

AMELIORATION OF THE KARAKUL SHEEP RACE IN DIFFERENT AREAS AND COUNTRIES OF THE WORLD

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Abstract

The purpose of this paper was the comparative appreciation of the historiography of the Karakul race improvement in various areas and countries of the world. It was found that, Karakul sheep are concentrated, harvested and exploited in countries and regions that have vast natural pasture lands, even impoverished (semi-desert and desert from Central Asia, Africa), but expanded with a climate that allows them to be maintained throughout the calendar year to grazing, without costly shelters. In these countries and regions, Karakul sheep are breeding not only to meet the urgent needs of the rural population, but also to get income from the sale of skins at international fur auctions. In Germany and Austria, the Karakul sheep were raising both for breeding and crossbreeding with other races, as well as for pure race for breeding material. On the basis of scientific research, was elaborated Karakul sheep origin and the formalistic view of the influence of the environment on the spinning of the fibers and the formation of the loop was combated. Have been identified the most compatible races (Somali) for crossing with Karakul, on the basis of which the idea of creating new Karakul sheep populations in Southwest Africa (Namibia) was created by crosses of transformation of sheep from breeds local. In Namibia, they were created some new entarasias of sheep Karakul with smooth curls, moire and smooth bark with short fibers. The skins of these types have soon conquered the world market of similar fur. In Ukraine, at the Institute for Scientific Research for the Steppe area, between 1935-1970 years was created, by crossing the Karakul with Romanov a new type of prolific Karakul. In Romania, at SCPCO Popauti, Botosani, a new type of Karakul sheep was created by crossing the Turcana sheep with the pure race Karakul rams, creating new lines and new populations with varieties of colors, gray, brown and white. In the former USSR, with the help of researchers from the United States Institute for Scientific Research for Karakulture (Samarkand), through the selection and the increase of sheep pure Karakul sheep were created a large number of sheep intakes such as: Gray of Buhara, Gray of Surhandaria, Gray Karakalpakia, as well as elite, black: Karakum, Mubarek, Nişan, Kenimeh etc; of greyish colour Nurata, Guzar, Cabadian etc; Gray Color: Kazalkum, Navoi, Talimarjan, etc. After the collapse of the USSR, the independent Central Asian countries continued to improve the Karakul sheep race, in which have been created a series of new type of Karakul sheep (15 in number) with specific productivity for skins, including Uzbekistan - 7 types, Kazakhstan - 4 types, Turkmenistan - 2 types, Tajikistan - 1 type, Kalmâkia - 1 type. All new type of Karakul sheep, created in Central Asian countries, South Africa and Europe, have unilateral production - high quality newborn lambs with different types of valuable curls and original colors. Neither one of new types of Karakul sheep produced in these countries (except Romania) has not approached the issue of improving milk and meat skills as they are not specific to the Karakul race breeding in the home regions.

Key words: historiography, mondial, countries, breeding, amelioration, sheep, Karakul race

INTRODUCTION

The Karakul sheep race is unique in the world due to a number of biological features, one of which is primordial and refers to the original fur, very beautiful of new-born lamb, slaughtered at 1-5 days after birth. According to its value, Karakul skin considered to be a luxury fur, located in the same line with the

most noble natural fur (rat, mink, fox). This is explained by the superior qualities and ornamental aesthetic of the curl, the excellent silk of the pilose cover, the perfect thermal properties, as well as the durable resistance to the exploitation of the leather confections. According to some authors [45, 46], some of the biological features of Karakul sheep also consist in the fact that they have less developed sweat glands compared to other races, because the abundant sweat secretion is accompanied by considerable water consumption in the

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body, which the Karakul sheep receives very rarely. The same consumption of water is also frequent breathing when animals use it to cool the body. Therefore, the frequency of breathing at the Karakul sheep is lower compared to other sheep races, and their blood has a lower content of erythrocytes, which denotes the fact that more rational assimilation of oxygen is compared to other races. The Karakul sheep are very mobile and active, they have robust legs, easy bumps, allowing them to walk long distances during the day and night in search of vegetation for food, efficiently using dry and very rare vegetation in the pastures of the desert and the semi-desert, rule, can not be used by other species of domestic animals. These particularities have been formed in the process of evolution as attributes of adaptability of the organism to the conditions of environment of deserts and semi-desert with arid heat and drought.

According to the information and other authors [49, 50, 58], Karakul sheep are quite small and late. The body weight of the sheep is 40-45 kg, of the rams is 50-60 kg. This body weight of sheep is reached late, at the age of 6-7 years. The duration of Karakul sheep gestation is relatively elongated - an average of 151 days, while at the Romanov breed - 148 days, in the English races for meat - 145-147 days.

