

SOME FACTORS AFFECTING BREED SELECTION OF LIVESTOCK FARMS IN SIIRT PROVINCE

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Abstract

This study investigates factors such as location, altitude, number of animals and number of employees influential in breed preferences of sheep and goat farms in and around Siirt. Research material was formed from a survey carried out in 286 enterprises in Siirt and 6 districts. Data were analysed using SPSS 20.0 software package. Breeds reared in farms are varying by location, in such districts as Centrum, Baykan and Kurtalan with low altitude, hair goats were not preferred, while in places like Eruh, Pervari and Şirvan with rich pasture and high altitude hair goats were preferred intensely. Inbreed preference of farms animal number was found significant ($p < 0.01$). It was found 42.5% of hair goats and 64.3% of Awassi ewes in farms with 26-50 animals, while in farms with 250 and more animals no hair goats was found. Satisfaction case in farms was different according to education level of farmers. Hence, 94.7% of uneducated farmers were satisfied with the reared breed. This rate was 98.3% in primary school graduates, 96.6% in secondary school graduates and increased to 100% in high school graduates. In cattle breed preferences Kurtalan and Pervari districts preferred exotic cattle in the close rates (%35.9, %33.3), also it was pointed out that the both districts had different altitudes. Again, the low percent of native breed and zero crossbreed cattle in Kurtalan district was found significant. Influential factors as location, number of employees in the farm, education, farming duration ($p < 0.01$), altitude and age ($p < 0.05$) were found significant in farms' cattle breed preferences. With this study made in sheep and goat farms located in Siirt, the impact of the investigated factors in breed selection was found significant. Considering the potential of the livestock in Siirt, it is concluded that in giving directions to the livestock in Siirt, these factors must be taken into account.

Key words: sheep and goat breeds, cattle breeds, Siirt.

INTRODUCTION

Sheep and goats come to the forefront with their ability to adapt to insufficient pasture and unfavourable climatic conditions, and this situation is especially important for developing countries. Sheep and goats that can benefit from the pasture in the best way, utilise the pasture in the best way and can use the pasture in every period of the year are suitable for the geographical structure of Turkey and Siirt. The fact that sheep and goats adapt to areas where agricultural production is unproductive in a short time turns this disadvantage into an opportunity in developing countries like Turkey (DAKA, 2012). Ovine-caprine animal breeding is commonly performed in Siirt province as well as throughout the Southeastern region. Holstein cattle, with dairy features, constitute a significant part of culture breed cattle raised in Turkey, and it is followed by Brown Swiss, Jersey and Simmental cattle. Native Black, Eastern Anatolian Red and Southeastern

Anatolian Red cattle breeds constitute a significant portion of the indigenous breeds. Cross-breed genotypes are usually obtained by crossing culture breeds with indigenous breeds (TİGEM, 2013).

This study was carried out to determine the breed preferences of sheep-goats and bovine animal enterprises in Siirt province and its districts and to investigate some factors such as altitude, location, the number of animals, the number of employees in the enterprise that affect breed preferences.

MATERIALS AND METHODS

Siirt province has an area of 11,003 km², and the surface area of Siirt Province decreased to 6,186 km² after the change in the borders in 1990. Siirt, which is located on 41°57' east longitude and 37°55' north latitude in the Southeastern Anatolia Region, is surrounded by the provinces of Şırnak and Van from the east, Batman and Bitlis from the north, Batman from

the west, Mardin and Şırnak from the south (Figure 1). Most of the province's territories are covered with mountains. The Muş South Mountains in the north and the Siirt East Mountains in the east are the mountain ranges that form the natural borders of the province.



Figure 1. The map of Siirt Province (Saygılı, 2015)

The villages representing the provinces to determine the breed preferences of the livestock owners were determined by the opinion of veterinarians working in the region. The 57 villages surveyed and 286 questionnaires were determined to best represent the districts of Merkez, Kurtalan, Baykan, Pervari, Eruh, Şirvan and Tillo in Siirt province. Data were collected by questionnaire during May - December 2015 period from migration and permanent livestock enterprises registered in Siirt region. The questionnaire forms prepared for the purpose of the research were filled in personally by the researchers themselves. Survey analysis was performed by SPSS Statistical package version 20.0.

