
6. GOATS

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Goats are raised in practically all climatic zones of the USSR. They are easy to keep, well adapted to diverse environmental conditions and very prolific. Because of their pointed muzzle and thin and very mobile lips, they are able to pluck out sparse and short grass on hill slopes among stones, and to feed on aftermath. On poor pasture with thin grass stand, where cattle, horses and even sheep remain underfed, goats are able to find enough feed and maintain productivity. Due to their unique biological features, goats can be successfully raised in zones with poor grass vegetation such as highlands, mountains, deserts, semi-deserts and steppes.

The most famous product of goat husbandry is cashmere, whose lightness, softness, relative strength, low heat conductivity and uniformity make it one of the most valuable wool fibres. The cashmere, either pure or mixed with Merino wool, is used for production of high-quality light shawls, fine knitted goods and the best kinds of felt. Orenburg cashmere shawls, which together with Palekh boxes and Vologda lace are masterpieces of folk art, are well known far outside Russia. "Gossamer" cashmere shawls were shown, as unique works of art in Paris (1857), London (1862), Brussels (1958) and Montreal (1967) International Exhibitions, and each time were awarded top prizes.

During the Second World War the goat population decreased: it was only 11.4 million in 1946. After the war it began to increase rapidly and reached 17.1 million in 1952, of which 7.1 million were in state and collective farms. However, during 1952-66 the goat population on all kinds of farming enterprises went down from 17.1 to 5.5 million, i.e. by nearly three times. In collective and state farms their population decreased sharply - from 7.1 million to 891 000, i.e. more than 9-fold - especially in Kazakhstan, Turkmenia, Georgia, Armenia and Azerbaijan. Rise in prices for cashmere, goatskins and meat led to an increase in the goat population on collective and state farms from 891 000 in 1965 to 1 365 000 in 1983; and, including private plots, from 5 561 000 to 6 135 000.

There are four goat husbandry zones in the Soviet Union, distinguished by different products.

Zone 1 - cashmere production: southern part of the Urals, Volga area, Rostov and Voronezh regions, Gorno-Altai and Khakass Autonomous Regions. Here they raise Orenburg, Don and Altai Mountain wool goats. In 1980 there were 1 851 000 goats kept in all farming enterprises of this zone. They market annually 125 t of cashmere, which is more than 50% of the national total.

Zone 2 - mohair production: Tajikistan, Namangan region in Uzbekistan, Turkmenia, Semipalatinsk, Taldy-Kurgan, Chimkent and Jambul regions in Kazakhstan, and also small goat populations in Transcaucasia, in North Caucasus and in Tuva ASSR. The total goat population in 1980 was 1 670 000 including 1 162 000 on private plots.

Zone 3 - mohair and cashmere production. It includes some regions of Uzbekistan, Osh region in Kirgizia, Alma-Ata, Aktyubinsk and Ural regions in Kazakhstan. Farms in this zone raise goats of the Soviet Mohair or Don