As a result, the body weight of the lamb at birth is relatively high and represents 11-12% of the mother's weight, while at the English-race for meat 7-9%. The external aspect of the Karakul sheep expresses its general underdevelopment. In addition to the small stature, the Karakul sheep has narrow chest and back, cheeks and bearded chunks, constitutional dryness and poorly expressed skills for meat. Prolificity at the Karakul race is not high (5-10%), because under natural conditions, lambs are usually lost due to poor development. So, birth rates are low and constituted 70-90%.

The milk production of sheep Karakul is low [18, 19] and their lactation is abbreviated. At the same time, Karakul sheep are extremely sensitive, compared to other sheep races, to a number of species of pulmonary, liver and intestinal helminths.

Knowing not so performed the morpho-productive biological characteristics of the Karakul sheep (with the exception of the quality of the skin), the question arises - from

which motivation has this race been spread throughout the world (with the exception of Australia).

The answer to this question can be found in the researches of the economic value of the selection characters in different historical periods of the development of human society, beginning with the end of the 19th century and the first decades of the 20th century - the period of Karakul spreading in Bessarabia, Europe, Africa, etc. Thus, based on the research, Ivanov M.F. [73] brings various information about the structure and the absolute income from a Karakul sheep a year in different ovine households in some southern Russian Tsarist rulers. At that stage of the development of human society, the relative economic value of the skin, taken together with the lamb slaughtering lag, occupied the first place after the weight in the total income from a sheep per year and was, in different households up to 56.4 - 60.0%. By comparing the prices of leather with cheese, meat and wool, we find that, according to the economic value, a leather at the price of 6-8 rubles, at that time, equaled with 46-61kg of meat, or 20-21 kg of cheese, or wool.

Under the current socio-economic conditions, the correlation of the economic value of skin on milk and meat has changed radically in favor of food characters. The price of Karakul skin is equivalent to only 2.0 kg of cheese in the Republic of Moldova or 2.5 kg of meat in the carcass.

From here result that, the knowledge of the historiography of the Karakul sheep race and improvement in the world allows the comparative appreciation of its value, adjusted to the current pedo-climatic and socio-economic conditions of a concrete country. In this context, the purpose of this work was the comparative appreciation of the historiography of the improvement of the Karakul breed in various areas and countries of the world.

MATERIAL AND METHODS

Scientific research has been carried out on the basis of the analysis of bibliographic sources on the evolution of Karakul sheep spreading and selection in different countries and geographical areas of the world, beginning with the end of the 19th century - the beginning of the 20th century. The effective of Karakul sheep in the main growing countries of this race was deduced from information by

Bertone B.F. (FAO official representative at I International Symposium on Karakul from Vena, 1967), cited by Ștefănescu C. [20], as well as the dynamics of the total number of sheep of all races and the share of sheep from the Karakul race in these countries. As a benchmark for these estimates, Faostat data [120] on sheep effective dynamics in the world during the period 2000 - 2013 years. The main sources of information for the analysis of the situation regarding the selection and improvement of the Karakul sheep race in Europe (Germany, Austria) and Africa (Namibia) served the papers published by the researchers of these countries in the volumes of scientific papers of the respective universities [1, 2] Their communications at international symposiums and congresses on Karakul [20, 44, 48, 76-82, 84-89, 106-110, 114-118]. The analysis of the state of selection and improvement of Karakul sheep in the former USSR was made on the basis of a study of an imposing series of scientific papers of classical researchers [45-47, 49, 52-58, 62-73, 102-103, 112]. The situation of Karakul sheep breeding in the independent countries of Central Asia was examined on the basis of the analysis of the scientific work of more

contemporary researchers [31-40, 42-43, 59-61, 83, 90-91, 104, 113, 119]. The assessment of the situation regarding the improvement of the Karakul race in Ukraine was carried out on the basis of data from classical researchers [92, 100, 101, 105] and modern [12, 51]. In Romania, the situation of the breeding and improvement of the Karakul sheep breed was examined based on the analysis of the published bibliography until the 1989 revolution [6-7, 16-23, 25] and then [3-4, 8-11, 13-15, 24, 27-30]. Research data has been systematized and generalized according to the principles of the general scientific methodology known in the field.

RESULTS AND DISCUSSIONS

According to Bertone B.F. (FAO official representative at I International Symposium on Karakul from Vena, 1967), cited by Ștefănescu C. [20], the Karakul sheep are growing on all continents of the world except for Oceania. In 1967, the world effective Karakul sheep and their meticolous with different local skin races constituted about 31.5 millionsion heads (Table 1).

