compatibility of cultivation.

The natural and climatic conditions of Russia are distinguished by a high variety of temperature regimes, the amount of precipitation, geographical features, huge arid areas, which determined beef cattle breeding as a promising direction of livestock development and the main agricultural industry in these areas.

Among the meat breeds of cattle in Russia, the first place is occupied by the Kalmyk breed, which is one of the oldest breeds. In our country, animals of this breed appeared about 400 years ago, together with nomadic Kalmyk tribes from Western Mongolia. In the arid conditions of the South of Russia, this cattle adapted well and showed high results in meat productivity. Year-round pasture keeping of animals, natural selection, severe wintering - all this made it possible for these animals to acquire the ability to adapt highly in harsh climatic conditions. More than 44% of the beef cattle stock is concentrated in areas unsuitable for farming, among which the Kalmyk breed takes first place in terms of numbers. The proportion of Kalmyk cattle in the total number of meat stocks in the country exceeds 40%.

Currently, Kalmyk cattle are raised in many regions of Russia (regions of the South, North Caucasus, Volga, Central, Siberian, Far Eastern Federal Districts). In addition, in recent years this livestock has been exported to such countries as the Republic of Kazakhstan, Mongolia, Turkey, the Republic of
Azerbaijan, Iran, the Republic of Georgia, Armenia, the EU countries, etc. In Russia, there are 18 breeding plants and 78 breeding reproducers. The largest breeding stocks are OJSC Shatta PR - 2024 heads (Kalmykia), Khanata SPK - 2348 heads (Kalmykia), Uralan Agrofirm LLC - 4418 heads (Kalmykia), Soap SEC - 1763 heads (Buryatia), the collective farm named after Skiba - 1640 goals (Rostov Region). The total number of breeding animals in the first place is the Republic of Kalmykia - 72,400 animals, in the second Rostov region - 28,174 animals, in the third Republic of Buryatia - 16081 animals.

The Mongolian cattle breed is an ancient local breed with a long history, widely distributed in the northern provinces of China, for example, in northwestern China, namely in the Bayangol-Mongolian and Xinjiang Uygur Autonomous Districts of China, in the territories of northeast China, in Mongolia and in Russia. Some countries of Central Asia are also breeding this breed [1].

The Mongolian cattle breed is one of the best cattle breeds in northern China. In this country, from the 70s of the last century, cows of the Mongolian breed were used for crossbreeding with animals of other breeds, such as: Simmental, Hereford, Charolese breed, to improve the productivity of the Mongolian breed. This breed is now preserved and protected in China as an excellent resource for breeding in the pasture areas of China [2].

However, the scientific and practical interest is represented by the economic and biological characteristics of the animals of the Mongolian breed, from which the cattle of the Kalmyk breed originated.

Bayangol-Mongol Autonomous Okrug is one of the main production area of the Mongolian cattle. The breed is distributed in all areas of the Autonomous Okrug, and the central production sites are in the Hejin and Heshuo regions. According to the latest data, the number of the livestock of pedigree cattle of the Mongolian breed in this territory has greatly decreased and amounted to about 6,000 heads.

The main distribution area of the Mongolian cattle breed is located in the northern part of the Autonomous Okrug in the Yankee Basin and in the middle of the Tien Shan Mountains, the height above sea level is 1085-3000 meters. Climatic conditions apply to the northern temperate zone, and the actual annual sundial on the mainland is 3138 hours, the average annual temperature is 8.6 °C, the extremely high temperature is 38 °C, the annual accumulated temperature is 4063.8 °C, the relative temperature is 52%, and the average period without frost is 178 days. The area of pastures is 2.19 million hectares. Animals are kept in the pasture year-round. In winter, they practice keeping in equipped pens, shelters from wind and snow.

The Mongolian breed has long been used to improve the Chinese Huannyu breed (literally yellow cattle) in agricultural areas and convenient pasture areas, so today it is most often a cross breed of cattle. Currently, most of the animals of the Mongolian breed are located in remote pasture areas. Since this breed of cattle for a long time was in a closed state of self-reproduction and self-improvement, problems such as mixed hair color, weight loss and decreased productivity arose. In this situation, it is necessary to take the necessary measures to preserve and protect the Mongolian breed and at the same time improve its productive qualities. So, in 2009, in the Hejin County, Xinjiang Uygur Autonomous Region of China, a protected zone of the Mongolian cattle was created and the main work was carried out to improve its genetic potential.

The main objectives of this project:

- Firstly, this is the definition of protected areas, the establishment of signs and the development of management systems for these territories, for the protection and restoration of the Mongolian breed;
- Secondly, it is planned to study the resources of the Mongolian cattle breed throughout the district, identify the pedigree and generate a detailed file, identify the main group and breeding bulls, create a genealogy file of the Mongolian cattle, study the characteristics of the Mongolian breed at different age periods and prepare breed standards [4].
There are no other cattle breeds in the protected area, closed breeding is underway, special personnel are responsible for the selection and veterinary measures. In accordance with the principle that the effective content of the population and the growth of inbreeding in the protected area is no more than 0.5-1% per generation in the protected population, a total of 5 protected groups were created in this area. The number of livestock has reached 6,000 heads.