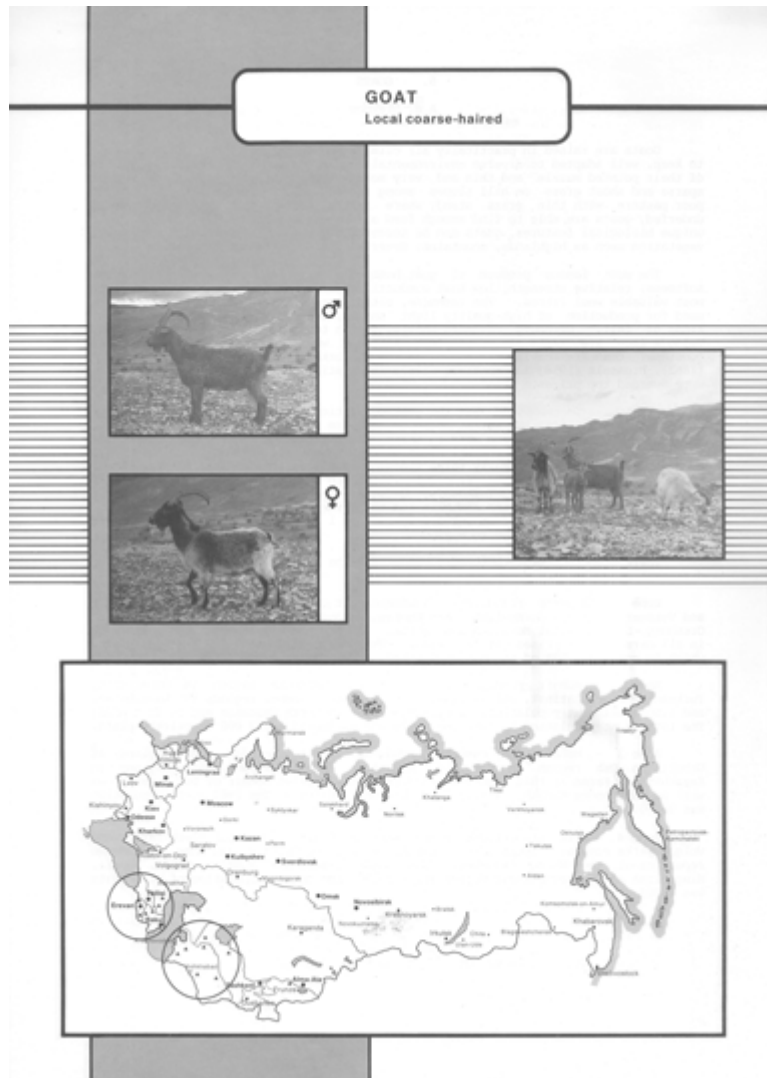
breeds, as well as indigenous Kazakh, Kirgiz and Uzbek wool breeds. The 1980 goat population was 980 000.

Zone 4 - milk production: North-Western, Central, Central-Black Earth and Volga-Vyatka economic areas of the RSFSR, as well as Georgia and some autonomous republics of the North Caucasus. The major breeds are Russian White, Gorki, Mingrelian and improved local varieties. In 1980 the total population of milk goats was 1 003 000.

In recent years several high-quality breeds and breed groups have been produced in the USSR, such as the Soviet Mohair and the Altai Mountain. Work is in progress to improve Uzbek Black, Kirgiz and Dagestan wool goats.

Based on the main product, goat breeds can be classified as follows: cashmere - Don, Orenburg, Altai Mountain, Uzbek Black and Kirgiz cross; mohair - Soviet Mohair; milk - Russian White, Gorki, Mingrelian and local breeds. Local coarse-haired goats, found in practically all parts of the country, should be regarded as a special group. Their main products are meat, milk and goatskin.

Our national goat breeds are well adapted to local environments, and, given adequate feeding, have a good productivity. Cashmere productivity depends on the undercoat/outercoat ratio, length of fibres, their density and fineness. As regards cashmere and mohair goats, the objective of selective breeding is to improve productivity, breed characteristics and wool quality.



LOCAL COARSE-HAIRED GOATS (Mestnye grubosherstnyye kozy)

A general idea about local goat breeds had already been formed before the Revolution; however, the systematic, in-depth study of their populations started only during the Soviet era.

These studies showed that indigenous goats have a relatively compact body and a good hair coat. Most animals were noted for large horns with rough matt surface. Up to 99% of goats in Uzbekistan, Tajikistan and Turkmenia have horns. In Kirgizia and eastern Kazakhstan 90-94% are horned and in Gorno-Altai 82-90%.

Local goats in mountainous areas of the Caucasus and Transcaucasia, and in Central Asia are predominantly black. In all Soviet republics one can find grey goats; their guard hair is uniformly grey, not fading with age or season. Somewhat fewer is the number of tan and pied animals with black head and neck. All goats have a well-proportioned body; the sacrum is 1-2 cm higher than the withers, and oblique body length is 1-2 cm more than height at

sacrum, or equal to it. Measurement ratios also indicate a pronounced compactness of the body.

Animals of both sexes are characterized by late maturity; the growing period for females is 6.5 years and for males 4-5 years. Kids grow slowly; their weight gain during suckling is low. Sexual dimorphism is clearly manifested: males are 1.5 times heavier than females.

