

Relationship of Karakul Sheep Productivity with Their Ethological Characteristics

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Abstract. Karakul sheep unlike other farm animals, have very valuable biological properties, they are able to breed in very harsh continental desert climates, sparsely vegetated, saline, arid pastures, without consuming absolutely green fodder in summer, autumn and winter has the ability to provide very valuable products (astrakhan leather, meat, wool, fur and milk), while maintaining the characteristics of rapid growth and development. The vegetation cover of rangeland ecosystems in Uzbekistan is diverse and serves as the main source of forage production for livestock production in the country. This article provides information on the nutrient composition of desert range as affected by weather conditions and productivity of animals from different ethological types.

Key words: rangeland, foothill semi-deserts, ethological behavior, sheep.

Introduction: The vegetation cover of rangeland ecosystems in Uzbekistan is diverse and serves as the main source of forage production for livestock production in the country. The productivity of natural rangelands is highly dependent on weather conditions and varies greatly across years and seasons. With favorable weather conditions for spring rangeland productivity reaches 600 kg of forage DM/ha. With unfavorable condition productivity may be only 70-150 kg of forage DM/ha. In mid yield year fodder supply in rangelands typically consists of 30% of ephemers and ephemerooids, 6% of annual chenopods, 46% of *Artemisia diffusa* and 18% of *Cousinia resinosa*, *Ferula assa-foetida*, *Alhagi pseudalhagi*. In a year with limited rainfall in spring season the share of annual grasses is reduced to 10% and the ratio of crude herbs as *C. resinosa*, *F. assa-foetida*, *A. pseudalhagi* increases to 81% (Salmanov, 1972).

Due to the deterioration of vegetation condition and degradation of best rangelands, the livestock is facing extreme shortage in forage, particularly during autumn-winter seasons. In the spring rangeland vegetation with annual and perennial grasses provide nutrient-rich feed. In the autumn the animals receive 34% less of the daily diet from rangelands, and in the winter 70% less of digestible protein (Gaevskaya, Salmanov, 1975). Therefore, the most crucial season for the organization of full feeding sheep in the desert and semi desert areas is the autumn and winter, and in the years of unproductive fodder, even summer season becomes difficult in term of forage supply.

It was found out that during spring season 1 kg of rangeland grass contains 8.55-9.88 MJ metabolite energy and 0.59-0.79 Fodder Units and 48-86 grams of digestible protein, and in winter season 6.75-7.44, 0.36-0.44 and 19.8-31.9, respectively. It is lower compared to the average spring rates of exchange energy, fodder units and digestible protein at 30%, 72,5% and 26,0%, respectively. The purpose of current research is to develop ethological basis and technological methods of increasing the efficiency in karakul breeding at Karakalpak Sur (local breed) arising from life manifestations of ethological differentiation of animals.

Material and methods: The study was conducted on the “Istiklal karakul naslchilik” breeding farm in the Navai province of Uzbekistan. The climate is continental with mean annual precipitation of 165 mm. Elevation ranges between 240-360 m. Soils are grey-brown. Vegetation cover is dominated by *Artemisia diffusa*. Desert range was assessed for plant species composition, plant growth, and the potential for karakul sheep grazing. Ewes from each production flock were selected to study feeding and reproductive behavior, weight, feed digestibility, growth and development of lambs, milk wool, and meat productivity by the methods of Belyaev and Martynov (1973) and Zarytovsky et al. (1990). Chronometer ethological observations were performed by the method of Velikzhanina (1975).

Results and Discussion: Analysis of desert range showed that the nutritional value of most plant species declined from spring through autumn and winter seasons. The changes of weather conditions have clearly resulted in the forage nutritional value which has reduced by 25-30% in unfavorable years compare to average year (Table 1).

Table 1: The nutrient composition of desert range as affected by weather conditions

Weather condition of a year	Chemical composition,% on the basis of DM					Nutritional value 1 kg of dry matter feed		
	protein	Fat	Cellular tissue	NFE	ashes	MJ	fodder units	digestible protein
Spring								
Unfavorable	8,30	2,05	34,0	45,5	10,55	8,55	0,59	48,2
Average	10,20	2,40	28,0	47,0	12,40	9,24	0,69	67,0
Favorable	13,40	3,25	24,2	47,2	11,90	9,88	0,79	86,0
Summer								
Unfavorable	6,80	2,70	37,5	48,5	7,5	7,92	0,51	39,8
Average	8,0	3,0	33,8	46,2	9,0	8,43	0,57	48,5
Favorably	9,2	3,4	31,0	43,6	12,80	8,82	0,63	55,6
Autumn								
Unfavorable	7,2	2,0	35,7	43,4	11,7	8,17	0,54	42,8
Average	7,8	2,5	34,6	42,2	12,9	8,32	0,56	48,6
Favorable	8,8	3,0	32,0	43,0	13,2	8,68	0,61	57,7
Winter								
Unfavorable	3,53	1,73	46,0	41,04	7,7	6,75	0,36	19,8
Average	4,00	1,80	43,6	43	7,6	7,08	0,40	25,5
Favorable	5,75	1,85	41,0	43,0	8,4	7,44	0,44	31,9

In the karakul sheep-breeding husbandry the animals with various production and physiological groups are kept in flocks with 400-500 head of livestock. However, to date research related to the study of the relationship between their productivity and ethological behavioral characteristics of animals have not been conducted. Research have shown that among the animals of each production flocks of ewes and rams number of differences were observed in the feeding and sexual behavior, live weight, feed digestibility, growth and development of lambs, milk, wool and meat productivity. At a young age (5.5-6.0 months old) ratio of behaviors of animals in different regions has specific characteristics. In particular, strong difference was observed regarding the number of young animals of 1 and 3 types of behavior. Thus, the number of lambs in type 1 in foothill zone was 52.0%, whereas in the type 2 in sandy zone - 41.0%; the animal behavior from type 3 was 18.0% in foothill and 29.0% in sandy zone (Table 2).

Table 2: Productivity of animals from different ethological types

Ethological types of ewes								
pregnancy			young lamb			single		
1	2	3	1	2	3	1	2	3
Live weight, kg								
35-38	34-36	32-35	44-38	42-37	40-36	39-42	37-40	36-39
Live weight of offspring, kg								
3,9-4,4	3,6-3,9	3,3-3,6	-	-	-	-	-	-
Milking ewes, l/day								
-	-	-	0,9-1,3	0,8-1,2	0,8-1,1	-	-	-

Conclusion: Based on conducted study and recording of many indicators of animal efficiency it was observed a clear variation in absolute values of sheep from different types of behavior. These data allow us to state that on live weight, milk, wool yield and quality of the lambs and offsprings of 1 and 2 types of behavioral groups can be considered superior compare to those from 3 types of behavior.

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