

4. Mutton-Wool Coarsewooled Breeds KUCHUGURY (Kuchugurovskaya)

Kuchugury sheep originated in the village of Kuchugury and adjacent localities of Nizhnedevitsk district of Voronezh region in the second half of the 19th century. Sheep of this breed have uniform coarse wool. They were produced by mating local long-thin-tailed ewes with large Voloshian rams which were raised at that time in the Don and Caspian steppes. M.F. Ivanov, who visited Kuchugury in 1916, states that the blood of some improved breed was added to these crosses. This view is supported by the breed's relative precocity, waviness of wool and improved conformation. Among other factors in the development of this breed, were good feeding and management on peasant farms, careful selection for size, and high prices for breeding animals.

According to the breed regionalization plan, the best and largest flocks of Kuchugury sheep are raised on state and collective farms of Voronezh and Kursk regions.

The stock of this breed has declined to almost one tenth of its numbers in 1964. In 1980 the total was only 7816 (all purebreds) including 68 breeding rams, 76 other rams and 6381 ewes and yearlings.

Kuchugury sheep have a strong constitution, a lively temperament, and good agility. The frame is solid and well developed. They have long fat tails. Both rams and ewes are predominantly hornless; only 10% have horns. The head is densely covered with curly wool. The body is of regular shape, although a large and heavy tail tends to raise the hindquarters. The shoulders, back and loin are wide. The legs are correctly set, strong and woolled almost down to the hoofs. The tail is long; at its root there is a broad flat pad of fat which gradually narrows to the tip. The fat tail weighs 15-18 kg.

The average live weight of ewes is 55 kg (range 40-79 kg) and that of rams is 73 kg (range 49-100 kg). The maximum live weight of ewes is 80 kg and that of rams is 145 kg. Lambs grow rapidly and by the age of 6 months weigh 32-37 kg. Sheep continue to grow to the age of 3.5 to 4 years.

About 70% are black and 30% white. Most black sheep have a white spot on the head.

Ewes are usually shorn twice a year. Rams are shorn once a year, in spring. The fleece weight data are given in Table 4.4

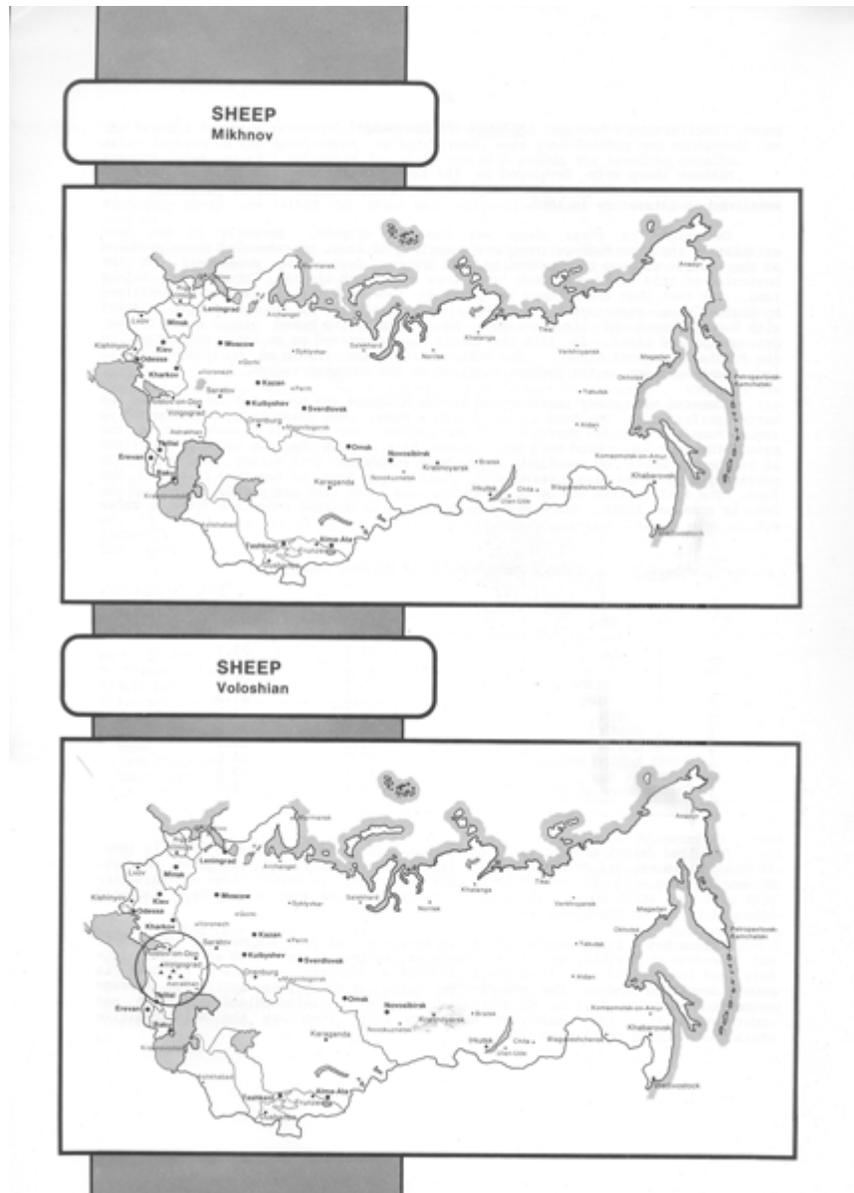
Table 4.4 FLEECE WEIGHT OF KUCHUGURY SHEEP (KG)

Category	Average	Range
Breeding rams	5.0	4.6-6.5
Yearling rams	2.7	2.2-4.5
Ewes	2.3	1.8-4.5
Yearling ewes	2.5	1.6-4.2
Lambs (hogs)	1.5	0.6-2.2

True wool fibres account for 86-92% of the ewe's wool. The diameter of guard hair is usually 57-62 μ and that of true wool is 21-33 μ . The annual length of guard hair is 33 cm, and that of true wool is 12 cm. The fleece hangs in wavy corkscrew-like locks. The clean wool yield is about 70%. The wool is used for worsted spinning and coarse carpets.