RESULTS AND DISCUSSIONS

Location, the number of animals, the number of workforce in the enterprise, and altitude were determined to be significant factors in the breed selection of enterprises ($p < 0.01$). Hair goat is not preferred in districts such as Merkez (Central), Baykan and Kurtalan, which are lower in altitude than the other districts. However, hair goat is preferred more intensively in regions such as Pervari, Şirvan and Eruh, which are high in altitude and rich in pasture. While Awassi sheep are raised intensively in Baykan district, it is observed that Hamdani sheep are raised only by 5.6% in this district.

Hamdani sheep are raised in Şirvan, Pervari and Eruh districts, which are relatively high in altitude compared to the others and rich in pasture.

The number of animals is observed to be a significant factor in the breed preference of enterprises. While hair goat (42.5%) and Awassi sheep (64.3%) are intensively present in enterprises with 26-50 animals, hair goat is not present in enterprises with the number of animals over 250.

Since Hamdani sheep are the most preferred breed in the region, it is present in all groups although it is intensively raised in herds with 51-100 animals by 31.5% (Table 1). In a study carried out in Van province, while hair goat is raised in ovine-caprine animal enterprises by 79.68%, Norduz goat is raised by 20.32% (Karakuş and Akkol, 2013).

Table 1. The effect of location and animal numbers to the breed of sheep and goats of Siirt Province

		Location**							Total	Animal number**						Total
		Centre	Baykan	Şirvan	Pervari	Tillo	Eruh	Kurtalan		0-25	26-50	51-100	101-250	251-500	500 and above	
Hair goat	N	2	2	7	15	0	11	3	40	6	17	9	8	0	0	40
	%	5	5	17.5	37.5	0	27.5	7.5	100	15	42.5	22.5	20	0	0	100
Awassi	N	0	12	2	0	0	0	0	14	2	9	1	2	0	0	14
	%	0	85.7	14.3	0	0	0	0	100	14.3	64.3	7.1	14.3	0	0	100
Hamdani hybrid	N	23	13	48	58	11	41	38	232	14	60	73	48	19	18	232
	%	9.9	5.6	20.7	25	4.7	17.7	16.4	100	6	25.9	31.5	20.7	8.2	7.8	100
Total	N	25	27	57	73	11	52	41	286	22	86	83	58	19	18	286
	%	8.7	9.4	19.9	25.5	3.8	18.2	14.3	100	7.7	30.1	29	20.3	6.6	6.3	100

**: $p < 0.01$, *: $p < 0.05$ significance level

Altitude is an important factor in breed preference ($p < 0.01$). According to this, hair goat is grown intensely (42.5%) in the 1312-1590 m altitude enterprises, whereas there are no Awassi sheep in the enterprises at this altitude. While Hamdani sheep was grown at 35.8% at this altitude, it has been determined that there are different rates at each altitude.

While hair goat is grown at 52.5% in the enterprises where the number of employees is 1-2, hair goat breeding rate decreases as the number of employees increases and sheep rate increases rapidly. While Awassi sheep breeding centred in the number of employees with 5-6 employees, Hamdani breeding is centred in 1-4 groups (Table 2).

Table 2. The effect of altitude and employee numbers to the breed of sheep and goats of Siirt Province

		Altitude**					Total	Employee numbers**					Total
		475-753	754-1032	1033-1311	1312-1590	1591-1869		1-2	3-4	5-6	7-8	9+	
Hair goat	N	4	10	9	17	0	40	21	11	6	0	2	40
	%	10	25	22.5	42.5	0	100	52.5	27.5	15	0	5	100
Awassi	N	12	0	2	0	0	14	1	3	7	0	3	14
	%	85.7	0	14.3	0	0	100	7.1	21.4	50	0	21.4	100
Hamdani hybrid	N	26	78	36	83	9	232	90	84	33	11	14	232
	%	11.2	33.6	15.5	35.8	3.9	100	38.8	36.2	14.2	4.7	6	100
Total	N	42	88	47	100	9	286	112	98	46	11	19	286
	%	14.7	30.8	16.4	35	3.1	100	39.2	34.3	16.1	3.8	6.6	100

