Some of the Structural and Technical Features of Sheep Breeding in the Gap Region of Turkey (I. Land Asset, Population, Education, Workforce, Production System, Shelters, Downland and Pasture)

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Abstract: The aim of this study was to determine some of the structural and technical features of sheep breeding in the Southeastern Anatolia Project (GAP) region of Turkey. To reach this aim a survey was carry out in the 251 farms located in 52 villages of 14 districts of 4 provinces including Gaziantep, Sanliurfa, Adiyaman and Diyarbakir provinces in GAP region which were selected by simple random sampling method. As the basis for sheep farming in the GAP region built (84.9%) and upland (15.1%) system has been identified in this study. The results showed that the average of sheep farming was 43.9 years in provinces of this study conducted. In addition, the average of sheep was determined as 105.4 heads and 88% of them were Avassi and 30% of them were White Anatolian, respectively.

Key words: Structural and technical features, sheep breeding, GAP, region, village, Turkey

INTRODUCTION

Turkey's natural resources, geographical conditions and climatic conditions provide an appropriate setting for small ruminant production. While sheep and goat production in Turkey conduct extensive in most cases, the obtained animal products constitute the staple food resources of farms with low income, contribute to farm revenues and create employment opportunities for the labor force (Kaymakci, 2006; Dellal, 1996).

Negative developments experienced in sheep breeding in Turkey have been affecting sheep production in Southeastern Anatolian region. In addition, in recent years, significant changes have occurred in the livestock breeding systems as a result of extraordinary conditions continuing in the region and farmers breeding sheep in nomadic and transhumance systems preferred to settle or dropped out sheep breeding.

Southeastern Anatolia Project (GAP) is one of the most important projects of Turkey. It has been reported that irrigation facilities will be available for approximately 1.8 million ha of agricultural fields in the region in near future after GAP is put into operation. Despite positive effects of irrigation facilities on plant production in the region, it is expected that sheep breeding will be affected negatively depending on decrease which might occur in natural pastoral lands and fallow and stubble lands. Therefore, it is very important that sheep breeding in the

GAP region is not affected negatively by the changes which are expected to occur in near future and/or to bring a more effective structure to this production sector. As a result, structural, economical and social changes which might occur in sheep breeding in the region in the future should be forecasted right now and production policies should be developed based on these forecasts. Therefore, some structural and technical features of the agricultural farms having been in sheep breeding in the GAP region were investigated in the present study. It is believed that the obtained data will contribute significantly to genetic, environmental and social studies to be conducted to making sheep breeding more productive and profitable in the region.

MATERIALS AND METHODS

As the study aims to determine structural and technical features of the agricultural farms having been in sheep breeding, the research material consists of the data collected with the help of questionnaires from the example farms selected through simple random sampling method across the GAP region.

The method practiced in sampling phase: The provinces of Gaziantep, Sanliurfa, Adiyaman and Diyarbakir, their districts and villages representing the GAP region from the point of view of natural factors, sheep asset and

production technique were specified as the research area. Opinions of relevant public stuff who have been working in the region for long years were also considered in specifying provinces, districts and villages representing the research area. The features of land asset, population, education and workforce were analyzed according to farm size as to sheep asset while such kind of classification was not conducted in analyzing the features of production system, shelter, upland and pasture; instead, they were analyzed according to the farms. Considering animal asset distribution in the farms in the villages of these provinces, the agricultural farms having >10 sheep made up the main population. Framework determination forms which were prepared for specifying the population to be made base in sample selecting were completed in all villages representing the area under investigation. Questionnaire studies were conducted in 251 sample farms existing in 52 villages of 14 districts of the provinces of Gaziantep, Sanliurfa, Adiyaman and Diyarbakir. The samples in which questionnaire would be conducted were calculated through simple random sampling method considering the criterion which is number of the sheep existing in the farms from population. The following formula was employed for this purpose (Gunes and Arikan, 1988). Statistical analyses were made by using Mimitab software (Minitab, 2000).

RESULTS

Land asset: As shown in Table 1, it was determined that 13.92, 27.14 and 26.09% of the farms whose herd size are 1-100 heads, 101-200 heads and 201 heads and more, respectively have no land. The 18.73% of the farms have no land in the farms' average. Land asset sizes of the farms are 111.39 decars (da) (1/10 of ha), 101.59 and 102.09 da, respectively according to the herd size and

farms' average is 107.80 da. About 82.56% of the lands are owned by the farm. About 12.23% of them are exploited by the partner and 6.72% of them are hired out. The ratio for the lands rented and hired out is 1.51%.