In live weight and measurements, Central Asian local goats are superior to those in other parts of the country. Live weight of adult females after summer fattening is 43-45 kg in Uzbekistan and Tajikistan, 40-45 kg in Turkmenia, 41-45 kg in Kazakhstan, up to 44 kg in Kirgizia. Live weight of some female goats reaches 60 kg. Live weight of male goats from improved herds in Uzbekistan was 60-65 kg and in commercial herds 56-58 kg.

The coat of local goats has a mixed composition. There is a clear distinction between long straight lustrous guard hairs and a short soft undercoat (cashmere wool). Guard hair grows evenly over the whole year and reaches an average length of 15-17 cm; diameter of fibres is 70-90 μm and more.

Wool undercoat grows during autumn and winter; its length is 4-5 cm and fineness 13-14 μm (in Central Asian goats). When the warm days are back again, the undercoat gets cotted and is shed.

Average wool yields from improved goat herds in Uzbekistan are: yearlings -120 g; 2-year-olds and older - 140-146 g. For Turkmenian goats the corresponding figures are 108 and 115-117 g. An average yield from goats in southern and eastern Kazakhstan is 140-150 g, in Kirgizia 120-140, Gorno-Altai 140-160 (females) and 170-230 (males), Kabardino-Balkaria 30-50, Dagestan 60-70 g.

The taste of the meat is good. Animals used for meat are castrated males (serke), culled females and kids.

The lactation period lasts 5-6 months, from April to October. Average milk yields are in the range of 90-160 kg. Goats with twins produce 10-15% more milk than those with singles.

Local goats are good material for producing new breeds, and therefore the protection of this genetic resource is an important task of goat breeders in our country.

Cashmere Breeds (Pukhovye porody)

These are very important for the national economy, because, together with the much valued wool fibre (cashmere), they also produce such industrial products as goatskin, as well as meat and milk.

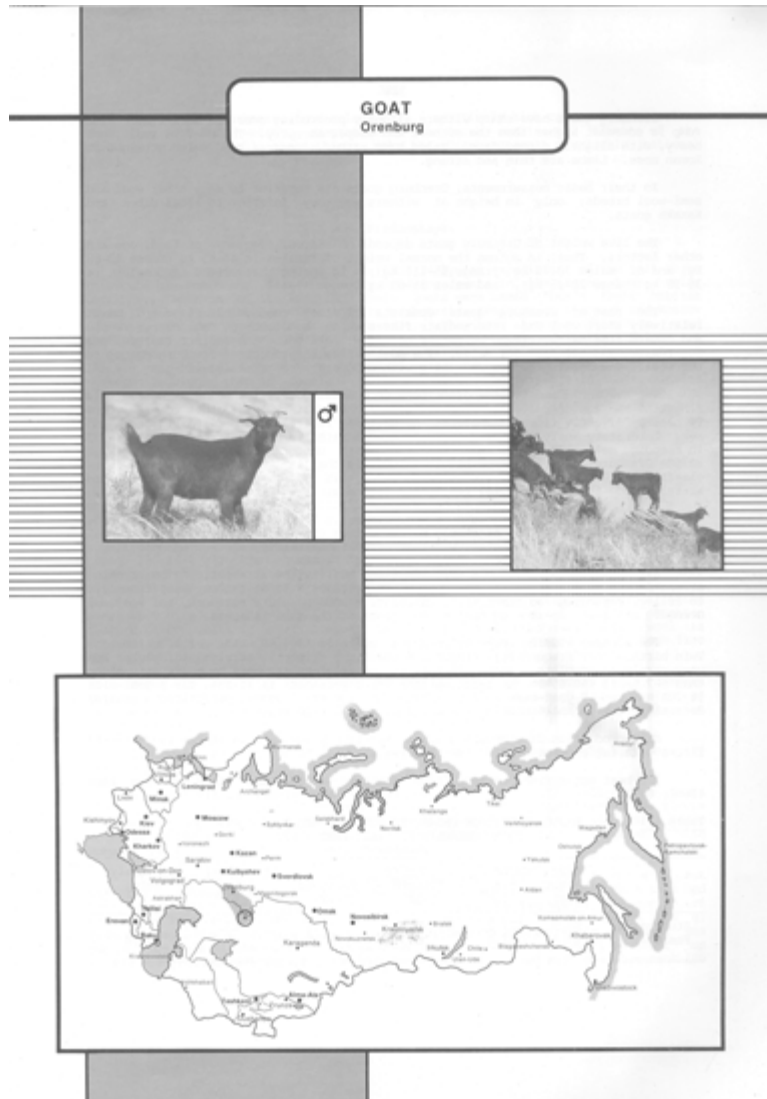
According to the breed survey, on 1st January 1980 the USSR had the following populations of purebred and grade (crossbred) goats:

cashmere (wool) goats total	443	182
including:		
Don goats Altai	87	205
Orenburg goats	157	978
Mountain goats	197	999

Wool goat breeds in the Soviet Union are second to none in their yield of cashmere.

As regards the composition of the fleece, wool breeds can be divided into two groups. The first group includes goats in which the wool is shorter than

the guard hair. In this case the wool can be defined as undercoat because, before shedding, the wool fibres form a lower layer normally hidden in long thick guard hair. Orenburg goats and their crosses are in this group. Goats in the second group have wool which is longer than the guard hair. This feature is characteristic of the Don breed and its crosses as well as the Altai Mountain breed and Uzbek Black goats. The fleece of these goats may be of various colours depending on the season. In winter, when the wool sticks out beyond the guard hair, goats are dark or light grey; but in summer, after combing out the wool, they are left with only dark bright guard hair, which is dark chestnut or black.



ORENBURG (Orenburgskaya)

This is a native breed secured after a long mass selection for cashmere production on private plots in Orenburg region. The present type of goat was formed by selection of animals with fine elastic fibres and is found in Orenburg, Chelyabinsk and Aktyubinsk regions.

Orenburg goats are predominantly large, active animals with well-developed skeleton and strong constitution. In contrast to other breeds, these goats have one-colour coats. Nearly 90% of them are black, and only 10% are tan, grey or pied.

Orenburg goats have sharp withers slightly protruding over the back-line. The rump is somewhat higher than the withers and slopes abruptly. The head is small, not heavy, with slightly dished face. Males have rather a coarse head, with straight or Roman nose. Limbs are thin and strong. In their basic measurements, Orenburg goats are superior to many other wool and semi-wool breeds; only in height at withers are they inferior to local Uzbek and Kazakh goats.

The live weight of Orenburg goats depends on season, adequacy of feed, age and other factors. Thus, in autumn the normal weight of females is 44-45 kg (range 42-65 kg) and of males 70-75 kg (range 55-110 kg); in spring the weight of females is 36-38 kg (range 28-45 kg), and males 55-65 kg (range 45-85).

The coat of Orenburg goats consists of long coarse bright guard hair, relatively short wool and intermediate fibres which some authors call coarse wool, and others fine hair. Fleece weight is moderate; excluding the wool it is 320-350 g for females and 580-610 for males. The most valuable product of Orenburg goats is the wool. The usual yield is 250-380 g with an overall range of 180-400 g.

The average diameter of wool fibres in Orenburg goats is 15 μm . The wool is finest at the age of one year, then it gets coarse, but in goats older than 5 years it becomes slightly finer. There is no definite relationship between fineness and sex. Laboratory analysis showed that average diameter in females is $14.7 \pm 0.33 \mu\text{m}$ and in breeding males $15.9 \pm 0.75 \mu\text{m}$. The fineness is uniform all over the body. The reason Orenburg cashmere is so highly valued is that it is finer, softer and more elastic than that of other breeds. Moreover, it can be fluffy, thus giving to articles made from it a special beauty and softness.

In Orenburg goats the length of wool fibres is $5.7 \pm 0.5 \text{ cm}$ (range 5.4-17 cm) and of guard hair $11.3 \pm 0.4 \text{ cm}$. It should be noted that the most intensive growth of wool takes place in autumn and winter, and that of guard hair in summer and autumn.

Strength of wool is also a very important quality characteristic. The breaking strength of a single fibre in Orenburg goats averages 5.95 g, and may vary from 4.1 to 10.1 g, depending on fineness. In relative and absolute strength, the wool of Orenburg goats is superior to that of Don goats of the same fineness.