A comparison of the conditions of keeping and growing Kalmyk and Mongolian livestock reveals similarities. So, both breeds are kept on year-round pasture maintenance, wintering is tolerated in the open air, they adapt well in conditions of sharply changing temperature conditions, they use and eat coarse fodder efficiently, maintain their productive and reproductive qualities. Next, a comparative analysis of the appearance and physiological characteristics of animals of two breeds was carried out (figure 2).

An assessment of the external features of the compared breeds proves that the animals of the Kalmyk and Mongolian breeds are externally quite similar. They have a similar color, their body type is characterized by a strong constitution of the body, especially gobbies. Both cattle breeds are meat oriented, have good meat quality, willingly eat roughage, are resistant to cold and disease, and quickly adapt to harsh environmental conditions. Head size is average; the neck is short, not wide and rough. The eyes of the animals are convex and bright, the eyelids of different colors, the ears are flat, the shells are thick, the tips of the ears are not dull. All animals are mostly horned. The horns are crescent-shaped and bend upward, then bend slightly inward, directed toward each other or forward, long and thin. The length of the neck is moderate and thin, under the neck there is less sagging muscles, a deep chest, the abdomen is round, not lowered, the back and waist are straight, the sacrum is slightly higher, the buttocks are in the shape of a crest, insufficient development of the hind limbs, a long tail and a small broom. Tail tips are different in color. The limbs are strong and short, and the hooves are small and strong. The chest is in the shape of a bowl. Build strong and slender. The color of the hair of the Kalmyk breed is more than a dark red color, almost black. The color of wool in Mongolian cattle mixes more with yellow, then comes black, and other colors and multi-colored also make up a certain proportion [3].

![Bull of the Kalmyk breed cattle](image1)
![Cow with calf of the Kalmyk breed cattle](image2)
![Bull of the Mongolian breed of cattle](image3)
![Cow of the mongolian breed](image4)

**Figure 2.** Appearance of the compared breeds of animals [2].

In table 1 we show the comparative characteristics of measurements of some indicators for the animals of the studied breeds. For comparison, groups of gobbies and heifers aged 15-16 months were
selected. Thus, a comparison of the height at the withers of animals of the Kalmyk breed showed that gobi at this age are 137.4 cm tall, heifers 127.8 cm. Mongolian animals at this age have reached growth: bulls 127.4 cm, heifers 121.52 cm. Also, for all other indicators, animals of the Kalmyk breed are generally larger than animals of the Mongolian breed.

Table 1. Analysis of data on the body size of cattle of the Kalmyk and Mongolian breeds aged 15-16 months.

| Indicators                        | Kalmyk    | Mongolian |
|----------------------------------|-----------|-----------|
|                                  | bull      | cow       | bull       | cow       |
| number of heads                  | 20        | 60        | 20         | 60        |
| height at the withers, cm        | 137.4±3.45| 127.8±4.35| 127.4±4.45 | 121.52±4.16|
| oblique torso length chest       | 170±8.11  | 150.4±7.15| 146.9±8.53 | 137.22±6.82|
| circumference, cm                | 210±5.98  | 178.2±6.91| 167.0±6.48 | 160.8±8.31 |
| pastern circumference, cm        | 20.5±2.23 | 17.4±0.93 | 18.65±2.45 | 16.69±0.88 |
| weight                           | 420±34.35 | 376±50.37 | 390.44±45.06| 342.83±60.44|

3.2 Meat productivity.

We conducted a comparative study of the productive qualities of two breeds. According to this indicator, both breeds achieve a sufficiently high yield of raw materials, however, the Mongolian breed is slightly inferior to the Kalmyk.

Kalmyk breed is generally recognized to have high meat qualities. Productivity of bulls aged 15-16 months is: pre-slaughter weight on average reaches 420 kg, carcass slaughter weight - 256 kg, slaughter yield - 52.6%, meat yield - 220.92 kg, meat yield percentage = meat / slaughter weight x100% = 86.3%; the percentage of meat yield to the ratio of slaughter mass = meat yield / slaughter mass x100% = 52.6%; skin thickness is 0.51 cm; the thickness of the abdominal muscles is 8 cm; thigh muscle thickness 15 cm; fat thickness: 0.9 cm back fat thickness; the thickness of the waist fat is 0.9 cm; the ratio of bone to meat is 5.65; the area of the thick edge of the carcass is 54.67 cm².