Land use: Average farm land area is 107.80 da for the studied farms. About 91.25% of it is used as crop land. About 0.41% of it is used for vegetable production, 6.34% of it for fruit production and 2.00% of it is vineyard. As seen, crop lands account for most of the farm land. The 18.4% of this area irrigable while the rest, 81.6% is arid. The highest rate (31.03%) under irrigation is available for the farms having 201 or more sheep. Vegetable lands generally for just the farm's household own demands. In fact, a vegetable field of 0.45 da is available per farmer family in the average farm (Table 2).

Population: As shown in Table 3, average population in the studied farms was between 7.61 and 11.13. This is 10.80 in the average and males account for 53.15% of it while females account for 46.85% of it.

The group in which ages range between 15 and 49 makes up the essential workforce resource in the farms under study and it is the highest ratio (45.93%). The group in which ages range between 7 and 14 (35.19%) and the group in which ages range between 0 and 6 (10.19%) comes after. The 50 or older people's ratio is only 8.70%.

Educational status: Table 4 and 5 show the findings about education level of the population existing in the farms which were studied. As shown in Table 4, 71.54% of those at seven or older are literate according to the farms' average. Among the literate people, literate male population accounts for 84.77% while literate female population accounts for 56.18%. As shown in Table 5, largest portion of the literate population accounts for

Table 1: Land asset and use

Herd size	Own land		Share land		Rented		Lands rented and shared out		Total farm land	
	da	Percentage	da	Percentage	da	Percentage	da	Percentage	da	Percentage
1-100	102.99	92.46	7.58	6.80	3.49	3.13	2.67	2.40	111.39	100.00
101-200	68.06	66.99	17.67	17.39	15.86	15.61	0.00	0.00	101.59	100.00
201 to +	63.26	61.96	34.48	33.77	4.35	4.26	0.00	0.00	102.09	100.00
Average	89.61	82.56	12.86	12.23	7.02	6.72	1.68	1.51	107.80	100.00

Table 2: Land use

Farm size groups	Crop land						Vegetable		Fruit		Vineyard		Total	
	Irrigable		Dry		Total									
	da	Percentage	da	Percentage	da	Percentage	da	Percentage	da	Percentage	da	Percentage	da	Percentage
1-100	20.43	20.24	80.52	79.76	100.95	90.63	0.63	0.57	7.15	6.42	2.66	2.39	111.39	100.00
101-200	9.31	10.09	82.97	89.91	92.28	90.84	0.09	0.09	7.89	7.77	1.33	1.31	101.59	100.00
200 to +	30.65	31.03	68.13	68.97	98.78	96.76	0.30	0.29	1.49	1.46	1.52	1.49	102.09	100.00
Average	18.30	18.40	80.10	81.60	98.33	91.25	0.45	0.41	6.84	6.34	2.18	2.00	107.80	100.00

Table 3: Ages range and workforce gender

	Farm size groups															
	1-100				101-200				201 to +				Average			
Ages range	M	F	T	Percentage	M	F	T	Percentage	M	F	T	Percentage	M	F	T	Percentage
0-6	0.46	0.52	0.98	12.88	0.64	0.64	1.28	14.90	0.78	0.61	1.39	12.49	0.54	0.56	1.10	10.19
7-14	1.07	1.01	2.08	27.33	0.86	1.00	1.86	21.65	1.48	1.57	3.05	27.40	1.86	1.94	3.80	35.19
15-49	1.99	1.62	3.61	47.44	2.66	1.97	4.63	53.90	3.39	2.65	6.04	54.27	2.84	2.12	4.96	45.93
50 to +	0.50	0.44	0.94	12.35	0.41	0.41	0.82	9.55	0.35	0.30	0.65	5.84	0.50	0.44	0.94	8.70
Total	4.02	3.59	7.61	100.00	4.57	4.02	8.59	100.00	6.00	5.13	11.13	100.00	5.74	5.06	10.80	100.00

M: Male; F: Female; T: Total

Table 4: Population accounts for literate (at 7 years old or older) (%)

	Male			Female			General total		
Farm size groups	Not literate	Literate	Total	Not literate	Literate	Total	Not literate	Literate	Total
1-100	13.84	86.16	100.00	42.34	57.66	100.00	27.08	72.92	100.00
101-200	17.42	82.58	100.00	41.59	58.41	100.00	28.57	71.43	100.00
201 to +	18.10	81.90	100.00	60.83	39.17	100.00	37.56	62.44	100.00
Average	15.23	84.77	100.00	43.82	56.18	100.00	28.46	71.54	100.00