**: $p < 0.01$, *: $p < 0.05$ significance level

Breeders' satisfaction with the current breeds in their enterprises was examined. Accordingly, while 97.2% of the breeders expressed satisfaction with the current breeds, only 2.8% of them said that they were not satisfied. The state of satisfaction in enterprises differed by the educational levels of managers. Accordingly, while 94.7% of managers without education were satisfied with the breed they raised, this ratio increased to 98.3% in primary school, 96.6% in secondary school and 100% in high school. Furthermore, satisfaction varied by the level of altitude at which the enterprises were located. While all managers at low altitudes (475-753 m) were satisfied with the breed they raised, the state of satisfaction decreased to 94% when the altitude level increased to 1312-1590 m. Managers' states of dissatisfaction with the breed they raised were examined. Accordingly, while the yield problem ranked first by 88.9%, feed supply and price were determined to be the second factor by 11.1%.

While Kurtalan and Pervari districts preferred culture breed in the preference of cattle breeds at close ratios (35.9%, 33.3%), it was remarkable that both districts were different from each other in terms of the settlement. It was also found to be significant that Kurtalan district did not demand cross breeds and demanded indigenous breeds at a low rate. The fact that indigenous breeds are intensively preferred in Erüh district is thought to be associated with the socio-economic nature of the district. It is observed that the demand for culture breeds decreases as the number of employees in the enterprise increases and that the enterprises with 1-2 and 3-4 employees demand culture breeds at most. It was found out that the enterprises demanding cross breeds were intensively the enterprises with 1-2 employees, and that the demand for cross breeds decreased with the increase in the number of employees (Table 3).

Table 3. The effect of location and employee numbers to the breed of cattle of Siirt Province

		Location**							Total	Employee numbers**					Total
		Centre	Baykan	Şirvan	Pervari	Tillo	Eruh	Kurtalan		1-2	3-4	5-6	7-8	9+	
Culture breed	N	1	5	13	28	2	3	26	78	29	24	13	5	7	78
	%	1.3	6.4	16.7	35.9	2.6	3.8	33.3	100	37.2	30.8	16.7	6.4	9	100
Hybrid	N	1	0	1	3	3	1	0	9	6	2	0	1	0	9
	%	11.1	0	11.1	33.3	33.3	11.1	0	100	66.7	22.2	0	11.1	0	100
Native breed	N	8	10	18	1	0	37	2	76	25	41	9	0	1	76
	%	10.5	13.2	23.7	1.3	0	48.7	2.6	100	32.9	53.9	11.8	0	1.3	100
Total	N	10	15	32	32	5	41	28	163	60	67	22	6	8	163
	%	6.1	9.2	19.6	19.6	3.1	25.2	17.2	100	36.8	41.1	13.5	3.7	4.9	100

**: $p < 0.01$, *: $p < 0.05$ significance level

A significant ($p < 0.05$) relationship was found between the altitude at which the enterprises were located and the preferred breed. Accordingly, culture and cross breeds were determined to be raised in enterprises in the districts such as Pervari and Şirvan with a relatively higher altitude at close ratios. It is observed that indigenous breeds are preferred in enterprises with a very high altitude (1592-1869 m) at a lower ratio (3.9%) and are generally raised at close ratios in enterprises with other altitudes. When it was taken into account that the educational backgrounds of managers generally consisted of primary,

secondary education graduates and illiterate and that there were only 7 high-school graduate managers, it was found out that 64.1% of those who preferred culture breeds were primary school graduates. The fact that those without education did not raise cross breeds attracted attention (Table 4). In a study in which the breed preferences of feeder cattle enterprises in Ergani district were investigated, while illiterate managers preferred indigenous breeds (48.5%), it was observed that the preference for indigenous breeds increased from primary school to high school (52.6%, 75.0% and 92.3%) (Han and Bakır, 2009).