The average kidding rate of Orenburg goats is 130-140 kids per 100 females. Twin births occur frequently; there are sometimes triplets, rarely quadruplets and very rarely quintuplets. Most often twins and triplets are born by goats not older than 6-7 years (50-65%) The twinning rate for 2-year-olds is 10-15%, for 3-year-olds 16-20% and for 4-year-olds 25-40%. From the age of 7 years, prolificacy usually decreases, but in some animals it remains high till 8-10 years.

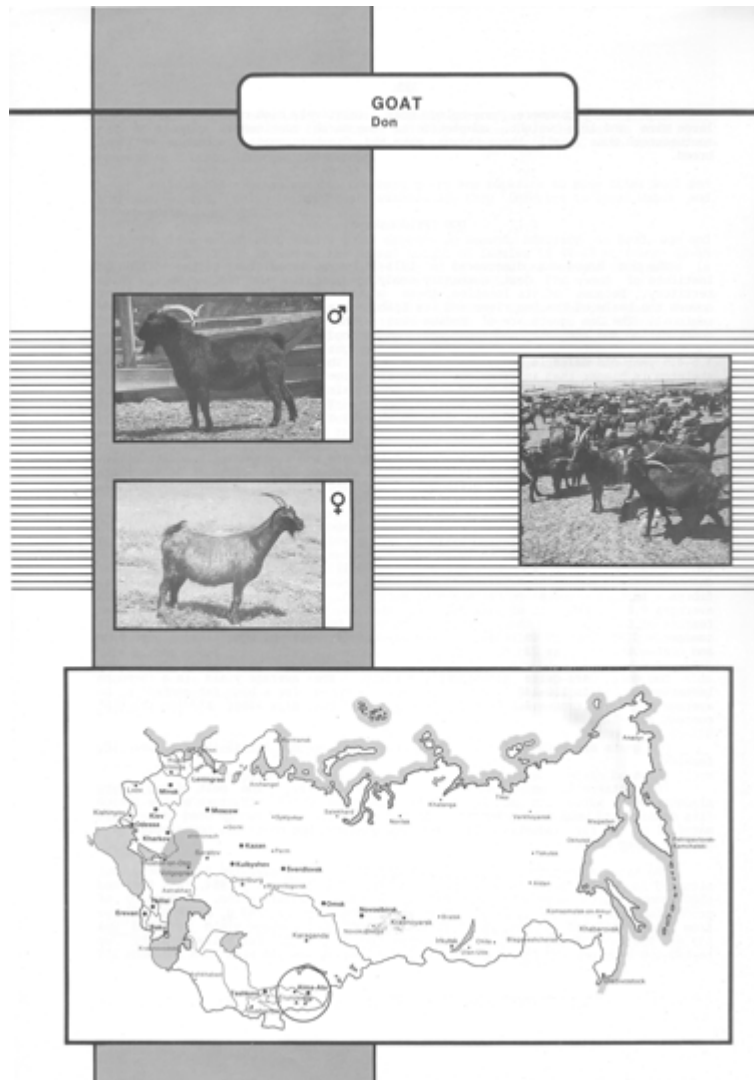
Milk production of Orenburg goats is relatively low. It is in the range 85-110 litres with fat content of 3.9% (range 3.2-6.1%).

The best enterprise raising these goats is Gubernlinski state breeding farm (Table 6.1).

Table 6.1 BASIC PRODUCTION CHARACTERISTICS OF ORENBURG GOATS FROM GUBERNLINSKI STATE FARM (1982)

	Live weight (kg)	Cashmere yield (g)	Cashmere length (cm)	Fineness μ	Hair/wool ratio %	Fertility rate %
Stud males	86.5	527.0	6.0	16.7	43.7	-
Females	47.3	367.0	5.5	15.9	42.3	137.0

High quality cashmere, one-colour coat, relatively high cashmere production, large size and live weight, adaptation to the harsh continental climate of the southeastern zone - all these things make the Orenburg goat a valuable national breed.