Table 1 Mondial effective of Karakul sheep and their meticolous for skins
(after Bertone B.F., 1967, cited by Ștefănescu C. [20])

Country	Effectiv, thousand heads	Country	Effectiv, thousand heads
U.R.S.S.	17 500.0	Hungary	20.0
<i>incl: R.S.S. Uzbekistan</i>	<i>6 800.0</i>	Scandinavian countries	15.0
<i>R.S.S. Kazakhstan</i>	<i>5 500.0</i>	North Africa	15.0
<i>R.S.S. Turkmenistan</i>	<i>4 100.0</i>	Turkey	15.0
<i>R.S.S. Tajikistan</i>	<i>510.0</i>	Germany	12.0
<i>R.S.S. Moldovenească</i>	<i>390.0</i>	Angola	12.0
<i>R.S.S. Ucraineană</i>	<i>150.0</i>	Saudi Arabia	12.0
Afghanistan	6 000.0	Czechoslovakia	11.0
Namibia	3 500.0	Pakistan	10.0
South African Republic	1 500.0	Yugoslavia	10.0
Iran	1 500.0	Spain	8.0
Romania	664.0	Portugal	8.0
China	200.0	Bulgaria	8.0
Argentina	95.0	Greece	6.0
Mongolia	50.0	Albania	6.0
North America	40.0	Italy	6.0
Eastern Africa	35.0	Poland	5.0
South America	30.0	Austria	5.0
India	25.0	France	5.0
Irak	20.0	Other countries	50.0
TOTAL			31 398.0

The highest figures were in the Central Asian countries: Uzbekistan (6.8 million heads), Afghanistan (6.0 million heads), Kazakhstan (5.5 million heads), Turkmenistan (4.1 million cap), and in Africa: Namibia (3.5 million heads) and South African Republic (1.5 million heads). At the same time, the socio-economic phenomenon developed globally between 1967 and 2013 years caused changes in the dynamics of sheep flocks, including those of the Karakul race [5]. According to Faostat data [120], in the most countries growing the Karakul, the total sheep population has increased, with the exception of Afghanistan, the Republic of South Africa and the Republic of Moldova. Thus, in proportion to these changes, we estimated a significant increase in Karakul sheep in Turkmenistan, 3.1 times, in Tajikistan 2.0 times, in Uzbekistan by 1.7 times, in Kazakhstan by 10.5% (Tab. 2).

Analyzing the dynamics and distribution of sheep effective in countries that growing Karakul, we have come to the conclusion that they are concentrated, harvested and exploited effectively in countries and regions that have enormous natural pasture landscapes, even impoverished (Central Asia, Africa), but expanded with a climate that allows them to be maintained throughout the year without costly shelters.

In these countries and regions, Karakul sheep are breeding not only to meet the urgent needs of the rural population, but also to obtain income from the sale of skins in international fur auctions [5]. On the contrary, in developed countries in Europe, Karakul sheep have only spread curiosity for study and research purposes, with the aim of breeding.

Table 2 Total herd of sheep in some of the most numerous countries of Karakul sheep, thousands of heads

Nr d/o	The name of the country	Total effectiv of sheep			2013 % on 2000	Estimated effectiv of Karakul sheep	
		2000	2007	2013		Total weight, %	thousands heads
1	Uzbekistan	8 000.0	10 383.0	14 077.5	176.0	84	11 825.1
2	Kazakhstan	8 725.4	12 813.7	15 197.7	174.2	40	6 079.1
3	Turkmenistan	7 500.0	13 758.0	14 000.0	186.7	90	12 600.0
4	Afghanistan	15 000.0	8 105.0	13 141.0	87.6	40	5 256.4
5	Namibia	2 446.1	2 652.6	2 930.0	119.8	98	2 871.4
5	South African Republic	28 550.7	25 082.0	25 000.0	87.6	5	1 250.0
6	Tajikistan	1 472.2	1 955.2	2 959.5	201.0	34	1 006.2
7	Romania	8 121.0	7 678.0	8 833.8	108.8	8	706.7
8	Republic of Moldova	930.2	835.1	695.1	74.7	50	350.0

Thus, **in Germany**, according to Vossov's report, [48] at Ith Karakul International Symposium, Karakul sheep breeding was born thanks to the initiative of Professor Iulius Kyun, director of the Institute of Animal Husbandry of the University of Halle, which organized in 1903 and 1906 Karakul sheep purchases from Turkestan for the completion the collection of the Institute's nursery with rare races. In the scientific researches carried out in Halle, it has been shown that the loops are hereditary more determined than other productive animal characters, such as milk and meat production. For the cross-breeding

experiences with the Karakul breed, 54 sheep breeds were trained,

Of which the most compatible was the Somali breed. Based on these researches, the idea of creating in the Southwest Africa (Namibia), at that time a German colony, of Karakul sheep populations through the crosses of transformation of sheep from the local races, including that from Somalia. The increase, research and improvement of the Karakul sheep race in Germany, coordinated by the Halle Institute of Zootechnics, had a positive impact on the dissemination of this race in several countries around the world. It is worth mentioning that the German Karakul sheep were exported to 19 European

