Research Article/Araştırma Makalesi

Analysis on Nomadic Communities Involved in Animal Production in Western Mediterranean Region and Their Social Structures

Duygu KAŞIKCI[*1] , **Türkay TÜRKOĞLU**[2] , **Ahmet TOLUNAY**[3] , **Mehmet ÖZMİŞ**[3] , **İrfan DAŞKIRAN**[4]

Abstract: As an important rural activity that has been ongoing for centuries in Turkey especially for nomadic communities in the Mediterranean Region, traditional goat husbandry has several functions. Traditional goat breeding have developed very interesting social structures. In this article, socioeconomic structures of nomadic societies are investigated. The purpose of the study was to determine the social structure status of nomadic communities in Western Mediterranean Region. Questionnaire method carried out for determining the social structures of breeders. Various sociological, demographic and economic characteristics were determined by way of the questionnaire method. Frequency and percentage values along with Kruskal Wallis-H Test from among the non-parametric analysis methods were used for the evaluation of the acquired data. Majority of the breeders who participated in the study were above the age of 40 and are primary school graduates. Goat breeding is carried out in country based on traditional methods. Tractors which are also used when migrating are frequently preferred as a vehicle by goat breeders. It was observed that goat breeders generally have an animal asset ranging between 200-600. It was also determined that the monthly income of families from goat breeding varies between 300-900 US dollars. Goat breeding is continued as a profession passed down from previous generations. It was observed that goat breeding is carried out extensively in the province of Antalya and that the monthly incomes are higher in comparison with other cities.

Keywords: Nomadic community, social structures, Western Mediterranean region, Turkey

Batı Akdeniz Bölgesindeki Hayvancılıkla Uğraşan Konargöçer Topluluklar ve Sosyal Yapılarının Analizi

Özet: Türkiye'de, göçebe olarak yaşayan topluluklar için özellikle Akdeniz Bölgesi'nde keçi yetiştiriciliğinin yüzyıllardır süren önemli bir kırsal faaliyet olarak geleneksel işlevleri vardır. Geleneksel keçi yetiştiriciliği çok ilginç sosyal yapılar geliştirmiştir. Bu çalışmada göçebe toplumların sosyoekonomik yapıları incelenmiştir. Çalışmanın amacı, Batı Akdeniz Bölgesi'ndeki göçebe olarak yaşayan toplulukların sosyal yapılarını belirlemektir. Yetiştiricilerin sosyal yapılarını belirlemek için anket tekniğinden yararlanılmıştır. Anket tekniği ile çeşitli sosyolojik, demografik ve ekonomik özellikler belirlenmiştir. Elde edilen verilerin değerlendirilmesinde parametrik olmayan analiz yöntemlerinden Kruskal Wallis-H Testi ile frekans ve yüzde değerleri kullanılmıştır. Araştırmaya katılan yetiştiricilerin büyük çoğunluğu 40 yaş üstünde ve eğitim olarak ilkokul mezunudur. Keçi yetiştiriciliği, ülkemizde geleneksel yöntemlerle üretimi devam etmektedir. Keçi yetiştiricileri tarafından göçlerde de yaygın kullanılan araç olarak traktör tercih edilmektedir. Keçi yetiştiricilerinin genellikle 200-600 arasında bir hayvan varlığına sahip oldukları gözlenmiştir. Keçi yetiştiricilerinin genellikle 200-600 arasında hayvan varlığının bulunduğu görülmüştür. Keçi yetiştiriciliği mesleğinden ailenin aylık gelirinin 300-900 ABD Doları arasında yer aldığı tespit edilmiştir. Keçi yetiştiriciliği atadan gelen bir meslek olarak yürütülmektedir. Antalya İli keçi yetiştiriciliğinin yoğun yapıldığı ve aylık gelir olarak diğer illere göre yüksek olduğu görülmüştür.

Anahtar Kelimeler: Konargöçer Toplumlar, Sosyal Yapılar, Batı Akdeniz Bölgesi, Türkiye

Sorumlu yazar (Corresponding author)
duyguince@isparta.edu.tr

[1]Isparta University of Applied Sciences, Faculty of Agricultural, Department of Animal Science, Isparta, Turkey.
[2]Mugla Sitki Kocman University, Koycegiz Vocational School, Department of Forestry, Muğla, Turkey.
[3]Isparta University of Applied Sciences, Faculty of Forestry, Department of Forest Engineering, Isparta, Turkey.
[4]General Directorate of Agricultural Research and Policies, Ankara, Turkey.