DON (Pridonskaya)

The Don breed was discovered in 1933-34 by an expedition of the All-Union Institute of Sheep and Goat Husbandry studying goats in the former Lower Volga territory. Because of its location, these goats were named "Don"; their habitat covers the basin of the Don river and its tributaries (Volgograd, Voronezh and Rostov regions). The Don goats are of medium size; they have strong constitution, good conformation and adequate undercoat wool on the body, neck and belly. Males are larger than females and have a greater live weight. The average live weight of 3.5-4.5 year-old males is 70 kg (range 65-85 kg). The body shape is roundish and the skeleton is bigger than in females. Horns are large and variable in shape. Males also have a longer and wider beard and abundant hair on chest, neck and back. The back is long, straight and wider than in females. The average live weight of adult females is 36 kg (range 35-40 kg). Kids weigh 2 kg at birth, 14 kg at weaning, 27 kg at the age of 1.5 years and 30 kg at 2.5 years.

Don goats are predominantly black, but they are sometimes white. Adult females have the following measurements (cm): height at withers 60.3, height at sacrum 62.1, oblique body length 64.5, chest girth behind shoulder blades 81.7, chest depth 30.7, chest width between shoulder joints 15.9 and width at hips 19.5.

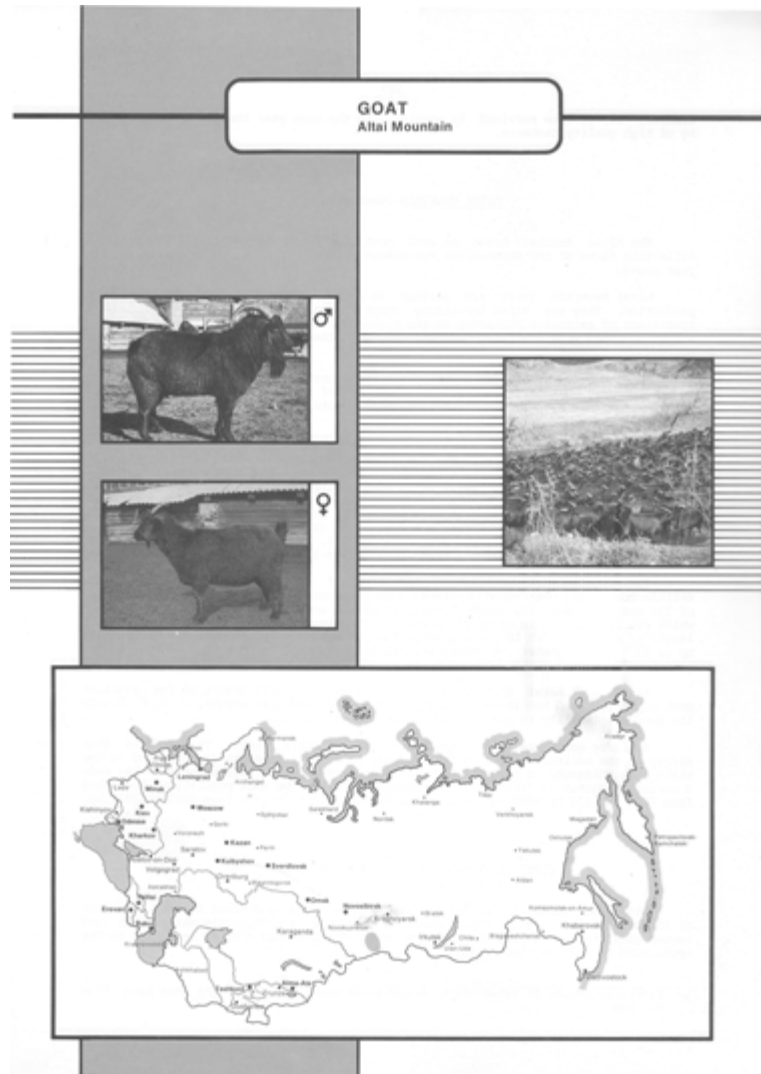
Don goats have the highest wool production among all goat breeds, though with significant individual deviations. The average wool yield from females is 500 g (range 330-1430 g); from bucks it is 1015 g (range 550-1600 g). The average wool content in the fleece is 79.4% (range 61.5-92.2%). As is known, in all other cashmere breeds and related varieties the guard hairs are much longer than the wool fibres. In this respect Don goats are an exception. The true length of wool fibres averages 9.8 cm, and that of hair 5.2 cm; that is, wool is 4.6 cm longer. Another feature of Don goats is that, compared with other breeds and varieties, the wool is coarser and not uniform in fineness. The average fineness of wool fibres, both fine and coarse together, is 22 m.