countries (including Romania), 6 American (including Argentina), 5 African (including South West) and 2 Asian (including China). About the Breast Huak Breed Value Karakul from the Hala Institute's herd tells us Brands H. [44], which revealed that the main characters of the skin are transmitted by heredity in a very large proportion: in the curls modeling - 30-35%, at the fiber quality (silk, gloss) - 75-85%, in the direction of fibers spinning - 80-85%, of fiber thickness - 85-90%, of fiber length - 75-80%. At the same time, the authors point out that to achieve maximum results

It is not advisable to take these indices away from the second generation of the pedigree. Trauer W.E. [26, 106] reports that the livak breeding livestock record system in the GDR (German Democratic Republic) provided for the evaluation of 15 quality characters with different degrees of character manifestation. In the 16th character of the evaluated series, the lamb class is synthetically evaluated according to a 12-point system, expressed in tenths of points, determined according to its utility for breeding for breeding purposes.

In **Austria**, according to Tourek F. [107], the Karakul sheep breed was the first to carry out highly effective scientific research, led by Professor Adametz L., head of the Department of Animal Husbandry at the Agricultural University of Vena. Based on the research conducted on the experimental herds of the University of Gross-Entzersdorfe and his own farm in Gross-Ullersdorfe, he developed the theory of the origin of sheep from the Karakul race [1], fought the formalistic visions of the determining influence of the environment on the spinning of the fibers and formation Loop [2]. Adametz L. was among the first researchers to have demonstrated that the curls are a hereditary character with partial dominance, and more than two hereditary factors (genes) are responsible for its formation, therefore, polygenic heredity is evident. Through the many variations of interracial crossings performed in Austro-Hungary, he revealed that the most suitable breeds for improvement with Karakul are those with coarse wool and semigrrophy. It has shown through experience that black color at Karakul is dominant, and white spots and fat tail have a genetic nature. From Austria, Karakul sheep

were exported to several countries (Namibia, Argentina, Spain, Uruguay, Angola, Turkey, Portugal, Romania).

From **Afghanistan**, information on scientific research, breeding and improvement of Karakul sheep in very accessible new publications is very few. According to Ферух Али М. [108], the Karakul sheep are growing in the northern provinces of the country (Kunduza, Samangan, Balch, Djauzdjan, Fairab, Badghis and Gherata). The number of this races is about 40% of the total sheep population in the country. The author just denotes that breeders of this races have accumulated a rich experience in getting grayish skin. Of the total amount of skins obtained in Afghanistan, those of grysh colour are, in the last years about 65-70%. In the country have been established state farms to produce valuable pruning rams in quite large quantities.

In **South Africa** (Namibia), sheep-breeding activity of Karakul sheep has spread since 1907 with enormous amplitude and has developed quite consistently. If at the end of the First World War in this country, there were only 1.0 thousand pure race and 21.0 thousand metiers [109], then, in the years 1965-1966, the sheep population Karakul reached 3500.0 thousand heads [20]. The imported Karakul sheep from Buhara served as a genetic material for massive cross-breeding, by cross-breeding, of local races with coarse wool, to a principally new sheep population for the production of skins high quality, competitive internationally. In this country, with the direct help of Germany specialists, was developed and implemented a specific Karakul sheep selection system, which contributed to the improvement of the skin qualities and creation of the new types of intraracial Karakul sheep. According to Филлинггер О. К. [109], the skin qualities of the lambs were evaluated by the 100-point system, and the animal was admitted for registration in the breeding register only if it accounted for at least 65 points. Кунов Б. [76] reports that Karakul lamb in this country includes the evaluation of an excessive number (21) of characters and attributes, mentioned that this is a problem that poses difficulties in selecting Karakul sheep. The same author mentions [77] that the length and thickness of the fibers and skin thickness

were subjective assessed by evaluation marks 6 points system, and fiber density, silky and gloss, also the curls shaping - after the 12-point system. Using his own visions and specific selection procedures, Dr. Tompson A.D. With the team (cited by Филлингер О. К. [110]), has been created in the flock of the Experimental Resort of Neydam a new type of intraracial Karakul sheep with flat curls. Subsequently, the creators of this type continued the selection in the direction of shortening the length of the fibers and improving their qualities in the lambs, creating a second type, called the moire. The skins of these types (flat and moire) soon conquered the world market of similar fur. According to Мостер Л. [84], at this station, in 1938, through the mutual crossings of the Black Karakul rams with white Persian sheep (Somalian) with black head and those from white African race with smooth and bright wool, have been created of the new type of with the dominant Karakul sheep.