Table 5: Educational state of population (at 7 years old or older) (%)

	General total						
Farm size groups	Illiterate	Literate	Primary school	Junior high school	High school	University	Total
1-100	27.08	3.95	58.59	6.13	3.56	0.69	100.00
101-200	28.57	2.65	57.35	5.72	5.10	0.61	100.00
201 to +	37.56	4.69	49.77	5.63	1.88	0.47	100.00
Average	28.46	3.66	57.44	5.97	3.84	0.65	100.00

Table 6: Average Workforce Unit (AWU)

	Family workforce									Ratio to	Foreign workforce			
	Age groups													
	7-14		15-49		50 to +		Total		Workforce in production	current workforce	Permanent	Temporary	Total	Total
Farm size groups	AWU	Percentage	AWU	Percentage	AWU	Percentage	AWU	Percentage	AWU	percentage	AWU	AWU	AWU	AWU
1-100	1.04	21.44	3.21	66.19	0.60	12.37	4.85	100.00	3.98	82.06	0.22	0.58	0.80	4.78
101-200	0.93	16.64	4.14	74.06	0.52	9.30	5.59	100.00	4.80	85.87	0.13	0.09	0.22	5.02
201 to +	1.52	20.79	5.38	73.60	0.41	5.61	7.31	100.00	4.90	67.03	0.22	0.05	0.27	5.17
Average	1.05	20.04	3.67	69.06	0.56	10.90	5.28	100.00	4.29	81.75	0.19	0.39	0.59	4.88

those who are elementary school graduates and still studying at elementary school in the farm size groups and the farms' average. This is 57.44% in the farms' average. According to the farms' average, the ratio for those who are junior high school, high school and university graduates and still studying at them is 5.97, 3.84 and 0.65%, respectively.

Workforce: According to the estimations conducted by considering population's achievement capacity in completing a work from the point of view of age groups and gender, it was determined in the farms' average that the farms have 5, 28 Average Work Unit (AWU). The highest share in total belongs to the group including those whose ages range between 15 and 49 with 69.06%. This is followed by the age groups of 7-14 with 20.04% and 50 plus with 10.90%. Because work maximums occur in the farms in certain time periods not only the farms with

insufficient family workforce but also those which are sufficient, hire workforce. Temporary labor accounts for significant part of outsourced workforce in the farms studied. About 13.75% of the total working workforce is outsourced according to the farms' average. It was seen that the highest outsourcing rate exists in the largest farms' group (Table 6).

Production system, the races who are bred and herd size: It was determined that sheep breeding are mostly conducted in settled way in the provinces which were included in the study (84.9%). Nomadic way in sheep breeding was not seen and transhumance system was at low ratios (15.1%). The ratio of the farms which are engaged in sheep breeding in settled way, in the provinces, Diyarbakir, Sanliurfa, Gaziantep and Adiyaman, in which the study was conducted is 84.2, 82.2, 100.0 and 75.5%. Only Gaziantep varied from the others significantly

Table 7: Herd size, production system and breeding races

| | | Production system | | | | | | Herd size | Professional | Breeding races | | | | | |
| | | Settled way | | Transhumance | | Nomadic | | | experience in | Red Anatolian | | White Anatolian | | Avassi | |
Provinces	N	N	%	N	%	N	%	Head	breeding	N	%	N	%	N	%
Diyarbakir	76	64	84.2[A]	12	14.5	-	-	90.9	44.0	11	14.5	28	36.80[a]	58	76.3[Ac]
Sanliurfa	73	60	82.2[A]	13	17.8	-	-	152.9	39.5	-	-	6	8.23[b]	67	92.0[BCa]
Gaziantep	49	48	100.0[B]	-	-	-	-	85.6	35.4	-	-	23	47.00[a]	49	100.0[Cb]
Adiyaman	53	40	75.5[A]	13	24.5	-	-	92.3	56.5	-	-	18	34.00[a]	47	88.7[ABac]
General	251	213	84.9	38	15.1	-	-	105.4	43.9	11	4.4	75	30.00	221	88.0

[a, b]Means in the same column denoted by the different letters differ significantly (p<0.05), [A, B] Means in the same column denoted by the different letters differ significantly (p<0.01)