Table 4. The effect of altitude and education to the breed of cattle of Siirt Province

		Altitude*					Total	Education**				Total
		475-753	754-1032	1033-1311	1312-1590	1591-1869		Not educated	Primary school	Secondary school	High school	
Culture breed	N	6	30	7	32	3	78	15	50	8	5	78
	%	7.70	38.50	9.00	41.00	3.80	100.00	19.20	64.10	10.30	6.40	100.00
Hybrid	N	1	3	1	4	0	9	0	4	4	1	9
	%	11.10	33.30	11.10	44.40	0.00	100.00	0.00	44.40	44.40	11.10	100.00
Native breed	N	16	24	17	16	3	76	20	52	3	1	76
	%	21.10	31.60	22.40	21.10	3.90	100.00	26.30	68.40	3.90	1.30	100.00
Total	N	23	57	25	52	6	163	35	106	15	7	163
	%	14.10	35.00	15.30	31.90	3.70	100.00	21.50	65.00	9.20	4.30	100.00

**: $p < 0.01$, *: $p < 0.05$ significance level

The duration of performing animal husbandry was a significant ($p < 0.01$) factor in breed selection. It was found out that the enterprises with the duration of performing animal husbandry of 41 years and over preferred indigenous breeds. Accordingly, while young breeders do not prefer indigenous breeds, a few

of them demand cross breeds. It is observed that the breeders demanding culture breeds are over the age of 25 years (Table 5). In a previous study carried out in Ergani district, the preference for cross breeds in all groups of the duration of performing animal husbandry draws attention, and the young breeders with little

experience and those with the experience of 8-13 years preferred indigenous breeds by 36.4% and 38.1% (Han and Bakır, 2009). In a study carried out in bovine animal enterprises in Muş province, it was determined that the enterprises

were engaged in indigenous, cross breeding and culture breeding by 46.9%, 37.2% and 15.9%, respectively (Şeker et al., 2012). The age of managers was found to be a significant factor in the breed preference.

Table 5. The effect of duration of performing animal husbandry and age to the breed selection of cattle of Siirt Province

		Duration of performing animal husbandry **					Total	Age*					Total
		1-10	11-20	21-30	31-40	Above 41		16-25	26-36	37-48	49-59	60 and older	
Culture breed	N	1	17	28	17	15	78	1	18	29	21	9	78
	%	1.3	21.8	35.9	21.8	19.2	100	1.3	23.1	37.2	26.9	11.5	100
Hybrid	N	1	3	3	2	0	9	1	3	3	2	0	9
	%	11.1	33.3	33.3	22.2	0	100	11.1	33.3	33.3	22.2	0	100
Native breed	N	0	10	24	16	26	76	0	7	28	22	19	76
	%	0	13.2	31.6	21.1	34.2	100	0	9.2	36.8	28.9	25	100
Total	N	2	30	55	35	41	163	2	28	60	45	28	163
	%	0.6	18.4	33.7	21.5	25.2	100	1.2	17.2	36.8	27.6	17.2	100

**: $p < 0.01$, *: $p < 0.05$ significance level

It was determined that the location was a significant factor ($p < 0.01$) in the cattle breed selection. According to this, it is noteworthy that only one breeder's request for Simmental from the culture breed, and the others and the breeders of Eruh demand the South Anatolian Red breed from the indigenous breed in the rates of 60% and 75.6%. In addition, breeders from Baykan and Şirvan mainly preferred

Native Black breed in similar proportions (46.7%, 46.9%). It was found significant, that the breeders in Pervari district prefer the Brown Swiss breed in the rate of 75.6% among the culture breeds (Table 6). The proportion of culture breed cattles raised in Muş province was found as 17.2% Simmental, 12.5% Holstein and 70.3% Brown Swiss (Şeker et al., 2012).

Table 6. Cattle breeds preferred in Siirt Province

Location		Cattle breeds**							Total
		Simmental	Holstein	Brown Swiss	SAR	EAR	Native Black	Hybrid	
Centre	N	1	0	0	6	0	2	1	10
	%	10	0	0	60	0	20	10	100
Baykan	N	2	0	3	3	0	7	0	15
	%	13.3	0	20	20	0	46.7	0	100
Şirvan	N	4	1	8	3	0	15	1	32
	%	12.5	3.1	25	9.4	0	46.9	3.1	100
Pervari	N	3	0	26	0	0	0	3	32
	%	9.4	0	81.3	0	0	0	9.4	100
Tillo	N	2	0	0	0	0	0	3	5
	%	40	0	0	0	0	0	60	100
Eruh	N	0	3	1	31	3	2	1	41
	%	0	7.3	2.4	75.6	7.3	4.9	2.4	100
Kurtalan	N	15	1	10	0	0	2	0	28
	%	53.6	3.6	35.7	0	0	7.1	0	100
Total	N	27	5	48	43	3	28	9	163
	%	16.6	3.1	29.4	26.4	1.8	17.2	5.5	100