A significant contribution to the theory and practice selection of Karakul sheep in Southwest Africa brought Prof. Нел Дж. А. [86-89], who proposed a series of procedures for enhancing the accuracy of the visual evaluation of the skins qualities at bonitation, to reveal the ideal lamb model to which the selector should aim, recommended the application of indexes for the selection of lambs depending on the productive and economic value of some of the most important characters and qualities of skins. The author noted that "*such indices ready to be used are not everywhere for broad application, but for the Neidam breed flock, such indices have been developed*" [88, p. 99]. He studied phenotypic and genotypic correlations, as well as the etiquette of a variety of wheat starch in South African Karakul sheep, has proposed some specific methods for testing rams according to their descendant qualities. Major research in this field has been conducted by Маттеп Х.Э. [78-82], which developed the principles of lamb selection Karakul according to the length of fibers at bonitation applied to sheep from Namibia (smooth and moarat). No less contribution to research and selection of Karakul sheep in Southwest Africa was brought by the German researcher Шлефер Х. [114-118], that describing the peculiarities of

the characters heritability and the appropriation of skin at the crossing of Karakul rams with the two local races (African and Somali) with coarse wool, which led to the creation of new intraracial types of Karakul sheep from the African population.

In Ukraine (Askania-Nova, Ciaplinca, Herson region), according to Перегон И.Л. [92], based on scientific research conducted and coordinated by academician Иванов М. Ф. [65-73], a series of Karakul sheep crossing experiments carried out from Buhara with the Ghisar de Kurdiuk breed for obtain of corpulent lambs at birth, with the Ciuntuk race to obtain descendance with new color and coloration, and with Romanov race for increasing the sheep's prolificity. Of all cross variants, the last one (with the Romanov race) was successful. Pursuing a planned selection and reproduction activity of Karakul x Romanov from various generations, the authors succeeded in creating between 1935-1970 a new type of prolific Karakul with superior performances, compared to the Asian one. Mean prolificity of sheep in the regions of Herson and Odessa constituted to 144.8-146.8%. The average lamb at birth is 4.5 kg. Sheep have good body development and increased milk production. According to Дрoньк Г.В. communications, [51] and Lesyk O.B [12], the sheep Karakul prolific of Askania are also spread in the Chernivtsi region, based on which, by crossing with local sheep, measures are being taken to create a new sheep type Karakul of Bucovina.

In Romania, according to Бапра М. [84], Karakul sheep breeding was born in 1910, when 160 sheep and rams for the first time were imported from Buhara for pure-bred breeding. At first the Karakul sheep were distributed in the southern counties of the country. Thus, in 1924, the sheep breed Karakul sheep flock was set up at Dulbanu-Cretu Experimental Station, moved after 1962 to Slobozia, then to Russețu and finally to Rachiti, Botosani [38]. During this period in Romania begin the scientific researches of the Karakul race and her mechs with the Țurcana race. Early research of curls at the Karakul lambs in Romania was carried out in 1929 by Th. Nica [16]. A genetic analysis of the sheep flock of the Karakul race was made by Ababii D., cited by Drăgănescu C. [7]. A special contribution to the research of the

Karakul race and her meticulous with Turcana brought Teodoreanu N. [25], Ștefănescu C. [17-19], Taftă V. [21-24]. In his researches Ștefănescu C., Nicoliciu S. and Taftă V. [17] highlight the blood lines of Karakul-Dulbanu sheep flock. Taftă V. and Ștefănescu C. [21, 22] communicate the results of the crossing of white Turcane with black Karakul and Karakul x Turcana, as well as the results of the crossing of white Turcana sheep with grayish Karakul rams. Subsequently, Derlogea G., cited by Drăgănescu C. [7], highlights the effect of inbreeding and makes an appreciation after reproduction descendants. In 1970, Professor Drăgănescu C. himself [6] made a research on the qualities of skins at the meadows between the black Karakul and the Turcana race, as well as a genetic analysis of the Karakul of Dulbanu [7].

Subsequently, SCPCO Popauti (Rachiti, Botosani) researchers created a new type interracial by crossing the black and greyish Turcana sheep with the Karakul rams pure race, with the reproduction "of itself" of the requested type metias of the 2nd and 3rd generations. They then carried out genetic improvement of sheep populations under the pedo-climatic conditions specific to the area, creating new lines and populations with bleached [3, 8, 30], sur, brown and white [27-29], estimating morpho-productive and genetic parameters [4, 10, 11, 13-15]. Unlike other countries and regions of the world, attention is paid in Romania to the improvement of milk production at the Karakul sheep. Milk production of selected sheep from SCPCO Popouți flock, Botoșani branch, was 77.8 liters on a 175-day lactation with a daily average of 0.443 liters [9].