Table 8: Shelters' structural features

| | | Shelters location | | | | | | Shelters type if independent | | | |
| | | Under the house | | Next to house | | Independent | | Indoor | | Semi-open | |
Provinces	N	N	%	N	%	N	%	N	%	N	%
Diyarbakir	76	25	32.9[A]	42	55.3[aA]	9	3.6[Aa]	8	88.9[Aa]	1	11.1[A]
Sanliurfa	73	2	2.7[B]	27	37.0[bAB]	44	60.3[Bb]	35	79.5[B]	9	20.5[B]
Gaziantep	49	14	28.6[A]	26	53.1[abA]	9	18.4[Aa]	7	77.8[Aa]	2	22.2[AB]
Adiyaman	53	42	79.2[C]	11	20.8[Bc]	-	-	-	-	-	-
General	251	83	33.1	106	42.2	62	24.7	50	80.6	12	19.4

[a, b]Means in the same column denoted by the different letters differ significantly (p<0.05), [A, B]Means in the same column denoted by the different letters differ significantly (p<0.01)

from the point of view of this feature (p<0.01) (Table 7). Farmers who live in Ceylanpinar of Sanliurfa, migrate to rented stubble lands existing in Viranþehir district and/or Mardin's Kiziltepe and Nusaybin districts in summer time for benefiting from stubbles. During winter time, they mostly use rare pastures existing in the district and/or rented lands in Ceylanpinar agricultural state farm. Although, these farmers are called nomads, they do not have general characteristics of nomadic stock breeding.

It was determined that essential sheep races which are bred in the studied provinces are Avassi, White Anatolian and Red Karaman. Avassi is mostly preferred sheep race for breeding (88%). Avassi sheep race is bred most intensively in Gaziantep (100%), Sanliurfa (92.0), Adiyaman (88.7) and Diyarbakir (76.3%), respectively and variations are significant between provinces except the variation between Adiyaman city and Diyarbakir as well as Sanliurfa (p<0.05, p<0.01). This race is followed by White Anatolian (30.0%) and Red Anatolian (4.4%), respectively (Table 7). White Anatolian sheep race is mostly bred in Gaziantep (47.0%), Diyarbakir (36.8%), Adiyaman (34.0%) and Sanliurfa (8.23%), respectively and the variations between Sanliurfa and other provinces are significant with respect to this race (p<0.01). It was understood that Red Karaman sheep race is bred only in Diyarbakir (14.5%) (Table 7).

Sheep number in the farms which were investigated in the present study, in provinces of Diyarbakir, Sanliurfa, Gaziantep and Adiyaman is 90.9, 152.9, 85.6 and 92.3, respectively. This number is 105.4 in general of provinces. Sheep number in Sanliurfa is higher compared with other provinces because sheep breeding business is more intensive in this city especially in its Ceylanpinar and Siverek districts (Table 7).

Sheep breeders in provinces in which this study was implemented, Diyarbakir, Sanliurfa, Gaziantep and Adiyaman have been active in this business for averagely 44.0, 39.5, 35.4 and 56.5 years, respectively. This is 43.9 in general of provinces with respect to this feature (Table 7). As seen, age groups which may be assumed young, operate in sheep and goat breeding in all provinces under study.

Shelters' structural features and additional buildings: Table 8-10 show the findings about shelters' structural features and Table 10 shows findings about additional buildings also. It was seen that shelters take place generally under the house (33.1%), next to the house (42.2%) and are independent from the house (24.7%). Among the said provinces, variations are significant between the provinces except the variation between Diyarbakir and Gaziantep relating to that the shelter exists under the house (p<0.01). Variations are also significant between the provinces except the variation between Gaziantep and Diyarbakir as well as Sanliurfa (p<0.05, p<0.01). Independent shelter type was not seen in Adiyaman. The variations are significant between Sanliurfa and Diyarbakir as well as Gaziantep with respect to this type of shelter (p<0.05, p<0.01). The variations are significant between Sanliurfa and Diyarbakir as well as Gaziantep with respect to presence of indoor shelters (p<0.01). As shown in the Table 10, 80.6% of independent