Don goats are quite satisfactory milkers. The average yield in a 5-month lactation period is 130-140 litres. The milk is noted for a high fat content - an average of 4.6% (range 3.3-8.2%). In the first two days after kidding the fat content is 7-12%.

Don goats are very prolific. An average kidding rate is 145-150 kids per 100 females.

The goatskin is mainly used for low-grade footwear. The pelt of Don goats slaughtered in autumn has good fur quality determined by the structure of the fleece (its density and wool fibres longer than guard hairs). They can be used as a basic material in the fur industry. In their fur quality Don goats are comparable with Romanov sheep which produce the best sheepskin.

The major enterprise for Don goat breeding is the collective farm Svetly Put situated in Oktyabr district of Volgograd region. On 1st January 1984, this farm had 6500 goats which were characterized by a high classification, uniformity of production type and wool quality. Wool yield from males is 1160 g, maximum 1600 g; from females 560-630 g, maximum 1500 g. In 1982 the average yield per head was 639 g. The bulk of the herd are goats with dark grey wool. Fertility is high: up to 140-150 kids per 100 females. In 1982, the average was 114 kids born for each 100 females; 103 of them survived to weaning. In the same year the farm produced 5000 kg of high quality cashmere.



ALTAI MOUNTAIN (Gornoaltaiskaya)

The Altai Mountain breed of wool goat was formed between 1944 and 1982 on collective farms of the Gorno-Altai Autonomous Region; it is kept on pasture all the year round.

Altai Mountain goats are uniform in colour, size, conformation and wool production. They are noted for strong constitution and adaptability to the severe conditions of extensive husbandry in the highlands. They have a relatively high live weight and good meat qualities and are able to fatten rapidly during a short summer period.

Altai Mountain goats are superior to local ones in live weight (5-10 kg more) and wool yield (3-4 times more). Live weight of males is 65-70 kg and that of females is 41-44 kg. However, like local Altai goats, they mature rather slowly and grow till the age of 5-5.5 years.

Wool of Altai Mountain goats has high technical qualities and is a valuable commodity for light industry. The guard hair is black and true wool dark grey. Laboratory data show that the true length of wool fibres in pedigree

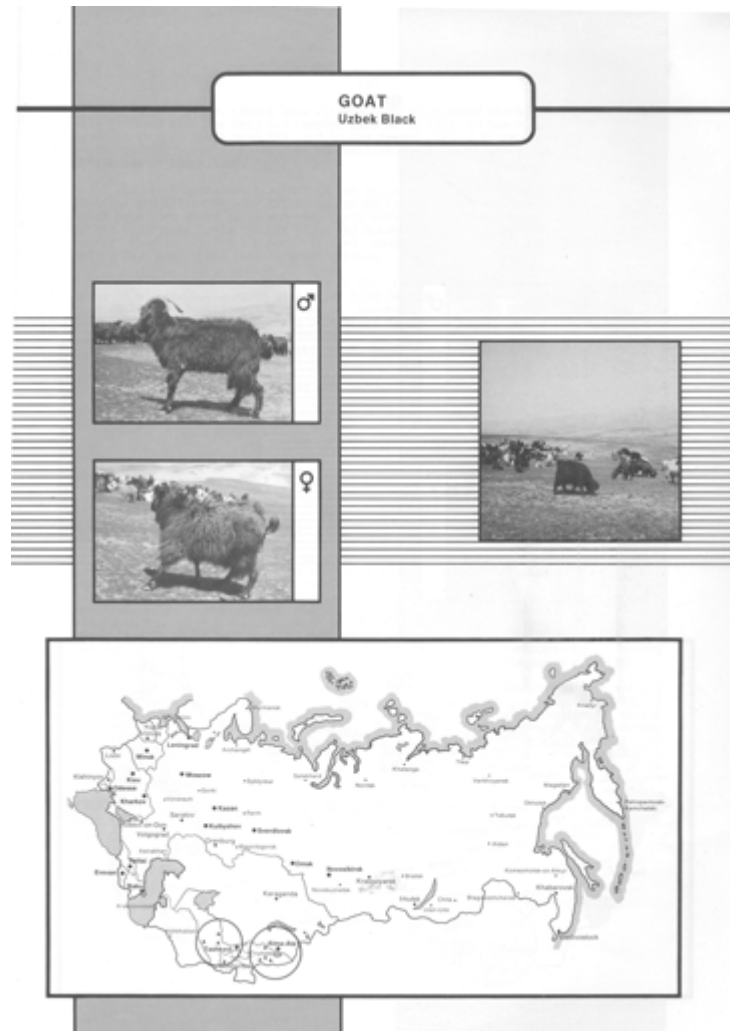
goats is 7.5-10 cm. The average diameter is 16-17 μm in adult goats and 15-16 μm in young animals. There is no apparent difference in wool fineness between flanks and thighs. Guard-hair diameter is 75-90 μm . Wool content in the fleece of pedigree animals is 65-70%. Uniformity between flanks and thighs is satisfactory; the difference in wool content between them is not greater than 10%. Wool yields are 600-900 g for males and 450-600 g for females. Fibre length is 8-9 cm for both.

