

CGIAR Research Program on Dryland Systems

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TECHNICAL REPORT

Establishment of the Elite Karakul-Sur Nucleus Flock

Koybak Livestock Cooperative

Karauzyak District of Karakalpakstan

Republic of Uzbekistan

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1. Framework

In April, 2015, during the field mission of ICARDA staff (Dr. Barbara Rischkowsky, Dr. Mourad Rekik and Makhmud Shaumarov) met with the Hokim (Governor) of Karauzyak District of Karakalpakstan to identify research and development needs and priorities of the district for livestock productivity improvement. The Hokim expressed his interest for cooperation and to extend support for our project activities focused on livestock cooperative Koybak. The governor also informed the delegates on recent changes in Karakul pelt market and on particular market demands for highly valued Karakul-Sur pelt both in domestic and regional markets: local prices per Karakul-Sur pelt vary from 50-300 thousand UZS, whereas in regional markets from 100-300 USD. In this concern, the governor suggested ICARDA staff to extend research activities and practical assistance to improve the quality of Karakul Sur breed in Koybak livestock cooperative (the former “40 years of Karakalpakstan”) that would stimulate pelt production and its value chain development in the district in the long-run. The following two tables briefly illustrate the current livestock production patterns in Karauzyak district of Karakalpakstan.

Table 1. Number of cattle and poultry in Karauzyak district in January-June, 2015

Animals	Total	Agricultural enterprises	Rural households	Private farms
Cattle	29,230	648	28,455	127
including cows	9,691	186	9,447	58
Sheep	79,135	19,850	58,410	875
Horses	1,447	59	1,364	24
Poultry	125,079	2,600	121,129	1,350

Table 2. Livestock produce in Karauzyak district in January- June, 2015

Animal products	Unit	Total	Agricultural producers	Rural households	(%)	Private farms
Meat	tons	485	3.5	479.3	98.8	2.2
Milk (cow)	tons	1,250	23	1,224.9	98.0	2.1
Eggs	thousand	1,595	160	1418	88.9	0.21
Wool	tons	407	356	34.1	2.6	17
Karakul	pcs	1,529	356	1,095	71.6	78
Fish	tons	61	29	16	26.2	16

Source: Rudenko *et al* (2015). Value Chain Assessment report for Karauzyak district, Karakalpakstan

Karakul sheep breed is unique, has good adaptive features, with natural high endurance, which makes desert pastures utilization economically possible. Karakul sheep can be maintained whole year-round in conditions of desert pastures, whereby it is impossible to successfully breed other small ruminant species. Thus, Karakul husbandry in desert areas makes it possible to ensure the livelihoods of local people, to produce export-oriented goods, food and raw materials for industry.

Karakalpak variety of Karakul Sur enjoys a particular high market demand among large variety of Karakul pelts. Currently, there is only one livestock cooperative - "Kyzylkum" in Turtkul district - engaged in Karakul Sur breeding in Karakalpakstan. This explains the urgency and high interest of authorities in creating another breeding herd of Karakul sheep of Sur variety within the livestock cooperative "Koybak" at Karauzyak District.

2. Field interventions and establishment of the Karakul-Sur nucleus flock

The Uzbek Research Institute for Karakul Sheep Husbandry and Desert Ecology was approached to initiate field interventions on establishment of the nucleus Karakul-Sur flock at Koybak cooperative. This research institute, founded in 1930, is particularly specialized on long-term practice-based studies on desert rangelands improvement and on Karakul sheep breeding at country and regional levels. Dr. Suratbek Yusupov and Dr. Kuyli Ochilov, the prominent Karakul breeding scientists of the institute were appointed and sent to Karakalpakstan to conduct a feasibility study on establishment of the nucleus Karakul sheep flock in May, 2015. As a result of the first field mission with evaluation of the pastoral Karakul sheep, the scientists have concluded that "there is every reason to believe that establishment of Elite breeding herds of Karakul Sur (Karakalpak breed type) in livestock cooperative '40 years of Karakalpakstan' (Koybak) is possible within 3-5 years; This idea is realistic, prospective and may provide high economic effectiveness in the future".

During the next field mission in October, 2015 the following scope of work was conducted with the purpose of creating a nucleus flock of high quality pedigree 'Karakul-Sur' sheep at livestock cooperative 'Koybak' in Karauzyak District:

- All herds with Karakul-Sur ewes at the cooperative were visually screened by two scientists of the Karakul Institute and best quality ewes were selected to establish a nucleus Karakul-Sur flock. Inventory of 317 heads of Karakul ewes was conducted at two nucleus flocks by placing ear-tags with individual numbers;
- The Senior Shepherds of the both flocks were explained on technology of "manual" mating. Such method will provide better information about origins of the future offsprings; it will also help to evaluate the breeding rams from the quality of their offsprings;
- Ten heads of pedigree 'Karakul-Sur' rams of 1,5-2,5 years of age (see description in the next table) were purchased from 'Karakul Pedigree Factory' of Turtkul District in Karakalpakstan and they were delivered to 'Koybak' cooperative;
- Number of record books were developed and handed over for use to senior shepherds such as (a) record book for sheep mating; (b) instructions for animal housing; (c) timetable with feeding regime and feeding norms during mating campaign;

It was agreed that involved scientists of the Karakul Institute to monthly monitor the mating results of the new Karakul-Sur rams and their winter feeding conditions with the focal shepherds of the cooperative. The current priority task would be to prevent their loss before/during lambing.