Table 9: Shelters' structural features

		Shelters' floor				Shelters' wall								
		Concrete		Soil		Brick-briquette		Mud brick		Stone		Wood	
Provinces	N	N	%	N	%	N	%	N	%	N	%	N	%
Diyarbakir	76	4	5.3	72	94.7^{ABa}	8	10.5^{a}	17	22.4	51	67.1^{aAC}	-	-
Sanliurfa	73	7	9.6	66	90.4^{Ba}	16	21.9^{b}	23	31.5	34	46.6^{bAD}	-	-
Gaziantep	49	-	-	49	100.0^{Ab}	14	28.6^{ab}	13	26.5	21	42.9^{bBD}	1	2.0
Adiyaman	53	3	5.7	50	94.3^{ABab}	11	20.8^{b}	-	-	42	79.2^{aC}	-	-
General	251	14	5.6	237	94.4	49	19.5	53	21.1	148	59.0	1	0.4

^{a,b}Means in the same column denoted by the different letters differ significantly (p<0.05); ^{A,B}Means in the same column denoted by the different letters differ significantly (p<0.01)

Table 10: Shelters' structural features and additional buildings

				No. of					Additional buildings					
		Ventilation hood		ventilation hood	No. of windows	Shelter size (average) (m)			Milking house		Feed storage		Sheep bathing	
Provinces	N	N	%	(average)	(average)	Width	Length	Height	N	%	N	%	N	%
Diyarbakir	76	9	11.80^{AB}	4.0	4.8	6.3	10.3	2.0	1	1.3	39	51.3^{A}	1	1.3
Sanliurfa	73	17	23.30^{aA}	3.5	4.5	11.5	15.0	2.2	3	4.1	43	58.9^{Aa}	4	5.5
Gaziantep	49	5	19.2b^{AB}	3.0	4.7	8.0	9.5	2.9	-	-	20	40.8^{Ab}	-	-
Adiyaman	53	3	5.70^{B}	3.0	2.7	8.0	8.0	2.9	-	-	47	88.7^{B}	-	-
General	251	34	13.50	3.5	4.2	8.5	11.0	2.4	4	1.6	149	59.4	5	2.0

^{a,b}Means in the same column denoted by the different letters differ significantly (p<0.05); ^{A,B}Means in the same column denoted by the different letters differ significantly (p<0.01)

shelters are close and 19.4% of them are semi-open. The variations are significant between Diyarbakir and Sanliurfa with respect to presence of semi-open shelters (p<0.01). Open shelters were not seen in any city among those under study (Table 8). It was seen that 94.4% of floors of shelters is made of soil and 5.6% of them is made of concrete. The variations are significant between Gaziantep and Diyarbakir as well as Sanliurfa with respect to presence of shelters with soil floors (p<0.05, p<0.01). Essential materials used in wall construction of shelters are stone (59%), mud brick (21.1%), brick-briquette (19.5%) and wood (0.4%). The provinces in which stone is most intensively used as wall material among provinces are Adiyaman (79.2%), Diyarbakir (67.1%), Sanliurfa (46.6) and Gaziantep (42.9%), respectively. The variations are significant between Adiyaman and Sanliurfa and Gaziantep as well as Gaziantep and Diyarbakir and Sanliurfa with respect to stone usage rate in wall building (p<0.05, p<0.01). The variations are significant between Diyarbakir and Sanliurfa with respect to brick usage rate in wall building (p<0.05). Also it was determined that mud brick was never used in wall building in Adiyaman. Roofs of shelters are mostly made of tile (0.4%), wood (41.3%), soil (66.5%) and nylon-tin (17.9%) (Table 9).

It was determined in the study that 88.2, 76.7, 80.8 and 94.3% of the sheep breeding farms under study have no ventilation hood in their shelters in Diyarbakir, Sanliurfa, Gaziantep and Adiyaman, respectively. The variations are significant between Adiyaman and Sanliurfa and Gaziantep as well as Sanliurfa and Gaziantep and Adiyaman with respect to this feature (p<0.05, p<0.01).

Farms with ventilation hood were mostly seen in Sanliurfa (23.3%). Average number of ventilation hoods is 4, 3, 5, 3 and 3 in Diyarbakir, Sanliurfa, Gaziantep and Adiyaman, respectively and this is averagely 3.5 in general of provinces (Table 10).

It was determined that windows exist in all sheep shelters owned by the farms under study in Diyarbakir, Sanliurfa, Gaziantep and Adiyaman provinces. Window number is 4.8, 4.5, 4.7 and 2.7 according to the provinces, respectively and this is averagely 4.2 in general of provinces (Table 10).

Average values about width, length and height of shelters in Diyarbakir, Sanliurfa, Gaziantep and Adiyaman which are the provinces in which the study was conducted are 6.3, 10.3, 2.0; 11.5, 15, 2.2; 8, 9.5, 2.9 and 8, 8 and 2.9 m. The said value is averagely 8.5, 11 and 2.4 m in general of provinces (Table 10).