Lambing rate is 120-130 lambs dropped per hundred ewes lambing. Barenness does not exceed 2-3%. Newborn lambs are strong and active with a live weight of 4.2-4.9 kg.

Most of the Kuchugury sheep are raised on breeding farms of Nizhnedevitsk district of Voronezh region. Breeding rams are successfully used for improving coarsewooled breeds in other areas.



MIKHNOV (Mikhnovskaya)

Mikhnov sheep were developed in the former Ostrogozhsk district of Voronezh region, now Ostrogozhsk, Liski and Evdakov districts. These sheep were first mentioned in literature in 1880.

The origin of these sheep was long in dispute. Recently it has been established that the Mikhnov sheep are a variety of local coarsewooled sheep produced as the result of long-term selection and improved feeding and management. At the beginning of this century Mikhnov ewes were mated with Lincoln, Cotswold and Oxford rams. The fact that the Mikhnov sheep are an independent fixed variety is confirmed by their fleece structure. Since 1936, nearly all Mikhnov ewes have been crossed with Romney Marsh and Lincoln rams. As a result two breed groups were formed: Ostrogozhsk and Liski. In 1975 the latter was recognized as an

intra-breed type of the Russian Longwool breed. The Mikhnov sheep now remain as purebreds only on individual holdings in the Evdakov district of the Voronezh region.

Compared with other coarsewooled breeds Mikhnovs are noted for larger size and better performance. The head is broad with a Roman nose which is more pronounced in rams. Rams have coiled horns; ewes are polled. The head is fleeced down to the eyes. The face is covered with short glossy hair of dark chestnut colour; sometimes it is nearly black or speckled. The body stands on thin strong legs which are correctly set. They are covered with short glossy hair of the same colour as the face. The tail is thin and up to 35-49 cm long. The ribs are poorly sprung and the bone is somewhat light. The average measurements of Mikhnov sheep are given in Table 4.5

Table 4.5 AVERAGE MEASUREMENTS OF MIKHNOW SHEEP (CM)

Measurements	Rams	Ewes
Head length	24.3	22.7
Head width	12.4	11.4
Height at withers	70.4	66.7
Height at rump	71.8	67.2
Body length	76.1	71.2
Chest depth	34.1	31.9
Chest girth	91.5	84.5
Width behind shoulders	20.7	18.8
Width at hip	17.8	17.8
Cannon bone girth	9.8	8.7

The live weight of rams is 75-85 kg (max. 108 kg), that of ewes 52-66 kg (max. 78 kg). Birth weight of healthy lambs is 3.5 kg for males and 3.3 kg for females. At weaning they weigh 20 and 19 kg respectively. Skin is rather dense and elastic, pink over the whole body. The fleece is white; some animals may have isolated coloured fibres on the hindquarters.

Fleece has a tippy staple of medium fineness. Staples are made of long (7-10 cm) undercoat with fibres of 26-28 μ diameter, rather coarse (40-50 μ intermediate hair, and long (15-17 cm) guard hairs of 60-65 μ diameter.

Medulla in the last is poorly developed and at the end of the staple it disappears entirely. Average proportion of guard hair is 41.3% of the total wool, intermediate hair 14.1% and undercoat 44.6%. Long undercoat and thin outer coat are the main positive characteristics of the Mikhnov sheep. Annual fleece weight of rams is 4.8-5.5 kg (max. 7.0), that of ewes 4.0-4.7 kg (max. 6.0 kg). The autumn shearing gives 20% less than the spring one. The clean wool yield is 60-70%. The lamb's fleece weight is 0.8-1.5 kg.

Wool is mainly semicoarse. According to the Central Wool Research Institute only 22% of wool is graded as coarse; the rest is considered semicoarse. Fleece is even in fineness. Most fleece is sorted into two grades.

The fresh pelts account for 6-7% of body weight. Fur quality is good. They make good sheepskins. Mikhnovs fatten well for 1-1.5 months without any supplementary feeding. At slaughter the animals yield carcasses evenly covered with fat and with a lot of suet. On test slaughter 5-6-year-old ewes of 53.1 kg live weight (after fasting) had an average slaughter weight of 26.6

kg and dressing yield of 50.2%. Of these carcasses 55.4% were graded prime and 32% choice. The meat and fat content was 82% and the bone 18%.

Mikhnov sheep, because of their high wool quality, good pelts, and low requirements in feed and management conditions, are used for grading-up coarsewooled sheep with low productivity.

VOLOSHIAN (Voloshskaya)