**: $p < 0.01$, *: $p < 0.05$ significance level, SAR: Southeastern Anatolian Red, EAR: Eastern Anatolian Red

Village type was found to be a significant factor in the cattle breed preference ($p<0.01$). Accordingly, while the enterprises located in mountain villages preferred the Southeastern Anatolian Red cattle breed from among indigenous breeds, and the Brown Swiss cattle breed from among culture breeds, it was observed that the enterprises in slope villages

were more willing in the preference of the Brown Swiss breed from among culture breeds compared to those in mountain villages. The enterprises in lowland villages raise the Simmental breed in addition to the Brown Swiss cattle breed from among culture breeds (Table 7).

Table 7. The effect of village types to the cattle breed selection of Siirt Province

Village type		Cattle breeds**							Total
		Simmental	Holstein	Brown Swiss	SAR	EAR	Native Black	Hybrid	
Mountain villages	N	12	4	18	29	3	14	6	86
	%	14	4.7	20.9	33.7	3.5	16.3	7	100
Slope villages	N	1	0	16	11	0	9	2	39
	%	2.6	0	41	28.2	0	23.1	5.1	100
Lowland villages	N	14	1	14	3	0	4	1	37
	%	37.8	2.7	37.8	8.1	0	10.8	2.7	100
Migrant villages	N	0	0	0	0	0	1	0	1
	%	0	0	0	0	0	100	0	100
Total	N	27	5	48	43	3	28	9	163
	%	16.6	3.1	29.4	26.4	1.8	17.2	5.5	100

**: $p<0.01$, *: $p<0.05$ significance level, SAR: Southeastern Anatolian Red, EAR: Eastern Anatolian Red

Educational background was significant $p<0.05$ in the breed preference of enterprises, while illiterate ones preferred SAR from indigenous breeds and the Brown Swiss breed from culture breeds, the ratio of SAR decreased in primary school graduates, and it was observed that the demand for the Brown Swiss and Simmental breeds from culture breeds increased, and the demand for Native Black cattle also increased.

While there was a rapid increase (33.3%) in the Simmental breed, a similar situation was observed in the cross breed in secondary school graduates compared to others. Although the fact that the number of enterprises with high school graduates was small was taken into account, it was remarkable that the Brown Swiss breed was preferred at the highest rate (Table 8).

Table 8. The effect of education to the cattle breed selection of Siirt Province

Education		Cattle breeds*							Total
		Simmental	Holstein	Brown Swiss	SAR	EAR	Native Black	Hybrid	
Not educated	N	5	2	8	14	0	6	1	36
	%	13.9	5.6	22.2	38.9	0	16.7	2.8	100
Primary school	N	16	3	32	28	3	20	3	105
	%	15.2	2.9	30.5	26.7	2.9	19	2.9	100
Secondary school	N	5	0	4	0	0	2	4	15
	%	33.3	0	26.7	0	0	13.3	26.7	100
High school	N	1	0	4	1	0	0	1	7
	%	14.3	0	57.1	14.3	0	0	14.3	100
Total	N	27	5	48	43	3	28	9	163
	%	16.6	3.1	29.4	26.4	1.8	17.2	5.5	100

**: $p<0.01$, *: $p<0.05$ significance level, SAR: Southeastern Anatolian Red, EAR: Eastern Anatolian Red

In the preference of breeds raised in enterprises, while beginners in animal husbandry preferred indigenous breed and SAR, this ratio decreased to 25.2% in those who performed it as a predecessor job, and the

culture breed ratios increased to 30.5% and 17.2% in the Brown Swiss breed and Simmental breed, respectively. Accordingly, it is observed that the beginners appear to be more distant to culture breeds (Table 9).