Warehouses for feed exist in the farms in all provinces which were included in the study in addition to shelters however, milking stops and bathing places exist only in the farms in Diyarbakir and Sanliurfa. Feed warehouse presence ratio is 51.3, 58.9, 40.8 and 88.7% in the farms in Diyarbakir, Sanliurfa, Gaziantep and Adiyaman provinces, respectively. The variations are significant between Adiyaman and the other provinces and also between Sanliurfa and Gaziantep with respect to presence of feed warehouse (p<0.01, p<0.05) (Table 10).

Ratio for presence of milking stop and bathing place are quite low in the farms in Diyarbakir and Sanliurfa (1.3; 1.3 and 4.1; 5.5%, respectively). This ratio is 1.6 and 2.0% and are generally shared (Table 10).

Table 11: Ownership and utilization of pasture

Provinces	N	Utilization rate from pasture		Common pasture of the village				Rent pasture				Forest and scrubs			
		N	%	N	%	Extent (da)	Distance (km)	N	%	Extent (da)	Distance (km)	N	%	Extent (da)	Distance (km)
Diyarbakir	76	76	100.0^A	67	88.2^aAD	15382.0	1.8	7	9.2	407.0	0.5	2	2.6^A	33000.0	5.0
Sanliurfa	73	45	62.0^B	45	61.6^B	37700.0	4.0	-	-	-	-	-	-	-	-
Gaziantep	49	25	51.0^B	11	22.4^C	914.0	1.4	-	-	-	-	14	28.6^B	15717.0	0.3
Adiyaman	53	53	100.0^A	52	98.1^bD	9718.0	1.2	1	1.9	30.0	0.5	2	3.8^A	10000.0	1.0
General	251	199	79.3	175	69.7	15928.5	2.1	6	2.4	218.5	0.5	18	7.2	19572.3	2.1

A, B Means in the same column denoted by the different letters differ significantly (p<0.01)

Table 12: Round trip time and type to pasture

Provinces	N	Time to go to pasture						Time to return from pasture						Round trip type					
		March		April		May		October		November		December		Tek aile surusu		Ortak suru		Koy surusu	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Diyarbakir	76	18	23.7^aAB	54	71.1^aAB	4	5.3	17	22.4	48	63.1^A	11	14.5	53	69.7	32	42.1	-	-
Sanliurfa	45	25	55.6^bC	20	44.4^bC	-	-	-	-	7	15.5	38	84.5^B	-	-	27	60.0	18	40.0	-	-
Gaziantep	25	7	28.0^aAC	18	72.0^aAC	-	-	-	-	-	-	25	100^C	-	-	18	72.0	7	28.0	-	-
Adiyaman	53	17	32.1^aA	36	67.9^aA	-	-	14	26.4	27	50.9^A	12	22.6	37	70.0	-	-	16	30.0
General	199	67	33.7	128	64.3	4	2.0	38	19.1	138	69.3	23	11.6	135	67.8	57	28.6	16	8.0

Table 13: Ownership and utilization of downland

Provinces	N	Those who benefit from downland		Common downland of the village				Rent downland			
		N	%	N	%	Extent (da)	Distance (km)	N	%	Extent (da)	Distance (km)
Diyarbakir	76	12	16	8	67.0	-	10.0	4	33	500	10
Sanliurfa	73	13	18	13	17.8	-	9.0	-	-	-	-
Gaziantep	49	-		-	-	-	-	-	-	-	-
Adiyaman	53	13	25	13	100.0	-	-	-	-	-	-
General	251	38	15	34	89.0	-	9.4	4	11	500	10

State of benefiting from pasture and time for moving to pasture and returning back: As shown in Table 11, the sheep breeding farms which were investigated in the GAP region, benefit from pasture fields intensively (79.3%). As shown in the Table 11, most of the farms benefiting from pasture in general of the farms, use pastures which are common assets of villages (69.7%). The ratio of the farms benefiting from forests and bushes as pasture and rental pastures is 7.2 and 2.4%, respectively however, any farm having a private pasture was not determined. The variations between all provinces are significant with respect to ratio of the farms benefiting from common pastures in villages while the variations are significant between Gaziantep and Diyarbakir as well as Adiyaman with respect to the ratio of farms benefiting from forests and bushes (p<0.01, p<0.05).