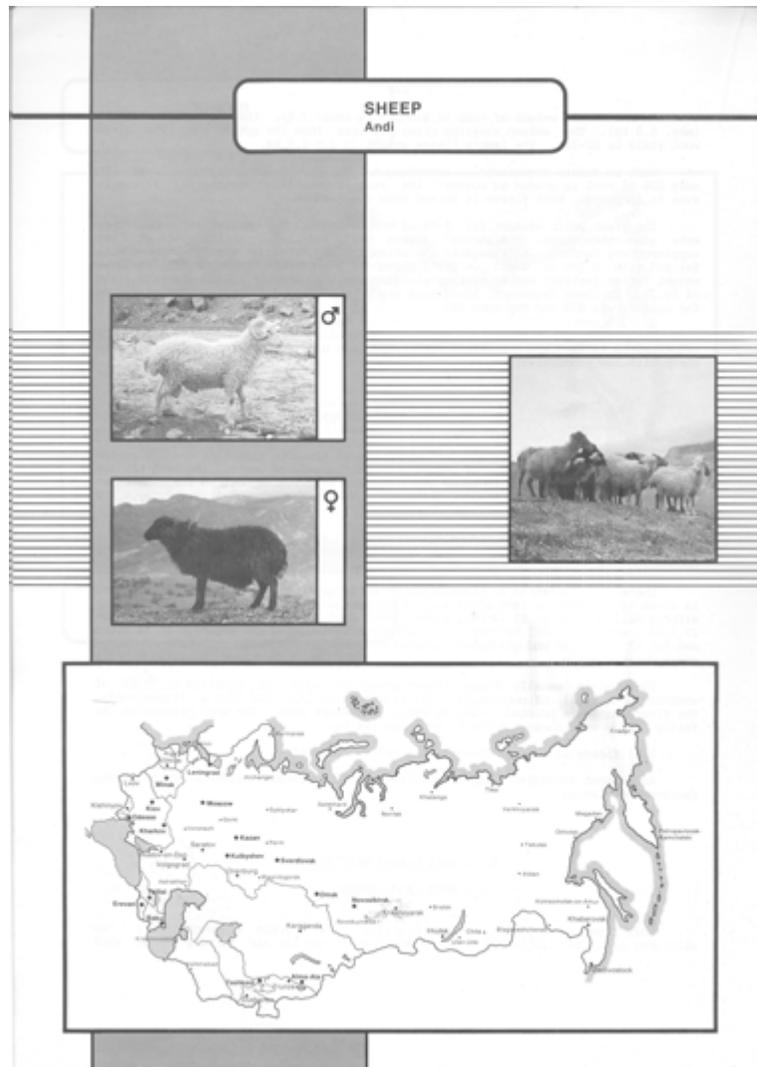
At the end of the 19th and the beginning of the 20th centuries the Voloshian breed was kept in many parts of Russia and was considered one of the best of the coarsewooled breeds. After thorough investigation M.F. Ivanov divided the Voloshian sheep into several types: Steppe, Trans-Don, Voronezh (Nizhnedevitsk), Pynny, and longwool crosses.

The purest type is the Steppe Voloshian which was raised in the North Caucasus and Lower Volga areas. There they were the base for developing finewool sheep husbandry.

The Steppe Voloshian is characterized by large size: the live weight of ewes is 43-46 kg and that of rams 60-80 kg. Body measurements are as follows: height at withers 61.2 cm (range 61-74 cm), chest girth 85.0 cm, chest depth 29.3 cm (range 27.3-51.5 cm). The tail is very long, occasionally touching the ground; it is broad and fat at the base and gradually narrows to the tip. Sometimes it is narrow and sways during mating.

The wool is usually white; black sheep are rare. It consists of 78.6% of undercoat and 21.4% of outercoat; the fineness is 23.1 and 56.3 *m* respectively. The fleece hangs in pointed locks on which crimps are seen. The wool production is fairly high - ewes shear 2.5-3.0 kg and rams 3-4 kg. Prolificacy is good - 120-130 lambs per ewe lambing.

At present Voloshian sheep are raised on the individual holdings of the North Caucasus population.



5. Mutton-Wool-Milk Breeds ANDI (Andiiskaya)

This breed is bred in northern Dagestan. The terrain is mountainous; the altitudes are high (2000-3500 m above sea level) and the air is very humid, with sharp temperature variations during the day. The Andi breed is well suited to the local conditions and year-long range husbandry; sheep of this breed are capable of covering long distances in the mountains.

Andi sheep have a broad chest, long and low-set body, and strong legs with tough hoofs. Both rams and ewes are horned. The tail consists of a large fatty cushion and shield-like appendage which covers the smooth surface of the fat cushion. The length of the fatty pad is 19 cm and the width is 18 cm. Sheep are relatively small in size: withers height is 53-60 cm. Live weight of ewes is 35-40 kg (max. 50 kg), and that of rams is 50-55 kg (max. 60-65 kg). Yearling rams weigh 32-48 kg, yearling ewes 26-29 kg. Andi sheep do not mature early but they have good meat traits and the lamb's meat is

particularly valued. The yield of choice cuts (grade I and II) is the same as in sheep of mutton breeds. The carcass yield of meat and fat is 50-57%.

Andi sheep are black or white. The spring wool contains 40-41% of true wool fibres, the autumn wool 37-38%. The corresponding figures for guard hair are 59-60 and 62-63%. Kemp is not present. The staple length is 20-24 cm. The difference in fineness between guard hair and undercoat is not great; therefore the wool has a more or less uniform look. The wool of white sheep is used for the production of coarse cloths, and that of black sheep is used for felt boots, very light and watertight. Sheepskins are used for coats and hats.

The annual fleece weight of adult rams is 2.5-2.6 kg; it is 1.9-2.0 kg for ewes. Yearling rams and ewes produce 1.8-2.0 and 1.6-1.7 kg respectively.

The clean wool yield is 58-67% in spring and up to 75-80% in autumn.