3. Characteristics of the purchased improved rams

ICARDA financially supported the Koybak cooperative in purchasing ten rams of elite Karakul-Sur from Karakul pedigree factory in the neighbor Turtkul district. Although it was initially agreed with the district governor and with the chairman of the Koybak that new Karakul elite rams would be purchased by the cooperative, it did not work as planned due to meat prices decline during September-November¹, 2015 and corresponding budget constraints of the coop. Nonetheless, it was agreed that ICARDA will be compensated by receiving newborn ten Karakul-Sur rams from 2016 offsprings. Those rams would be distributed among local households to stimulate elite Karakul-Sur production at community level.

Table 3. Description of ‘Karakul-Sur’ pedigree rams purchased by ICARDA to ‘Koybak’ livestock cooperative (Karakalpakstan) in October, 2015.

#	Ram ID	Age	Live weight	Color	Parents	Fur type / Quality	Body score / Fatness	Health
1	4-0476	1.5	48	Sur	Sur/Sur	Jaket	4	Normal
2	4-0508	2.5	51	Sur	Sur/Sur	Jaket	4	Normal
3	4-0504	1.5	48	Sur	Sur/Sur	Jaket 1	4	Normal
4	4-0506	1.5	45	Sur	Sur/Sur	Jaket 1	4	Normal
5	4-0507	1.5	44	Sur	Sur/Sur	Jaket Elita	3	Normal
6	4-0470	2.5	49	Sur	Sur/Sur	Jaket 1	3	Normal
7	4-0479	3.5	54	Sur	Sur/Sur	Jaket Elita	4	Normal
8	4-0505	1.5	44	Sur	Sur/Sur	Jaket 1	4	Normal
9	4-0475	1.5	46	Sur	Sur/Sur	Jaket 1	4	Normal
10	4-0500	2.5	54	Sur	Sur/Sur	Jaket 1	4	Normal

Fig. 1. Newly purchased Karakul-Sur pedigree rams for Koybak cooperative.



Photo: M.Shaumarov

¹ It was noted that during this period of the year a bulk sale of live and slaughtered animal occurs in local markets stimulated by province smallholders and private livestock producers to avoid costly winter feeding and climate uncertainties.

4. Mating performances of the purchased rams

Selected ewes from the different flocks in the cooperative and the purchased 10 improved rams were placed in 2 separate flocks of the cooperative. In the first flock, the 4 rams were selectively mated to 40 ewes with a full record of the matting data. In the second flock, the 6 remaining rams were selectively mated to 77 ewes with also full records of the mating events. At least 115 controlled matings were facilitated between the 10 improved rams and the elite ewes expecting about 100 lambs of high quality pedigree Sur. The below table summarizes mating performance of new Karakul-Sur rams in the nucleus flocks.

Table 4. Number of ewes mated by each Karakul ram and mating distribution per flock.

Nr.	Karakul Ram ID	Age	Live Weight	Nr. of Ewes Mated
<i>First Karakul-Sur nucleus flock</i>				
1.	4-0470	2.5	49	3+4+2=9
2.	4-0476	1.5	48	2+3+3=8
3.	4-0504	1.5	48	7+5+4=16
4.	4-0505	1.5	44	1+2+2+2=7
<i>Second Karakul-Sur nucleus flock</i>				
5.	4-0475	1.5	46	4+1+2+3+2=12
6.	4-0479	3.5	54	5+1+1+2+2=11
7.	4-0500	2.5	54	5+2+1+2+2=12
8.	4-0506	1.5	45	4+3+1+2+2=12
9.	4-0507	1.5	44	5+2+2+2+2=13
10.	4-0508	2.5	51	5+2+3+2+3=15
Total:				115

The detailed data with ID of ewes and mating dates have also been recovered from the shepherds, will be shared with the specialists of the Uzbek Karakul Institute and will be used to assess the lambs' pedigree at lambing. Preliminary valorization of this data will be carried out to assess the mating intensity of each of the individual 10 Karakul-Sur rams.

With proper implementation of provided recommendations to the coop shepherds, we expect to receive 260-280 heads of lambs of known origin next lambing season. We also expect about 100 heads of animals of high quality pedigree among those lambs. This will also help us to reveal best pedigree Karakul-Sur rams.

Based on the lambing and pedigree assessment results in spring 2016, starting from the next mating season in autumn, the best quality Karakul rams will be used in an artificial insemination program with fresh semen aiming a larger dissemination of the "Sur" trait both within the cooperative flocks and the community private flocks.