1. Introduction

The Mediterranean Region is a region in Turkey where goat breeding is carried out extensively. The fact that certain trees and shrubberies are among the natural plant cover of the region is related with the popularity of goat breeding in the Mediterranean Region (Tolunay et al., 2015). The fact that goats prefer the leaves and shoots of kermes oak (*Qercus coccifera* L.) and boz pırnal oak (*Qercus aucheri* Jaub. & Spach.) is indicated as the reason for this relationship. Goat breeding in the region has been continued nomadically for many years under difficult conditions. This activity makes up an important part of the income and food sources of families in rural and forested regions (Ainalis and Tsiouvaras, 2004; Kaymakçı et al., 2005). Goat breeding has a significant material and moral importance in Anatolian culture. Goats are important economic aspects for the feeding, clothing and accommodation of humans in addition to taking on an important spiritual role throughout history (Kaymakçı and Engindeniz, 2010). Factors such as the suitability of the natural resources of Turkey and especially the meadows and pastures to sheep and goats along with the consumption habits of families in rural areas have led to an environment that is well suited for small ruminants (İnce et al., 2012; Kaşıkcı 2016). Another feature of goat breeding is that it can be carried out in mountainous, rocky areas and shrublands which cannot be used for other purposes. In other words, goat is an abstinent animal that makes use of low quality shrublands and meadows which cannot be used by people to produce meat, milk and other products (Koyuncu et al., 2005; Kaymakçı, 2006; Kaymakçı and Dellal, 2006). The Mediterranean region is located in the tropical and subtropical climate region where goats are bred extensively. Whereas Antalya is the province in Western Mediterranean region with the highest goat population, Burdur is the province with the least population. Hair goats (*Capra hircus* L.) make up an important portion of the goat population in Turkey. Even though goat breeding is extensively carried out in the Mediterranean, Aegean and Southeastern provinces, goats are present in all regions of Turkey. Hair goat is an abstinent specie bred in mountain villages inside or near forests which is resistant to the harsh climate of Anatolia and which can feed on weak pastures. It is a combined yield oriented goat species with the highest population in Turkey (Günlü and Alaşahan, 2010). There is a close relation between the natural distribution of various tree and shrubland species as part of the Mediterranean vegetation with regard to the extensive goat breeding in the Mediterranean Region. The reason for this relationship is indicated as the fact that goats like to feed on the leaves and shoots of kermes oak (*Qercus coccifera* L.) and boz pırnal oak (*Qercus aucheri* Jaub. & Spach.). Hair goat has selected the natural distribution areas of these two tree / shrubbery species as its habitat (Tolunay et al., 2014; Tolunay et al., 2018).

Nomadism is the seasonal migration of large herds from region to region or in the same region for grazing and wintering. It is a gradually diminishing culture and means of breeding due to the decrease in empty fields and pastures over time as well as the problems related with nomadism. It is generally carried out to move out to the plains during the summer months and to reduce the number of sheep losses during the winter in regions without any snow settlement. In other words, nomadic culture is the traditional means of living for nomadic, semi-nomadic and highlander communities (Dulkadir, 1985; Karaca et al., 2010).

The present study has been prepared for examining the social structures of nomadic goat breeder communities in the provinces of Antalya, Burdur and Isparta and to explain their various social states.

2. Material and Method

The animal breeding nomadic communities in Western Mediterranean region and their social structures make up the research topics of the present study. The "Socioeconomic State Analysis" questionnaire form comprised of 36 questions was applied in the study for putting forth the socioeconomic state of nomadic communities. The total number of breeders that are members of the Sheep and Goat Breeders' Association of Turkey in the Western Mediterranean Region is 9324 with 2023 in Isparta, 3035 in Burdur and 4266 in Antalya. These are professional farm administrators with over 25 small ruminant. Thus, the study population was comprised of 9324 people. Sample size for the questionnaire application as calculated using the following equation:

$$n = [N * t^2 * p * q] / [d^2 * (N-1) + t^2 * p * q]$$

Here n: sample number, N: population number, t: reliability coefficient (1,96 for a reliability level of 95 %), p: probability of finding the attribute to be measured in the population, q: probability of not finding the attribute to be measured in the population and d: accepted sampling error (10 %). According to this formula, the number of questionnaires to be applied in all three regions (Isparta-Burdur-Antalya) was determined as 96 people. Cluster sampling method was used in the study which is used when there are sub-groups as part of a population with pre-determined borders and when there is a possibility to work on the population by way of these sub-groups (Yıldırım and Şimşek, 2005). A total of 119 face-to-face interviews were carried out with goat breeders with 41 in Isparta, 34 in Burdur and 44 in Antalya and evaluations were carried out at the breeding sites.

Frequency and percentage values were used in the evaluation of the acquired data and Kolmogorov-Smirnov test as well as the normality test were carried out for

determining which of the tests is suitable (parametric or non-parametric) for the evaluation of the data acquired via questionnaire method. It was determined that the study data do not have normal distribution at a reliability interval of 95 %. Kruskal Wallis-H Test from among the non-parametric analysis methods was carried out for determining whether there are any differences between the subjects of the Antalya, Burdur and Isparta sample group with regard to study parameters and crosstabs were used for determining the groups which cause differences in opinions.

Table 1. Results of Studies on Socioeconomic Status

Regions	Minimum number of survey	Number of survey
Antalya	44	44
Burdur	31	34
Isparta	21	41
Total	96	119

3. Results and Discussion

3.1. Frequency and percentage values with regard to the evaluation of the social structures of nomadic animal breeder communities

Frequency and percentage values were presented as part of the study with regard to the evaluation of the social structures of small ruminant breeder families examined within the scope of the study. Results for small ruminant breeder families are presented in Table 2.