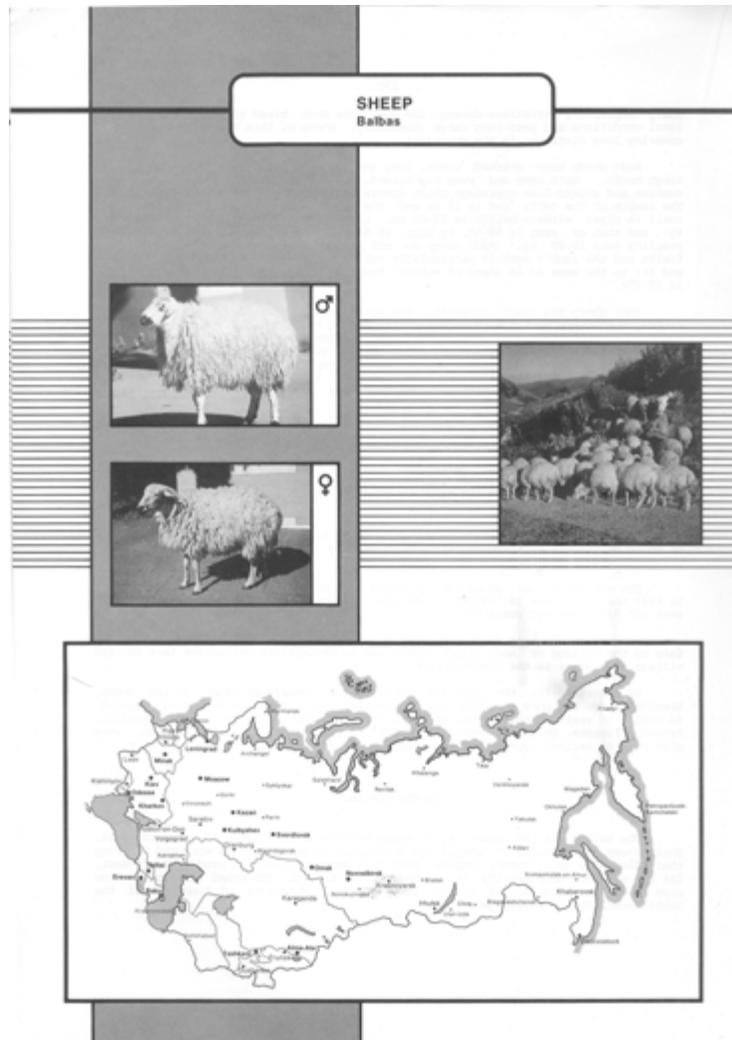
The lamb's fleece is of particular interest: some 70% of it does not hang in pointed locks but has a tippy staple. The average diameter of this wool is 28.5-30.6 μ , the length of guard hair is 13-22 cm and of true wool 6.0-9.8 cm. The clean wool yield is 82.8-85.7%.

Milk yield is satisfactory; ewes produce up to 70 kg per lactation (150 days), of which marketable milk amounts to 30 kg. Lambing rate is not high - 105-110 lambs per hundred ewes lambing.

The number of Andi sheep has increased slightly over the last fifteen years. In 1980 the total was 16 739 (96% purebreds) including 57 breeding rams, 271 other rams and 9336 ewes and yearlings.

At present the best flocks of Andi sheep are raised on Orjonikidze collective farm in the village of Andi (black sheep) and on Orjonikidze collective farm in the village of Argvani in the Dagestan ASSR.

In order to fix the type and preserve the commercial value of the sheep, breeding farms use pure breeding and inbreeding; new bloodlines are being created. In order to restore the stocks of Andi sheep in the designated areas (Botlikh, Kazbek, Tlyarota, Untsukul, Gumbet and other districts) of the Dagestan ASSR, ewes with wool of various types are being graded to purebred white or black Andi rams.



BALBAS (Balbas)

The Balbas is the most valued coarsewooled breed raised in Transcaucasia. These sheep were brought to Armenia and Azerbaijan by nomadic Kurds who used to bring their flocks to local summer ranges. They have been selected for production of meat, fat and milk and adaptability to transhumance husbandry. The breed regionalization plan zones the breeding of Balbas sheep in some districts of Armenia and the Nakhichevan ASSR of Azerbaijan.

Sheep are kept on mountain pastures for 220-255 days and they spend 110-145 winter days in confinement. This pattern has always been the most rational one and will continue to be so in the future.

Numbers have increased considerably since 1964 and in 1980 stood at 355 331 (95% purebred) including 11 652 breeding rams, 3783 other rams and 211 660 ewes and yearlings. Out of the total population 227 500 are in Armenia and 127 800 in Azerbaijan.

Balbas sheep have a strong constitution and ample bone. They are rather large in size and are known for their weight, pronounced meat traits, satisfactory wool production and fertility.

Both rams and ewes are hornless; horned rams occur occasionally. The head is medium-sized, with a straight profile; rams are slightly Roman-nosed. Ears are long. The neck and the body are slightly elongated. The back is level and straight. The chest is deep, sufficiently wide and full. The rump is somewhat sloping. The udder is well developed. Sheep are well legged; the legs are strong, muscular, with tough hoofs. The tail is of medium size and consists of two pads, a larger lower and a smaller upper one; it hangs below the hocks. The colour is predominantly white, with dark spots on face, ears, and lower limbs. Balbas sheep in the Nakhichevan ASSR have shorter legs and a longer body than their Armenian relatives. The Balbas are the largest among all local Transcaucasian breeds, not only in terms of their live weight but also in size. The average live weight of rams is 83.9 kg (range 65-105 kg). The average live weight of elite rams used at state breeding stations may reach 102 kg and that of Grade one rams is 75.6-79.2 kg. The average live weight of breeding ewes is 55-58 kg in autumn and 50-53 kg in spring. The tail fat weighs 10-12 kg in rams and 5-6 kg in ewes.

Newborn lambs weigh 3.5-4.3 kg; at weaning (4-4.5 months) males weigh 25.2 kg and females 23.3 kg. The average daily gain during suckling is 160 g for males and 148 g for females. The carcass yield is 50-62% and the yield of choice cuts is 83-85%. Meat yield is 80-84% of the carcass weight. Balbas sheep are known for their good milk yield: the average per lactation is 100 kg (range 85-130 kg). The yield of marketable milk in the shorter lactation period of 80-90 days is 30-35 kg. Sheep in the Nakhichevan ASSR have a higher milk yield; they produce 68-80 kg per ewe.

The average fleece weight of purebred elite rams is 3.5 kg; it is 2.5 kg for first-grade rams, and 2.4 and 1.9 kg for elite and first-grade ewes respectively. The average fleece weight in ordinary flocks ranges from 1.2 to 2.2 kg per head. Breeding rams used at state breeding stations have higher fleece weights (3.6-4.1 kg). The fleece weight of Balbas sheep registered in Volume I of the State Flockbook was 3.2 for rams (range 2.6-5.0 kg) and 2.7 kg for ewes (range 2.2-4.5 kg).