In general of farms, sizes of forests and bushes which are exploited as pasture besides common pastures in villages and rental pastures are averagely 15928.5, 218.5 and 19572.3 da. In general of farms, the distance between center of village and pastures was determined as averagely 2.1 km.

As shown in Table 12, in general of the provinces included in the study, it was observed that the farms under study start to benefit from pastures essentially in March (33.7%), April (64.3%) and May (2%) and they

return back in October (19.1%), November (69.3%) and December (11.6%). However, the farms which start to benefit from pastures in May, exist only in Diyarbakir. The variations are significant between all provinces except those between Sanliurfa and the other provinces with respect to going to pastures in March and April and those between Diyarbakir and Adiyaman with respect to returning back (p<0.05, p<0.01).

As shown in the Table 14, most of the farms take only their own families' herds to pastures and return them back (67.8%). The ratio of the farms which drive their herds to pasture within a common herd and village's common herd is 28.6 and 8%. Variations between provinces are not significant with respect to the ways adopted for moving to pasture.

State of benefiting from uplands and time and way in moving up and returning back: As shown in Table 13, most of the farms which were investigated in the GAP Region do not benefit from uplands (85%). As shown in the Table 13, in general of the provinces, 89% of the farms benefiting from uplands exploit common uplands of villages while the rest accounting for 11% rent uplands. The ratios of the farms benefiting from uplands according to the provinces are Adiyaman (100%), Sanliurfa (18%) and Diyarbakir (16%) in order of intensiveness and sheep

Table 14: Round trip time and type to downland

		Time to go to downland						Time to return from downland						Round trip type					
		April		June		July		September		October		November		Family Herd		Common herd		Village herd	
Provinces	N	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Diyarbakir	12	4	41.7	-	-	7	58.3^A	-	-	5	41.7^{aA}	7	58.3	9	75.0	3	25.0^A	-	-
Sanliurfa	13	-	-	13	100.0	-	-	-	-	13	100.0^B	-	-	-	-	13	100.0^B		
Gaziantep	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adiyaman	13	-	-	12	92.3	1	7.7^B	-	-	1	7.7^{bA}	-	-	12	92.3	-	-	1	7.7
General	38	5	13.2	25	65.8	8	21.1	12	31.6	19	50.0	7	18.4	21	55.3	16	42.1	1	2.6

breeders do not benefit from uplands in Gaziantep. In general of the provinces, most of the farms (89%) benefiting from uplands exploit common uplands of villages. The rest accounting for 11% rent uplands and they exist only in Diyarbakir. According to the provinces, among the farms benefiting from uplands, the ratio of those benefiting from common uplands of villages is 67.0, 17.8 and 100% in Diyarbakir, Sanliurfa and Adiyaman, respectively.

Reliable data could not be collected about sizes of common uplands of villages in general of provinces. However, as mentioned above, rental uplands exist only in Diyarbakir and they cover averagely 500 da. Also in general of provinces, the distance between common uplands of village and village center is averagely 9.4 and 10 km. According to the provinces, the distance between rental as well as common uplands and village center is 10 km in Diyarbakir and the distance between common uplands of village and village center is 9.0 km in Sanliurfa.

As shown in Table 14, in general of provinces, moving to uplands starts essentially in April (13.2%), June (65.8%) and July (21.1%) and they are left in September (31.6%), October (50%) and November (18.4%). The variation between Diyarbakir and Adiyaman was considered significant with respect to the ratio of moving to uplands in July (p<0.01). As shown in the Table 14, in general of provinces, breeders drive only their own herd (55.3%) within a common herd (42.1%) and building up a village herd (2.6%). According to the provinces, single family herds are moved to uplands in Diyarbakir (75%) and Adiyaman (92.3%). Common herds are moved to uplands in Diyarbakir (25%) and Sanliurfa (100%). Farms which benefiting from pasture within a common village herd, exist only in Adiyaman (7.7%). Variations seen between Diyarbakir and Sanliurfa in which breeders build up common village herds for moving to pasture were considered significant (p<0.01).