Table 9. The effect of career to the cattle breed selection of Siirt Province

Career		Cattle breeds**							Total
		Simmental	Holstein	BrownSwiss	SAR	EAR	Native Black	Hybrid	
Beginner	N	1	2	2	5	2	0	0	12
	%	8.3	16.7	16.7	41.7	16.7	0	0	100
Predecessor job	N	26	3	46	38	1	28	9	151
	%	17.2	2	30.5	25.2	0.7	18.5	6	100
Total	N	27	5	48	43	3	28	9	163
	%	16.6	3.1	29.4	26.4	1.8	17.2	5.5	100

**: $p<0.01$, *: $p<0.05$ significance level, SAR: Southeastern Anatolian Red, EAR: Eastern Anatolian Red

The number of employees in the enterprise was found to be a significant ($p<0.01$) factor in the preference of cattle breeds in enterprises. Accordingly, while SAR from indigenous breeds and the Brown Swiss breed from culture breeds were intensively preferred in the enterprises with 1-2 employees, the ratio of SAR from indigenous breeds increased and the ratio of the Brown Swiss breed decreased as the

number of employees increased to 3-4 people. While the SAR breed was not demanded if the number of employees was 7 and over, significant increases (50% and 66.7%) were determined in the Simmental breed among culture breeds. It was found remarkable that the demand for the Holstein breed among culture breeds was low in this region (Table 10).

Table 10. The effect of number of employees in the farm to the cattle breed selection of Siirt Province

Number of employees in the farm		Cattle breeds**							Total
		Simmental	Holstein	Brown Swiss	SAR	EAR	Native Black	Hybrid	
1-2	N	6	1	23	13	0	11	6	60
	%	10	1.7	38.3	21.7	0	18.3	10	100
3-4	N	8	4	13	27	3	10	1	66
	%	12.1	6.1	19.7	40.9	4.5	15.2	1.5	100
5-6	N	5	0	8	3	0	6	1	23
	%	21.7	0	34.8	13	0	26.1	4.3	100
7-8	N	4	0	1	0	0	0	1	6
	%	66.7	0	16.7	0	0	0	16.7	100
9+	N	4	0	3	0	0	1	0	8
	%	50	0	37.5	0	0	12.5	0	100
Total	N	27	5	48	43	3	28	9	163
	%	16.6	3.1	29.4	26.4	1.8	17.2	5.5	100

**: $p<0.01$, *: $p<0.05$ significance level, SAR: Southeastern Anatolian Red, EAR: Eastern Anatolian Red

Significant differences were found in the breed preferences according to the altitude at which the enterprises were located ($p<0.01$). Accordingly, while an increase was determined

in the demand for the Brown Swiss breed, which is resistant to high altitudes, among culture breeds along with the increase in altitude, a decrease was determined in the

Simmental breed. It was found out that the Native Black cattle were preferred in enterprises with a lower altitude, and there was

a decrease in the demand at higher altitudes (Table 11).

Table 11. The effect of altitude to the breed selection in Siirt Province

Altitude		Cattle breeds**							Total
		Simmental	Holstein	BrownSwiss	SAR	EAR	Native Black	Hybrid	
475-753	N	3	1	3	9	1	5	1	23
	%	13	4.3	13	39.1	4.3	21.7	4.3	100
754-1032	N	17	1	12	12	2	10	3	57
	%	29.8	1.8	21.1	21.1	3.5	17.5	5.3	100
1033-1311	N	4	2	1	8	0	9	1	25
	%	16	8	4	32	0	36	4	100
1312-1590	N	3	0	30	11	0	4	4	52
	%	5.8	0	57.7	21.2	0	7.7	7.7	100
1591-1869	N	0	1	2	3	0	0	0	6
	%	0	16.7	33.3	50	0	0	0	100
Total	N	27	5	48	43	3	28	9	163
	%	16.6	3.1	29.4	26.4	1.8	17.2	5.5	100

** : p<0.01, * : p<0.05 significance level, SAR: Southeastern AnatolianRed, EAR: Eastern Anatolian Red

CONCLUSIONS

This study was carried out to determine the breed preferences of sheep-goats and bovine animal enterprises in Siirt province and its districts and to investigate some factors such as altitude, location, the number of animals, the number of employees in the enterprise that affect breed preferences.

Location, the number of animals, the number of workforce in the enterprise, and altitude were determined to be significant factors in the breed selection of enterprises.

With this study made in sheep and goat farms located in Siirt, the impact of the investigated factors in breed selection was found significant. Considering the potential of the livestock in Siirt, it is concluded that in giving directions to the livestock in Siirt, these factors must be taken into account.

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