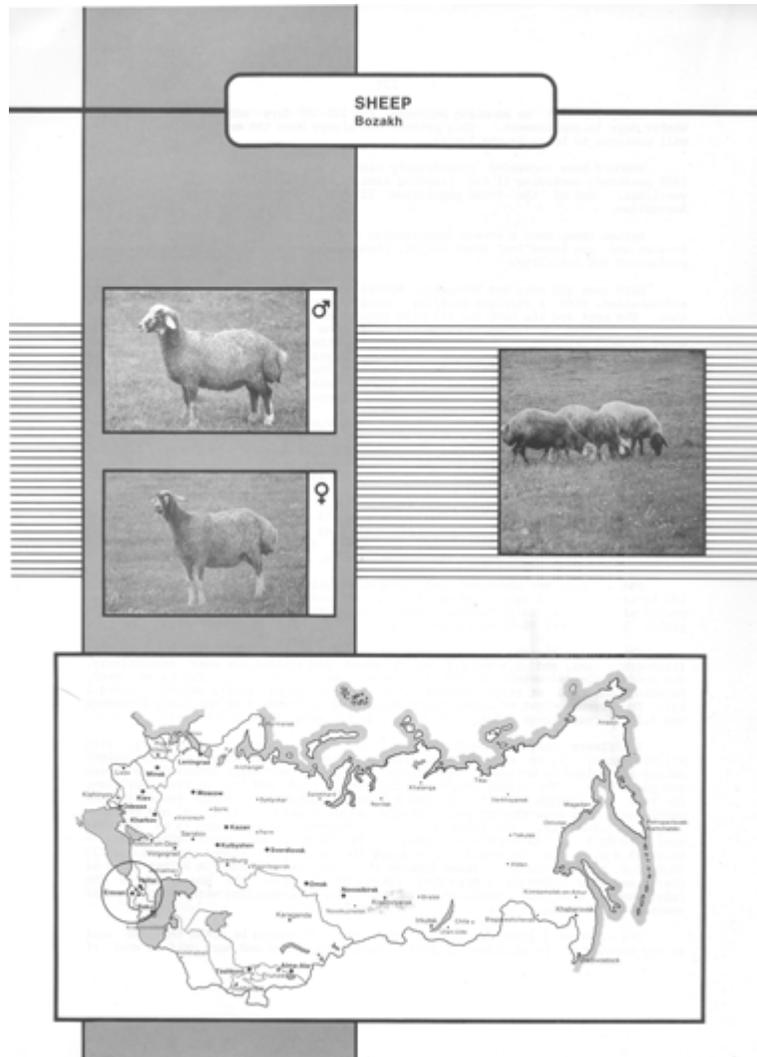
The fleece hangs in pointed locks. The wool is white or light grey, with slight lustre. It is suitable for worsted spinning and is widely used in carpet making and valued by artisans. The fleece consists of true wool, intermediate fibres and guard hair. The staple length is 18.0 cm for ewes and 13.5 cm for yearlings; the true wool length is 12.1 cm and 9.8 cm respectively. Sheep raised in the Nakhichevan ASSR have shorter wool. Staple length in ewes is 13-17 cm, and the wool length is 7.5-8.5 cm. The fibre fineness in Armenian Balbas sheep is as follows: wool 27.0-32.9 μ intermediate fibres - 39.7-53.6 μ and short guard hair - 53.5-109.4 μ . The corresponding figures for Azerbaijan Balbas are 21.1-23.7, 33.8-36.6, and 51.6-58.5 μ . These figures show that the undercoat in Balbas sheep is coarse and very close to intermediate fibres in fineness. The guard hair on the other hand is thin thus producing greater evenness in comparison with wool of other coarsewooled breeds.

The clean wool yield varies from 50 to 65%. It should be noted that the wool is dry because of the shortage of yolk. Sheep with evenner and more uniform

wool of better quality have yolk of a yellow colour. Sheep with uneven and non-uniform wool have kemps.

Lambing rate is 100-102 lambs dropped per hundred ewes lambing but in the best flocks the figure is 110-115.

As a highly productive breed, which is well adapted to local conditions, the Balbas is used for improving productivity, particularly of meat, in other coarsewooled Transcaucasian breeds.



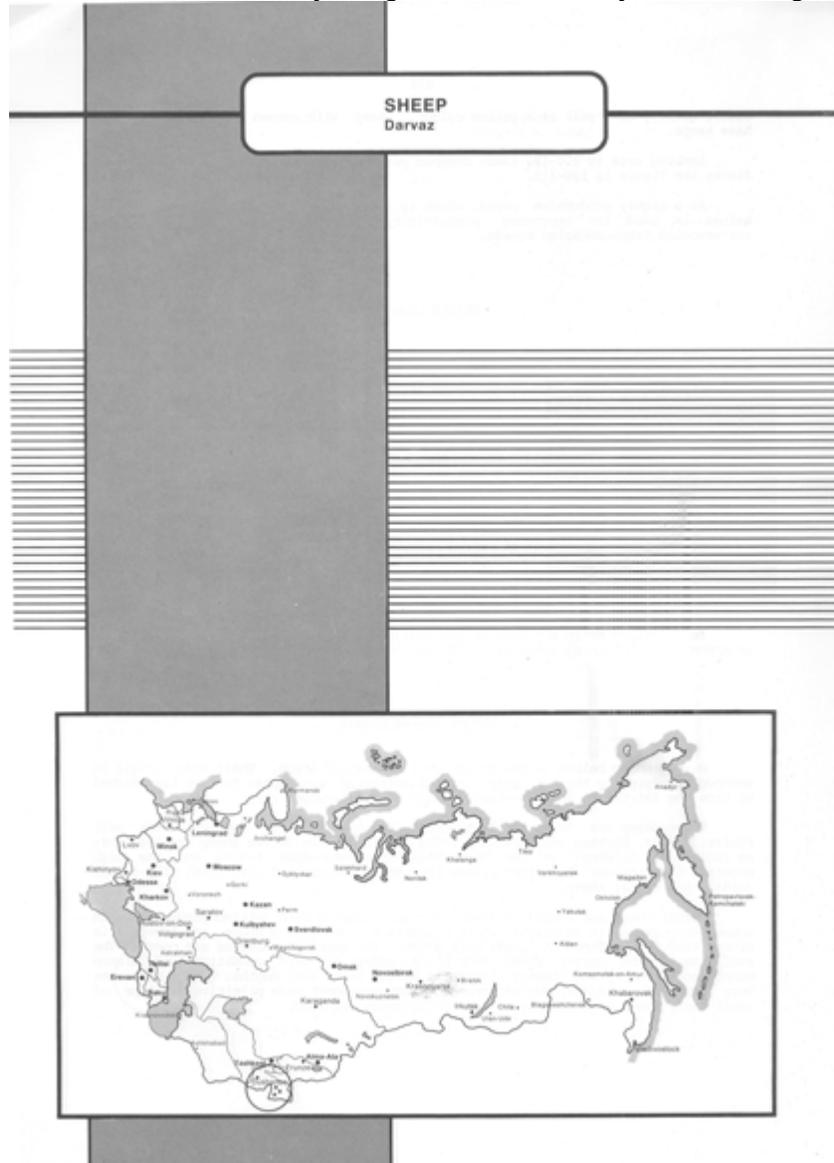
BOZAKH (Bozakh)