DISCUSSION

In the studied farms in GAP Region owned land farms was determined as 89.61 da. However, owned land size tends to decrease when the number of the sheep which are bred in the farms. Average farm land is 107.80 da. This is below under the value which is 104.8 da in the GAP Region (Anonymous, 2001). In general of the farms, dry agriculture is practiced in 80.10 da of the agricultural fields however, sizes of the fields in which vegetable, fruits and grapes are produced are very low. The most noticeable point relating to vegetable production in the farms under study is lack of feed production in these farms. This is very important because these farms are engaged essentially in sheep breeding. Farm owners and other breeders pointed out essentially insufficiency in water and field among reasons for not growing feed in the interviews however, lack of information on how feed is important in livestock breeding was also observed. It was seen that stubble lands are ultimately important feed resources in the provinces in which the present study was implemented. In fact, stubble lands are exploited basically instead of pasture in places in which pastoral lands do not exist or not sufficient especially in Sanliurfa as well as Gaziantep and Diyarbakir. Therefore, seeking ways for benefiting from stubble more efficiently in these regions and putting them into practice will significantly contribute to reducing feed costs in agricultural farms breeding sheep also.

Population per farm is averagely 10.80 person in sheep breeding farms in the GAP region and males account for 53.15% of it while females account for 46.85% of it. Populations of the farms are their workforce assets also and 81.12% of people are at the age ranging between 7 and 49 considered active in the studied farms. Accordingly, it might be said that a significant young population potential is available with respect to workforce.

Literacy ratios estimated in general and separately for males and females (84.77, 56.18 and 71.54%, respectively) existing in the investigated farms are lower than the average estimated for Turkey in general (93.86, 80.64 and 87.30%, respectively) (TurkStat, 2010). However, 57.44% of the populations in the farms are elementary school graduates; 5.97% of them are junior high school graduates; 3.84% of them are high school graduates; 0.65% of them are university graduates and we may assume that significant population which can learn and practice important information on sheep breeding is available.

Workforce asset of the farms is 5.28 AWU and most of it (69.06%) consists of the age group of 15-49. According to this finding, we may say that a significant young workforce is available for working for sheep breeding in the farms.

It was determined that sheep breeding are mostly conducted in settled way in the provinces which were included in the study (84.9%). Nomadic way in sheep breeding was not seen and transhumance system was at low ratios (15.1%). The reason may be the fact that in recent years, significant changes have occurred in the live-stock breeding systems as a result of extraordinary conditions continuing in the region and farmers breeding sheep in nomadic and transhumance systems preferred to settle or dropped out sheep breeding.

Sheep breeders in the provinces in which this study was implemented have been active in this business for averagely 43.9. Average sheep number for the farms which were investigated in the present study is 105.4 in general of provinces. It was investigated that sheep races of Avassi (88.0%) and White Anatolian (30.0%) are mostly bred. Breeding frequency of the mentioned races and the species included in the races (White Anatolian, yellow and black head Avassi) varies between the provinces in which the study was conducted due to various reasons. Therefore, why the breeders prefer to breed these races and also efficiency performances of these races in different regions should be studied and suitable race (s) should be determined for each region.

Sheep races of Avassi (88.0%) and White Anatolian (30.0%) are mostly bred by the farms under study. However, breeding frequency of the mentioned races and the species included in the races may vary due to various reasons. However, breeding mostly Avassi and White Anatolian sheep may be deemed natural considering the region's geographical and climatic conditions as well as these sheep races' biological features. Different production systems in sheep breeding will occur depending on changes which might occur in vegetable production as a result of increase in water use in agriculture in the near future in the provinces in which the study was conducted. Therefore, testing usability of different pure bred and cross bred sheep races besides Avassi and White Anatolian sheep races in these systems will significantly contribute to sheep breeding in the region.

About 88.4% of sheep shelters are owned by real persons in the provinces in which the study was conducted and were mostly built under or next to their houses. Shelters built up independent from houses are mostly close (24.7%). Shelters mostly exist in villages (95.2%) and do not have normal sizes and conditions. Efforts should be made for improving conditions of shelters in the provinces in which the study was conducted. For this purpose, ways should be searched for building cheaper and more useful shelters by using the materials especially stone available in the region.

Pastures are generally common assets of villages in the provinces in which the study was conducted and the distance between them and village centers may be deemed short. Therefore, breeders generally act individually in moving to and returning from pastures.

CONCLUSION

This study shows that among the provinces in which the study was conducted, sheep breeding in transhumance way is generally seen in Diyarbakir, Sanliurfa and Adiyaman. All uplands in these provinces are common assets of villages and they are 10 km far from villages. Uplands of Diyarbakir and Sanliurfa mostly exist in Karacadag region while breeders living in Adiyaman generally go to the uplands taking place in Gerger district and Akdaglar region taking place between Malatya and Adiyaman.

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