5. Winter feeding management of the improved rams

The purchased rams are young (1.5 to 2 years old), and are still growing and they need to be correctly fed during the coming winter season in order not to compromise their growth and to avoid any loss. The producer pedigree rams also need required amount of fodder to ensure good weight gain and solid endurance during pre-mating and mating seasons. For these purposes, taking into account the coop's budget constraints, ICARDA helped purchasing of 1.7 tons of extra supplementary feeding targeted for the purchased Karakul-Sur rams. The required amount of concentrated (barley, sorghum) and coarse feeding (alfalfa hay) were delivered to the mating territory at 'Koybak' cooperative and the responsible shepherd was explained on daily feeding norms. Winter forage and record keeping instructions were provided to the senior shepherds.

6. Lambing season and quality evaluation of Karakul offspring

Following the mating season conducted in October 2015, ICARDA team closely collaborated with livestock cooperative Koybak and with the Karakul Research Institute to monitor pregnant sheep of the Elite nucleus flock. Mobile ultrasound device was utilized to detect non-pregnant females. Karakul sheep lambing period coincided between early March and mid-April, 2016. All newborn Karakul lambs were ear-tagged, screened for pelt quality and recorded by the scientists of the Karakul Research Institute and ICARDA.



Pedigree Karakul rams



Scientist demonstrates elite quality of the newborn Karakul lamb

As a result, a total number of 165 heads of elite and first class Karakul Sur lambs were evaluated and ear-tagged, and selected for breeding, as shown on the following table.

Evaluated Karakul lambs	Period of evaluation		
	23-29 March, 2016	4-9 April, 2016	Total
Total evaluated	171	151	322
including: Female	81	78	159
Male	90	73	163
Total Karakul Sur	149	122	271
including: Elite	34	28	62
1 st class	57	46	103
Selected pedigree:			
Female	47	36	83
Male	43	38	81

ICARDA team and national scientists in Karakul Sheep Research Institute will continue the genetic improvement program of the pelt quality at Koybak livestock cooperative by advisory support in next seasons of mating, lambing and selection of improved lambs.

7. Benefits

In 2016, the livestock cooperative “Koybak” produced a total of 480 heads of Karakul newborns, including 322 heads of Karakul Sur. For breeding purposes, 164 heads of Elite and 1st quality Karakul Sur were selected. During autumn-winter seasons of 2016, the cooperative sold in total 108 heads of Karakul sheep (including 58 heads of Karakul Sur rams) for an amount equivalent to 23 650 000 UZS. Shepherd families received from the cooperative 50 heads of Karakul sheep as honorarium for good work. Karakul pelts of moderate quality (90 pieces) were sold in domestic market with an additional amount of 2 700 000 UZS.

8. Partnership

In the framework of livestock productivity improvement activities, ICARDA staff established a decent working partnership with the Uzbek Karakul Institute. Scientists of the institute were actively involved in establishment of the elite Karakul-Sur flock in Koybak cooperative. It is important to note that the Uzbek Karakul Institute management and staff are also very motivated to contribute to the project activities in Karakalpakstan as it follows their institutional research and development objectives. In 2016, three scientists collaborated with ICARDA by providing extended expertise in lambing and weaning seasons. During the lambing season, the scientists from the institute joined ICARDA team in field missions to Karakalpakstan to evaluate quality of newborn Karakul sheep in the target livestock cooperative and to grade the lambs by pelt quality.

During the project implementation period, ICARDA team established a trustful working relations with the livestock cooperative “40 let Karakalpakstan” in Karauzyak district of Karakalpakstan. The staff of the cooperative was open for cooperation and supported the initiative of the local governor to establish a nucleus Karakul-Sur flock. The following persons were always ready for support during our field missions in the territory of the cooperative: Chairman of the cooperative O. Hujamov, Senior Vet.Specialist of the District, B. Kurbanyazov, rural community women’s association, specialists of the District Agriculture Department, and local households in Koybak village community.

9. Challenges encountered during the project implementation

Some challenges were encountered when implementing recommended activities related to the creation of the ‘Karakul-Sur’ nucleus flock by the cooperative management:

- The delay in purchasing improved rams (late October 2015), complicated their nutritional preparation for the mating season; supplementation was due to start in mid-August;

- Selection and concentration of the best quality Karakul-Sur ewes in the cooperative were not completed as advised in one flock; the ewes were scattered and finally were assigned in groups of 30-50 heads to the main flocks of the cooperative, we think that this has reduced the use efficiency of the purchased improved rams;
- For a better and more efficient use of the improved rams, it was scheduled to use artificial insemination during the mating season of 2016. Unfortunately, delays in shipping the hormones for synchronization coinciding with an unusual drop in temperatures in the district area forced the management in the cooperative to cancel the AI campaign and to initiate natural mating in the flocks.

The results of each field mission and observations were reported to the District Mayor (Hokim), as well as to the Deputy Minister of Agriculture on Livestock in Karakalpakstan.