The breed was developed in the mountain regions of Armenia and Azerbaijan. Animals have a broad tail, consisting of two half-open lobes and a little appendage. They are fairly large: ewes weight 45-55 kg, rams about 65 kg. Lambs at birth weigh 3.3-3.5 kg and at weaning 20-22 kg. According to M.F. Ivanov, Bozakh sheep have the following measurements: height at withers 61.7 cm (range 53-71 cm), chest girth 86.6 cm (range 73-102 cm), chest depth 28.5 cm (range 24-33 cm). Rams and ewes are mainly polled. The facial profile is straight; the head is covered with short wool. Belly covering is good. Wool colour is chiefly dirty white or yellow-white; sheep with brown, light tan, grey or black colour are occasionally seen. In most cases head and legs are some shade of brown; occasionally they are grey or another colour.

The wool production in two shearings per year is 1.8-2.2 kg with a clean wool yield of 75-80%. The wool is lustrous. It contains 32.4% of true wool, 17.8% of intermediate fibres and 49.8% of guard hair. The average fibre length on the sides is as follows: true wool 8 cm, intermediate hair 10 cm,

guard hair 12 cm, and short guard hair 5 cm; fibre diameter is 29.9μ 38.7μ 61.2μ and 84.7μ respectively.

Milk production is satisfactory: 36-38 kg of marketable milk annually. Today Bozakh sheep are bred on the individual holdings of the local population in Armenia and adjoining areas of Azerbaijan and Georgia.



DARVAZ (Darvazskaya)

Darvaz sheep belong to the mutton-wool fat-tailed group. Their exact origin is unknown. Judging by the tail shape and its variation they appear to have been formed by crossing fat-tailed and thin-tailed sheep with fat-rumped ones.

These sheep are found in the mountain and high mountain regions of the west Pamirs, Darvaz, Karateg and Zaravshan in Tajikistan. Pure Darvaz sheep are left only on individual holdings in the Gorno-Badakhshan

Autonomous Region and the high mountain Garm region. In other places they have been crossed with local fat-rumped Jaidara and Hissar sheep. Darvaz sheep are raised in areas of arable farming with settled population. In summer they graze in mountains where pastures are at 3500 m above sea level; in winter they are confined in sheds with yards. In general, pastures are poor. The evolution of the Darvaz sheep took place under the hard conditions of broken mountainous country and severe climate. Winter lasts 4-6 months. Food resources were insufficient and methods of breeding and management were primitive. A type of small hardy sheep with low mutton-wool performance resulted.

Darvaz sheep have fine but strong bone. The head of most sheep is light with a Roman nose; the forehead is straight and narrow. The ears are of medium size, thin. Ewes are chiefly polled or with scurs; rams are horned. The neck is rather long, narrow, and straight. Withers are prominent and narrow. The back is straight and rather narrow; the rump is short, sloping and weakly developed. The sheep are mainly low-set, elongated and have deep chest and pendulous belly. Such shortcomings as narrowness behind the shoulders, sway back, sloping rump, sickle hocks and cow hocks are present. The tail varies in shape and size from short and fat or nearly thin, to long straight or bent with a fat deposit at the base.

Table 4.6 shows the measurements of Darvaz sheep.

Table 4.6 BODY MEASUREMENTS OF DARVAZ SHEEP

Measurement	Ewes		Rams	
	Average	Range	Average	Range
Height at withers	55.1	46-67	58.1	48-70
Height at rump	56.8	48-69	59.0	50-72
Body length	60.8	48-70	61.0	49-72
Chest girth	78.0	68-89	79.7	68-89
Chest depth	29.2	23-32	29.4	24-32
Chest width	16.5	13-23	17.0	13-25
Width at hips	15.6	12-22	16.0	12-23
Cannon bone girth	7.7	5.5-9.5	8.2	6-10

Darvaz sheep are small and late maturing; they reach maturity at the age of three years. The average live weight of mature ewes is 31 kg (range 18-43 kg); that of rams is 33 kg (range 20-49 kg). Lambs are small at birth, but strong. Ewe lambs average 2.4 kg (range 1.4-3.2 kg), ram lambs 2.8 kg (range 1.5-3.8 kg).