In Tsarist Russia was begun, in 1883, the first works in the world of genetic improvement of sheep from the local races for skins (Socoliska and Rešetilovka) were started by crossing with the Karakul race, aiming to studying the results of the improvement of the skins qualities of the descendants [73]. The results of these works are not known. It is only known that the first methodical guidelines for the selection of Karakul sheep were subsequently made by Тихомиров В.А. [105], Петров Н.В. [93], Синицин И.В. [100, 101], Демянко В.Я. [50], Карпов М.С. [74], Чирвинский Н.П. [112], but these were superficial and popular, since at that time there

were no scientific methods for assessing the characteristics and qualities of the skin and Karakul sheep selection. The first author, who systematized the knowledge about the sheep from the Karakul race and laid the scientific basis for the evaluation and classification of Karakul lambs was the academician ВАСХНИЛ Иванов М.Ф. The author mentioned that „*Karakul sheep grow exclusively for the production of valuable skins and their quality is determined by the shape of the curls, the uniformity of curls modeling on the whole surface of the skin, the elasticity of the fibers, the color and the gloss of the sheathing, the size of the skin surface. According to these basic requirements, invoked to the skin, is to be done and the evaluation of the lambs*” [73, p. 94]. In the interest of evaluation, the curls were differentiated in the following ways: waves, bobs, peas, rings, deformations and dying looms, of which waves and grains are considered required, and the rest - unsolicited or even flawed. On the basis of these differentiations, the author proposes to award the following classes of lamb evaluation: Class I, Class II, Class III and Class IV. However, the attempts to implement these developments in the practice of Karakul sheep breeding in the dispersed private households of sheep farmers for the southern Russian Gubernian tsarist Russians did not succeed successfully because of both the First World War and the Bolshevik Revolution of October 1917.

Subsequently, Иванов М.Ф. [67, 72], in the appreciation of the skin characters, proposed the use of the 5-point scoring system and the four-point terminology system. The system provided for the division of the black lambs at evaluation in 7 classes (Elita I, Elita II, Class I, II, III, IV, V) and grayish lambs in 4 classes (Elite, Class I, II, III) with 3 group (A, B, C) in each class, giving the characteristic of each of these classes according to the qualities of the curls. Further [71], the author proposes methods for breeding sheep for milk-based milk only with regard to the qualities of the skin and the constitutional type, finally joining the proposal for the selection of sheep and milk production, without linking the selection of animals after these two important characters in a complex process [5].

In the former USSR, during the 1940s the first research institutions in the

karakulture branch were founded. In Uzbekistan (Samarkand) and Kazakhstan (Cimkent), specialized institutes for scientific research in karakulture were founded. Within the Animal Husbandry Institute of Dubrovnik (Moskova Region) and the Animal Breeding Institute for Steppe Area from the Askania Noua specialized laboratories have been created for research on the Karakul race, at the Institute of Animal Husbandry in Tajikistan, at the Institute of Animal Husbandry in Moldova, have been founded the IUCŞK scientific research branches from Samarkand [85].

According to Дьячков И.Н. [58], the first organizational bases of breeding, lambs classification, selection and mating of Karakul sheep both for pure-bred breeding and for cross-breeding with thick wool race, were developed during the years 1930-1935 by the experimental station researchers From Katakurgan (Petrov VA, Arapov PV, Nicoliskii NF, Odintova EV and others), and the staff of the Moskovskaya Sheep Research Institute (Ivanov MF, Iudin VM et al.), Who developed the principles of classification of curls, And the Karakul skins, being the basis for the standardization of the lambs and the evaluation of Karakul lambs. Subsequently, these scientific bases were completed by Васин Б.Н. [45-47], Дьячков И.Н. [52-57], Кузнецов Б.А. [75], Гигинейшвили Н.С. [49], Фищенко О.П. [111], Стояновская В.И. et al. [102, 103] Закиров М.Д. [62-64], Ролдугина Н.П. [96-99], Рахманов Н. [95] et al.

With the support of the above-nominated researchers, by selecting and breeding the pure Karakul sheep were created a series of interracial types, such as: gray of Buhara, gray of Surhandaria, of Karakalpakia, as well as elite, black color: Karakum, Mubarek, Nishan, Kenimeh etc; grayish color: Nurata, Guzar, Cabadian etc gray color; Kâzâlkum, Navoi, Talimarjan, etc. Improving the Karakul sheep breed continued in Central Asian countries, where a newer set of new Karakul sheep has been created with specific productivity for skins [5].

In Kalmâkia, Басраев А.У. [42] reports that has been created a new type of selected population of Karakul sheep "Erdnievskii" of high (quality) skin production.