Mongolian cattle. The productivity of 15-16 month-old gobies is: pre-slaughter mass is 390 kg, carcass slaughter mass is 234 kg, slaughter yield = 50.1%, meat yield 198 kg; meat yield percentage = meat yield / slaughter weight x100% = 84.8%; the percentage of meat yield to the ratio of slaughter mass = meat yield / slaughter mass x100% = 50.77%; skin thickness is 0.35 cm; thickness of the abdominal muscles 6 cm; thigh muscle thickness 12 cm; fat thickness: back fat thickness 0.7 cm; thickness of waist fat 0.7 cm; the ratio of bone to meat is 4.84; the area of the thick edge of the carcass is 40.75 cm².

Kalmyk cattle are not bred to obtain dairy raw materials, but it should be noted that milk obtained from these animals is thick, with a fat content of 4.2-4.4%. The lactation period is 8-9 months. The milk yield is low at the level of 1400 kg, sometimes it reaches 2500 kg. Such an amount of milk is necessary only for feeding calves [4, 5, 6].

In the pastoral regions of China, milk is one of the important food sources for pastoralists: Mongolian cattle are grown by long-term artificial milking and have a certain ability to produce milk. In conditions of complete cattle grazing in the pastoral zone, milking is usually carried out after calving in summer and autumn, and the actual milking days are generally about 150 days. In the agricultural area, additional feeding conditions are used for feeding during full lactation. Lactation period: 305 days, milk yield: 1200 kg, milk composition: percentage of water content 94%, fat content in milk up to 5%.

In terms of productive qualities, the breeds are quite similar. The percentage of meat yield and milk productivity of the compared breeds are approximately the same.
Comparison of the chemical composition and biological value of the obtained beef from the studied breeds of cattle showed the following results (table 2).

The results of laboratory studies presented in Table 2 indicate that the content of fat and protein in beef samples obtained from animals of the studied breeds have a slight difference. So, in the sample of beef obtained from gobies of the Mongolian breed, moisture contained more than in the sample from peers of the Kalmyk breed. The calves of the Kalmyk breed differed from their peers of the Mongolian breed in a higher fat content (by 1.36%).

Table 2. The chemical composition of the average sample of meat of experimental gobies, % (X±Sx).

| Indicator     | Kalmyk       | Mongolian    |
|---------------|--------------|--------------|
| Dry matter    | 32.18±0.80   | 31.30±0.95   |
| Moisture      | 67.58±0.70   | 68.30±0.96   |
| Fat           | 12.32±0.32   | 10.96±0.45   |
| Protein       | 19.21±0.49   | 19.32±0.56   |
| Ash           | 0.89±0.02    | 1.42±0.03    |

Based on this, we can conclude that the calves of the Mongolian breed during the growing period have a lower rate of fat deposition than the peers of the Kalmyk breed, which can be explained by some late ripening of the animals of the Mongolian breed.

Table 3. The chemical composition of the longest back muscles of experimental bulls, % (X±Sx).

| Indicator     | Kalmyk breed | Mongol breed |
|---------------|--------------|--------------|
| Dry substance | 23.72±0.21   | 23.47±0.58   |
| Moisture      | 76.32±0.22   | 76.56±0.72   |
| Fat           | 1.67±0.32    | 1.58±0.30    |
| Protein       | 21.06±0.50   | 20.96±0.42   |
| Ash           | 0.95±0.02    | 0.9±0.02     |

Comparison with medical recommendations showed that beef obtained from both breeds studied can be considered the most valuable in nutrition. So, the ratio of protein and fat in both samples meets the regulatory criteria (fat - 8-12%, protein / fat - 1: 0.5). The data in analytical table 3 reflect the dry matter and moisture content. These figures are approximately the same in both samples. Therefore, studies did not reveal significant significant differences in the chemical composition of the longest muscle.

Table 4. Biological value and physico-chemical parameters of the longest back muscles of experimental gobies, % (X±Sx).

| Indicator     | Kalmyk breed | Mongol breed |
|---------------|--------------|--------------|
| Tryptophan    | 314.66±3.86  | 323.01±4.18  |
| Oxyproline    | 61.40±3.39   | 62.10±4.26   |
| PQI           | 5.12         | 5.20         |
| Moisture content | 55.76±13.26 | 55.94±13.05  |
| Ph            | 5.86±0.24    | 5.63±0.19    |
| Color         | 25±6.76      | 252±7.26     |

The value of BKP, a protein-quality indicator of the longest muscle of the back in experimental gobies of the studied breeds, was at the level of 5.1-5.2, which indicates the high biological value of meat. In terms of pH, the longest muscle of both groups can be characterized in terms of high quality, good presentation and the absence of malformations.

Information on the energy value of the pulp of carcasses of experimental gobies is given in table 5. According to the results of the assessment of the energy value of beef samples, taking into account the pulp output from the carcass, superiority of calves of the Kalmyk breed over Mongolian peers was revealed. Due to less fat accumulation in the carcass of Mongolian gobies by the age of 15 months, the energy value of their meat was lower by 16%.