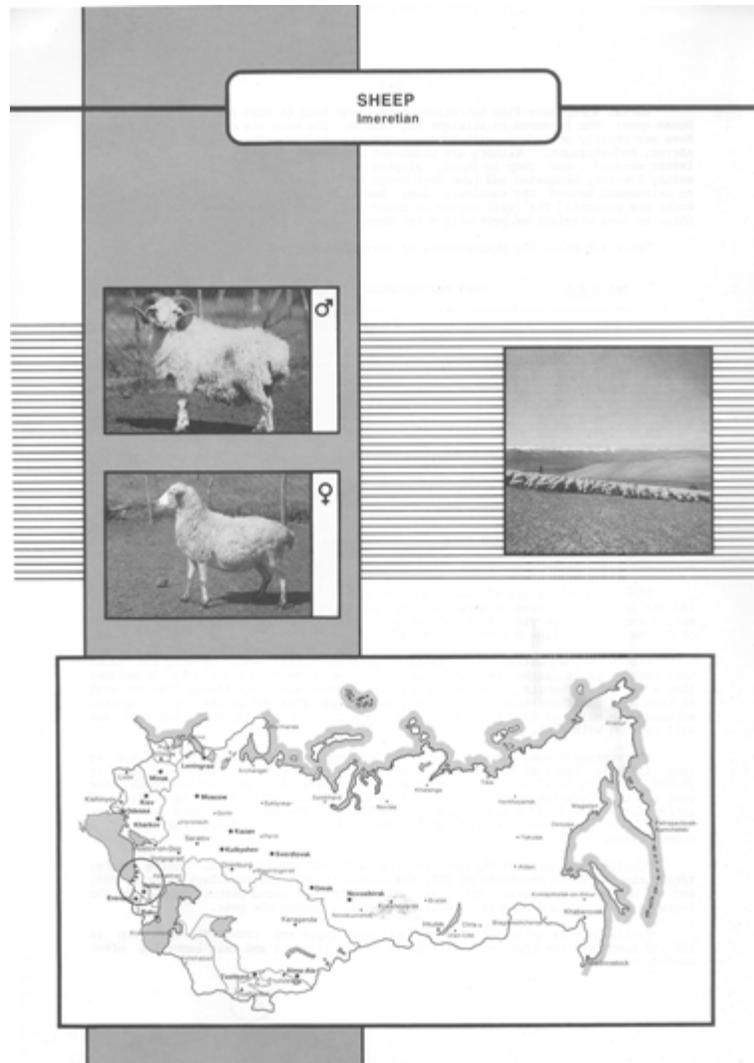
The slaughter yield of meat and fat is 41.3% on average; the best yield (43.3%) is obtained from wethers over two years old and the poorest (39.8%) from mature ewes. The fat yield from the fat tail ranges from 0.2 kg to 1.3 kg. The meat of Darvaz sheep is fine grained, but tough and lean. Fleece of the Darvaz sheep hangs in pointed locks. Wool is long and lacks uniformity; it is rather soft and not dense. Most animals are black; sometimes they are black-and-white, brown or white; white sheep are rare (about 10%) and most of them have black markings on the head, around the eyes and on the legs. Spotted animals with markings over the whole body are also seen. Head, belly and legs are well covered with wool.

The average annual fleece weight in shearings is: ewes 0.85 kg, rams 0.9 kg (max. 1.6 kg); lambs at the age of 4-5 months shear 0.3-0.4 kg. Clean wool yield is 75-78%. Wool is 15-17 cm long; it is silky with wavy crimp and contains much true wool and thin, elastic guard hair. The diameter of guard hair in ewes is 51-71 μ , of intermediate hair 33-47 μ and of true wool 27-31 μ . The amount of guard hair varies from 10.7 to 20.3% and of true wool from 72.3 to 77.6%. Guard hair is often unmedullated.

Considerable seasonal changes in skin and wool are observed. During winter total skin thickness decreases by 28%, the dermis by 30%, the papillary layer by 24%, and the depth of sweat glands by 26.5%. Under the year-round pasture management the increase of length and density of wool is irregular during the year.

Prolificacy is quite satisfactory although twins are rare. The lamb crop is 108-110 lambs per ewe lambing. Milk yield is insufficient and twin lambs are often underdeveloped.

While being small in size and having a low productivity, Darvaz sheep are distinguished by their good adaptation to the mountains. They are good walkers over the steep mountain slopes, with ravines and boulders; they withstand sharp changes of air temperature and atmospheric pressure; they are hardy while moving and endure cold winds and mountain snow storms. Sheep successfully compete with the local goats in utilizing the mountain farming area.



IMERETIAN (Imeretinskie ovtsi)

These sheep, of the mutton-wool-milk type are bred in the Ajar and Abkhazian ASSRs in western Georgia. They are considered to be the smallest among all the Caucasian mountain breeds.

According to the breed census on 1 January 1980 there were 834 head of Imeretian sheep, including 42 breeding rams and 625 ewes and yearlings. In 1964, 1970 and 1974 these sheep were not listed.

Imeretian sheep are small in size, their withers height is 48-55 cm. The head is small, with straight profile in ewes and slightly Roman-nosed in rams. The ears are small. Rams have well-developed horns; ewes are also horned. The forehead is covered with curly wool down to the nose. The neck is short; the body is small, on high strong legs; the rump is somewhat sloping. Fleece cover is satisfactory. The tail and the body are covered by the same wool. The tail reaches the hocks; it is straight, broad in the upper part and narrower in the lower section, gradually forming a thin tip.

The live weight of rams is 22-35 kg and that of ewes is 20-28 kg. The carcass weight is 14-20 and 10-16 kg respectively. The meat is tasty.