Thus, **in Kazakhstan**, Шамакенова Р.Д. [113] reports that in the northern Kazakhstan

desert area a new type of grey Karakul sheep was created through the crossbreeding of the local sheep Kurdiuk and Edilbaev of different colors with gray Karakul rams of the Suhardaria and Karakalpakia types of different colors. Beginning with the third generation of the requested type of sheep the were raised "by themselves".

In the southern region, Алибаев Н.Н. et al. [38] created a new sheep elite type grayish Karakul with bluish coloring, with the tubular curl type, by pure breeding method following the "closed flock" scheme. There have been applied heterogeneous pairings of two types: I- black sheep x grayish rams; II – grayish sheep x black rams. The process of creating the type included a series of elements of the selection: completing herds with higher class sheep by skin quality, selecting the lambs of the type requested, testing the ram for the kelly qualities of the progeny, creating the lines, individually matching the sheep of the requested type. The selection was started with the type of lamb required: medium nuance, blue coloration, 55-65% of white fibers longer than black ones by 10-15%, the 8 mm curls tubular type, silky, thin, dense skin with free reserve. The share of bluish skin coloration in the total grayish skins was 52.8-60.7%, the elite ewe and 1st class in the flock 84-85%. Юсупбаев Ж.Ш. [119] communicates about the creation of a new intraracial sheep type "Otararskii" White Karakul, created by complicated crossing of breeding to create new races of white sheep for meat- wool and black Karakul, with white rams of Kazaha race of Kurdiuk and white Karakul from Nurata type.

According to Алимбаев Д.Т. [39] and Ескара М.А. [60], in the Kâzâlkum area was created a new elite of black Karakul sheep of "Жоматский" with tubular curls The type was created by purebred breeding and homogeneous crossing of sheep with the jachet curls type. The lambs of the requested type were 4,5-5,0 kg, the thin skin, the free reserve, the length of the fibers 7 mm, the tubular curls of 7-8 mm size, length curls > 50 mm. The share of lambs with tubular curls constituted 81%, the skin types I - 79.5-90.4% with the area of 1400-1600 cm². The sheep had 45-50kg body weight, rams - 70-

80kg, height of withers - 75cm, with the superior qualities of skins.

In Uzbekistan, under the influence of Namibian fashion (at the type of curls smooth and moire), karakulists have reoriented the selection of Karakul sheep towards the creation of new type of sheep with smooth and coastal curls with different colors and coloration [5].

Thus Букаев Ж. et al. [31] have created a new elite "Саржальский" of black Karakul sheep with the type of coastal curl. The type was created by purebred breeding with the homogeneous pairing of sheep with the type of coastal curls. Sheep are well adapted to wilderness conditions. According to the authors, the sheep are corpulent. The body weight of lambs at birth is 4.2-4.7 kg, ewes - 42-47 kg, rams - 60-65 kg. The skin is thin, the curls - resistant and long, the type of parallel-scale modeling, the weight of the skin type I - 87-90%, the coastal type - 55-60%. For comparison, we mention that in the Karakul Moldovenesc type, in the category of "corpulent" fall ewes with 50-55 kg and rams 85-100 kg [34].

Юсупов Ш. et al. [32] have created the new elite type "Бухорошишарифский" of Karakul sheep gray silver with the type of smooth curl. The type was created by purebred breeding and homogeneous pairing of gray ewe with silver coloration with the smooth curl type. Sheep are well adapted to wilderness conditions. The body weight of lambs at birth is 4.0-4.5 kg, of ewes - 40-45 kg, of rams - 60-70 kg. The weight of the skin I type - 85-90%, smooth type - 45-50%, silver coloration - 70-75%.

Юсупов Х. И. et al. [33] have created the new elite type "Авазкульский" black Karakul sheep with the curl of coastal type. The type was created by purebred breeding and the homogeneous pairing of black sheep with curl of coastal type. Sheep are well adapted to wilderness conditions. The body weight of lambs at birth is 4.0-4.5 kg, of ewes - 40-42 kg, of rams - 52-57 kg. Excellent skin qualities. The weight of the skin I type - 90-92%, coastal type - 55-60%. Here we mention that, compared to the Karakul Moldovenesc type, the body mass of the rams of this type does not fit in the 18-month age standard [34].

Рахимов А. et al. [34] have created the new elite type "Сарибельский" of Karakul sheep gray-silver sheep with the type of smooth curl. The type was created by purebred breeding and homogeneous pairing of silver sheep with smooth curl. Sheep are well adapted to wilderness conditions. The body weight of lambs at birth is 4.0-4.5 kg, of ewes - 40-45 kg, of rams - 60-70 kg. Excellent skin qualities. The weight of the skin I type - 87-90%, smooth type - 59-60%, silver coloration 75-80%.