Table 5. Energy of the pulp of experimental gobies, % (X±Sx).

| Indicator     | Kalmyk breed | Mongol breed |
|---------------|--------------|--------------|
| Tryptophan    | 314.66±3.86  | 323.01±4.18  |
| Oxyproline    | 61.40±3.39   | 62.10±4.26   |
| PQI           | 5.12         | 5.20         |
| Moisture content | 55.76±13.26 | 55.94±13.05  |
| Ph            | 5.86±0.24    | 5.63±0.19    |
| Color         | 25±6.76      | 252±7.26     |
Thus, calves of the Kalmyk and Mongolian breeds have similar indicators of meat productivity. In this case, the bulls of the Mongolian breed had a lower rate of fat deposition, but they were practically not inferior to peers of the Kalmyk breed in terms of protein content in carcass pulp and its quality.

Table 5. Energy value of meat, MJ.

| Indicator                          | Kalmyk breed | Mongolian breed |
|-----------------------------------|--------------|----------------|
| Energy value of 1 kg of pulp       | 1,9          | 1,8            |
| (average sample)                  |              |                |
| The energy value of the whole pulp| 1736,3       | 1458,4         |
| (average sample)                  |              |                |

We will evaluate and compare the reproductive ability of animals. Kalmyk breed reaches maturity by 16-17 months. Recommended random age of heifers is 17-18 months, calves – 17-19 months. As a rule, animals reproduce well under natural conditions; calves yield up to 80%. In advanced pedigree farms with artificial insemination, the yield reaches up to 95-100% of calves. As a rule, the mass of calves at birth reaches 24-28 kg. Animals tolerate pregnancy well, calve easily, quickly come to the hunt after calving [7, 8].

The Mongolian livestock reaches maturity: bulls - 18 months, heifers - 22 months. Random age: bulls 24 months, heifers - 22 months; breeding period: May - October, estrus cycle: 21 days, gestation period: 283 days. At birth, calves weigh 21 kg for calves and 18 kg for heifers.

The analysis of the two breeds proves their similarity and common origin. External characteristics of animals, meat and dairy productivity, reproductive ability prove the relationship between these breeds. The unique properties of two cattle breeds, separated by thousands of kilometers and hundreds of years, were preserved due to the high adaptive abilities of these breeds [9, 10].

In further studies, it is necessary to observe purebred breeding of Kalmyk and Mongolian cattle, it is advisable to conduct a genome-wide analysis of biomaterials.

Currently, one of the main tasks in working with cattle of the Kalmyk breed is to increase the breeding and productive characteristics of animals while preserving the unique adaptive qualities and genetic diversity of the breed. In breeding farms, when conducting breeding and breeding work, it is taken into account that the Kalmyk breed of cattle was created on the basis of improving a homogeneous array of native cattle by exposure to changing environmental factors, artificial and natural selection. The breed, bred for 400 years, has been constantly improved due to the presence of zonal types, lines and families.

Today, the main direction of research to improve production indicators of the Mongolian cattle is the use of this breed to achieve the goal of preserving pure breed and improving the genetic potential [11]. The main characteristics of the Mongolian cattle are - unpretentiousness to pasture lands, frost resistance, high resistance to disease. In the future, it is planned to preserve the breed, choose a bull and a cow with a high level of productivity for work on improving the breed [12]. The main content is the definition of tribal composition in terms of body shape, appearance and productivity. The appearance and shape of the body are mainly determined by such features as the color of the coat, the characteristics of the appearance and shape of the horns. According to the characteristics of the Mongolian cattle, it is recommended to choose animals of yellow and milky white color.

4. Conclusion

This article described the characteristics of the Kalmyk and Mongolian cattle in Russia and China, namely in the Republic of Kalmykia and in Bajingol, Mongolian Autonomous Region of Xinjiang. The Kalmyk breed of cattle is one of the oldest breeds moved to the territory of Russia with nomadic Kalmyk tribes. It has high meat productivity, is a source of high quality beef. Animals are hardy and tolerate harsh climatic conditions. The breed is grown according to the technology of year-round grazing. The breed is bred clean and it is necessary to adhere to this principle to preserve its unique qualities. The Mongolian breed of cattle is an ancient breed with a long history, it refers to both dairy
and meat breeds, has good quality meat and milk. Animals are resistant to roughage, cold and disease, adapt well to harsh environmental conditions. Natural breeding of this breed using pastures is useful for maintaining the high genetic potential of animals. To date, in China, primarily in the Bayangol-Mongol Autonomous Districts of China, the Mongol Autonomous Okrug, measures have been taken to protect, preserve, improve the productive qualities of the Mongolian cattle.

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