The viability of goats in conditions of extensive husbandry is quite satisfactory. The year-round maintenance on pastures does not lead to deterioration of the quality (strength, length, fineness) of the wool, because it grows in seasons which are favourable in terms of feeding. For Altai Mountain goats, the breaking length ^v of wool (with 16-20 μm diameter) is 9-9.5 km. For comparison, Merino wool up to 23 μm in diameter is considered strong enough if its breaking length is not less than 7 km.

Breeding of Altai Mountain goats is directed to enlargement of the pedigree goat population and to increase of wool production and live weight, without losing the good adaptability to the special conditions of Siberia.

Pedigree goats are also raised for sale to other farms. This work is done mainly in the collective farm 50 Years of the USSR in Kosh-Agach district and in the state farm Edigansky in Shebalin district. In recent years this state farm has made a certain progress in raising young pedigree goats. The goat population increased from 7700 in 1970 to 9900 in 1983, and cashmere production rose from 2600 to 3840 kg.

^v Predicted length of fibre which would break under its own weight when hung from one end.



UZBEK BLACK (Chernye pukhovye kozy uzbekistana)

Black wool goats in Uzbekistan were produced as a by-product in the formation of the new breed - Soviet Mohair goats. Mating of predominantly white first and second generation crossbred females with purebred white Angora males resulted in the appearance of 1-2% of black kids. After 4-5 years, there were already several hundred black wool goats; they were gathered into one herd and females were mated only to black males. Such mating produced in the first year 64% and in the second 74% of black kids; others were white, tan, grey, etc. Later, due to positive assortative mating, it was possible to obtain 94% of black kids.

The black goats are similar to Don goats in such aspects as fleece structure, physical properties of wool fibres and productivity. In contrast to Orenburg goats, which have long guard hairs and very short wool fibres, Uzbek goats have wool fibres longer than guard hairs, except along the spine where the latter are very long. Hair is not shed in spring but wool is shed abundantly, starting from the first warm spring days when goats pass to grass feeding.

Wool is combed out selectively at the time of moulting and, as a rule, only once, in mid-March. Average yields per head in collective farms vary from 280 to 440 g. While the length and fineness of fibres depend on the level and quality of feeding, wool yields are actually determined by the time of combing out the moulting fibres. Shedding is very rapid and 5-10 days delay in combing results in 20-40% loss of wool. In females, the average wool length is 8-9 cm and in males 9-10 cm, irrespective of age. The extreme limits are 6 and 12 cm in females and even more in males. Fibre diameter is within the range 15-24 μm ; the average for females is 19 and for males 22 μm . In the young, wool is 1-2 μm finer than in adults.

The state farm Baisun in Namangan region of Uzbekistan has a goat herd of 10 000 head and is considered one of the best enterprises for raising black wool goats. Average wool yields are 450 g from females, 700 g from males and 600 from castrates. Wool goat husbandry in this state farm is very profitable and cost-effective.