Солиев В.Х. et al. [35] have created the new elite type "Узбекистанский" of Karakul sheep gray-silver with the jacket type of curl. The type was created by purebred breeding and homogeneous pairing of sheep with silver coloration with tubular curl, with subsequent selection after color uniformity. The sheep are well adapted to wilderness conditions. The body weight of lambs at birth is 4.0-4.5 kg, of ewes - 41-43 kg, of rams - 60-65 kg. The weight of the skin I type skin types - 95%, of silver coloration - 70-75%.

Очилов К.Д. et al. [36] have created the new type of "Турткульский" of gray Karakul sheep Karakalpak type. The type was created by pure-bred breeding and homogeneous pairing of the gray sheep with the "шамчирокгуль", "урюкгуль" and "пулаты" coloration with the subsequent selection after the coloration uniformity. Sheep are well adapted to wilderness conditions. The body weight of lambs at birth is 4.0-4.5 kg, of ewes - 40-45 kg, of rams - 65-75 kg. The skins are distinguished by the uniformity of coloration, with the obvious contrast of transition from the pigmented base of the fibers to the open top point of the fibers.

About the creation of new types of Karakul sheep in the Central Asian countries and the methods applied at the stages of their creation tell us Гигинейшвили Н.С. [49], Жиряков А.М. [61]. The highlighting of the morpho-productive peculiarities of the new types of Karakul sheep have been devoted to the more recent works of a number of researchers from the CIS countries [37, 40, 43, 59, 83, 90, 91, 94, 104].

Generalizing the material of this paper, we note that the overwhelming majority of new Karakul sheep types created in Central Asia, South Africa and Europe have the unilateral production direction - the skin high quality of

newborn lamb, of different types of Valuable curl, original colors and coloration. Neither one of the new types of Karak sheep produced in these countries (except Romania) has addressed the issue of improving milk and meat skills as they are not specific to the Karakul race in the home regions. [5].

CONCLUSIONS

1. Karakul sheep are highly concentrated, breeding and exploited in countries and regions that have huge natural pasture lands, even impoverished (semi-deserted and deserted from Central Asia, Africa), but with a climate that allows them to be maintained throughout the calendar year to grazing, without costly shelters. In these countries and regions, Karakul sheep are breeding not only to meet the urgent needs of the rural population, but also to get income from the sale of skins at international fur auctions.

2. In Germany and Austria, the Karakul sheep were breeding both for resercher and crossbreeding with other races, as well as for pure race for breeding material. On the basis of the scientific research, Karakul sheep origin was developed and combated the formalistic vision about the determining influence of the environment on the spinning of the fibers and on the formation of the curl. The most compatible races (Somali) have been identified for crossing with Karakul, on the basis of which the idea of creating in Southwest Africa (Namibia) the new Karakul sheep populations was created by crosses of transformation of sheep from local races

3. In Southwest Africa (Namibia), have been created several new intraraciale Karakul sheep with smooth curl, moire and smooth bark with short fibers. The skins of these types have soon conquered the world market of similar fur.

4. In Ukraine, at the Institute for Scientific Research for the Steppe area, between 1935-1970 years was created, by crossing the sheep Karakul with Romanov, an intraracial new type of the prolific Karak.

5. In Romania, at SCPCO Popăuți, Botoșani, a new type of Karakul sheep was created by crossing the Turcana sheep with pure Karakul rams, creating within the type new lines and populations with varieties of color, gray, greyish and white.

6. In the former USSR, with the help of researchers from the United States Institute for Scientific Research for Karakulture (Samarkand sity), through the selection and the increase of pure Karakul sheep were created a large number of intraracial type of sheep such as: Gray of Buhara, Gray of Surhandaria, Gray of Karakalpakia, as well as elite, black: Karakum, Mubarek, Nishan, Kenimeh etc; of grayish color: Nurata, Guzar, Cabadian etc; of gray color: Kazalkum, Navoi, Talimarjan, etc.

7. After the USSR collapse, the independent Central Asian countries continued amelioration the Karakul sheep race in pure race, in which a series of new types was been created (15 in number) of Karakul sheep with specific productivity for skin, including Uzbekistan - 7 types, Kazakhstan - 4 types, Turkmenistan - 2 types, Tajikistan - 1 type, Kalmăkia - 1 type

8. All new types of Karakul sheep, created in Central Asian, Southwest Africa and Europe countries, have unilateral production – the high quality of skins newborn lambs with different types of valuable curl, colors and original coloration. Neither one of new types of Karakul sheep produced in these countries (except Romania) has not approached the issue of improving milk and meat skills as they are not specific to the Karakul race breeding in the home regions

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