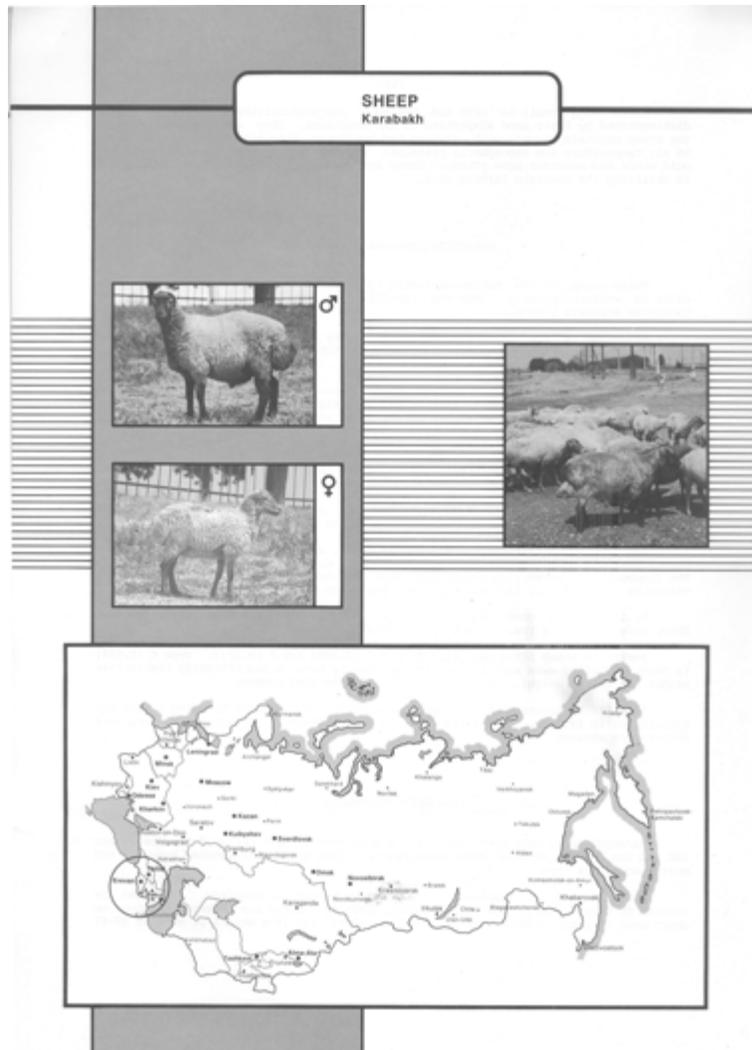
The wool is white, soft, sufficiently dense, and with a silky lustre. Staple length is 12-15 cm. The true wool and guard hair content each range from 42 to 58%. The diameter of true wool is 17-26 μ m and that of guard hair is 55-65 μ m. The wool is valued by the local population and is used for cloth and other artisan items.

Prolificacy is good (140-160 lambs per ewe lambing) but milk yield is low.

Sheep have a valuable trait: they come in heat throughout the year.

Imeretian sheep often have transferrin C (0.298) and A (0.213). Type E (0.118) is rare. Yearling ewes with Transferrin AC usually have a significantly higher live weight and fleece weight. Type B haemoglobin is the most common.

In order to preserve this valuable genetic resource a state breeding centre was established in 1977 in the Terzhol district. Here semen is collected for long-term deep-frozen storage.



KARABAKH (Karabakh)

Karabakh sheep have been raised for a long time in most parts of the Azerbaijan SSR and the Nagorny Karabakh Autonomous Region. They are a coarsewooled breed of the mutton-wool-milk type.

Karabakh ewes are hornless; rams can be horned or hornless. The head is covered by short wool. Ear length varies greatly; there are sheep with long or short ears or none. These sheep are small in size; the live weight of ewes is 39-43 kg and that of rams is 50-58 kg. Average withers height is 64.6 cm (range 53-74 cm), chest girth 63.1 cm (range 55-70 cm), chest depth 29 cm (range 18-34 cm).

The colour is usually dirty white or light brown, occasionally black or white. The tail is S-shaped; fat is deposited along its length except for the last two sections.

Ewes are shorn twice a year, giving a total of 1.5-2.0 kg of wool. Rams are shorn once and produce up to 2.5 kg per head, with clean wool yield of 75-76%. Lustre is poor. The wool contains 50.8% of true wool, 10.1% of intermediate fibres, 23.7% of guard hair, and 15.4% of short guard hair. The

length of wool fibres is 7 cm, of intermediate fibres 8 cm, of guard hair 8 cm, and of short guard hair 3 cm. Fibre diameter is 33.8, 47.1, 66.6 and 156 μ respectively.

Milk yield is satisfactory; ewes produce 35-40 kg of marketable milk. Milk is used for the production of butter and fresh cheese called pendir.

In spite of their low clip of rather coarse wool, Karabakh sheep are kept because of their hardiness and ability to subsist on rough forage, to gain weight on grazing and to traverse long distances. They are on pasture throughout the year. In summer they graze in the lowlands and in winter in the highlands, on alpine pastures. To get from winter quarters to summer ranges sheep cover 200-250 km and in some cases even up to 300 km. Sheep of the Karabakh breed are raised only on private plots in Azerbaijan and in small numbers in adjacent areas of Armenia.

The best variety of the Karabakh is the Karadolakh which is raised on a large scale on collective farms in Agzhabedinski, Agdam, Imishli and other districts of Azerbaijan. Karadolakh sheep differ from the rest of the population by a relatively larger size, better conformation and more fat in the tail. The Azerbaijan Livestock Institute has begun work to revive this variety.

At present the experimental farm of the Institute has 400 head of Karadolakh sheep with a live weight of 55-60 kg. They produce 115-120 lambs per hundred ewes and give 45-50 kg of marketable milk. The milk contains 7-8% of fat. Increase of the stock up to 5000 head is planned.

The average live weight of Karadolakh ewes in autumn is 66 kg (range 49-89 kg) and that of rams is 81.8 (range 63-101 kg). Yearling ewes in spring weigh 40-42 kg. The weight gain in ewes during the four summer months is 20% of the spring live weight. The corresponding figure in rams is 15%. Fat deposits in the tail of fattened wethers amount to 12 kg.

Karadolakh sheep have a somewhat higher fleece weight. Ewes shorn twice a year produce 2.5-2.9 kg. The clean wool yield is 71-76%. The fleece contains up to 12% of kemp. True wool accounts for 54-56%, guard hair 27% or more, and intermediate fibres 5-6%.