As can be seen in Table 2, of the farms that participated in the study 37 % were from Antalya, 28.6 % from Burdur and

34.5 % from Isparta. With regard to the ages of the breeders who participated in the questionnaire, the 41-50 age interval was ranked first with a ratio of 34.5 % followed by the 51-60 age interval with a ratio of 26.9 % and 31-40 age interval with a ratio of 21.8 %. Majority of the breeders (62.2 %) were primary school graduates. Goat breeding in Turkey is a farm carried out as a family. In addition to the head of the family who is working as a shepherd, his wife and children also take part in the controlling of the herds. However, the fact that majority of the breeders are aged above 40 can be accepted as an indication that this production model is not accepted by the young population and thus is gradually losing its sustainability. It was observed that 79.8% of the wife of the breeders who participated in the study were in the age interval of 36-55. It was determined that 73.9 % of the wife of breeders were primary school graduates. While 64.7 % of the wife of breeders were shepherds, 35.3 % were housewives. Figure 1 shows the findings on the machinery and equipment assets of the farms.
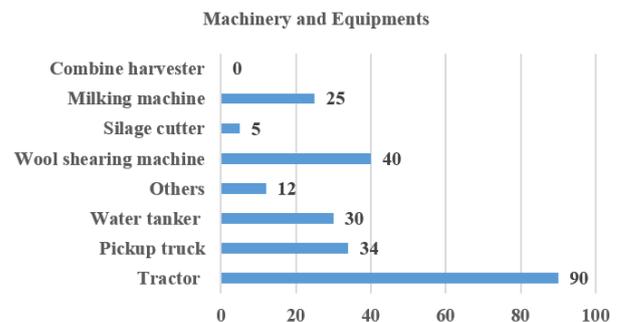

Figure 1. Machinery and equipment assets of the farms

Table 2. Results for small ruminant breeder families

Demographic information		Number	Frequency (%)
Regions	Antalya	44	37
	Burdur	34	28.6
	Isparta	41	34.5
Age of breeder	18-30	7	5.9
	31-40	26	21.8
	41-50	41	34.5
	51-60	32	26.9
	61 and over	13	10.9
Education status	Literate	2	1.7
	Primary	74	62.2
	Middle	23	19.3
	High School	19	16
	University	1	0.8
Wife's age	18-35	24	20.2
	36-55	95	79.8
	56 and over	0	0
Wife's education status	Literate	3	2.5
	Primary	88	73.9
	Middle	17	14.3
	High School	11	9.2
	University	0	0
Wife's job	shepherd	77	64.7
	housewife	42	35.3

Table 3. Findings on the current animal assets of farms

Animal assets	Value	Number	Frequency (%)
Animal numbers in farms	0-200	8	6.7
	201-400	40	33.6
	401-600	28	23.5
	601-800	9	7.6
	801-1000	11	9.2
	1001-1250	6	5
	1251-1500	10	8.4
	1501 and over	7	5.9
	Total	119	100
Breed of goats	Hair goat	105	88.2
	Honamlı	14	11.8
	Total	119	100
Is beekeeping done in farm?	Yes	3	2.5
	No	116	97.5
	Total	119	100
Is cattle breeding done in farm?	Yes	5	4.2
	No	114	95.8
	Total	119	100

Table 4. Findings on the socio-economic structure of farms

Socio-economic structure	Value	Number	Frequency (%)
What is your reason for working in the field of animal breeding?	Passed down from previous generations	66	55.5
	I know the best job	42	35.3
	Having the best income	3	2.5
	Existence of animal husbandry, forage field, crop production	2	1.7
	No alternative	6	5
	Total	119	100
Do you always live in the village?	Yes	62	52.1
	No	18	15.1
	Both of them	39	32.8
	Total	119	100
What is your social security status?	No social security	1	0.8
	Social security institution	12	10.1
	Social Security Organization for Artisans and the Self-Employed	103	86.6
	Other	3	2.5
	Total	119	100
What is your production expertise?	Plant production	2	1.7
	Animal production	103	86.6
	Both of them	14	11.8
	Total	119	100
Which production is more profitable for you?	Plant production	0	0
	Animal production	98	82.4
	Both of them	9	7.6
	None of them	12	10.1
	Total	119	100
What do you think about your income level?	Poor	9	7.6
	Moderate	92	77.3
	Good	18	15.1
	Rich	0	0
	Total	119	100
Are you a member of any breeder association?	Yes	115	96.6
	No	4	3.4
	Total	119	100
State of benefiting from supports	Governorship support	0	0
	Heating, Coal etc.	1	0.8
	Other institutions and organizations	6	5
	I do not benefit from supports	112	94.1
	Total	119	100

As can be seen in Figure 1, while tractor was ranked first in the tool and equipment assets of farms with at most 90 selections, pickup truck was ranked number two with 34 selections and water tanker was ranked third with 30. The number of wool shearing machine and milking machine are 40 and 25, respectively. Table 3 presents the findings on the current animal assets of the farms.

As can be seen in Table 3, with regard to the animal numbers in small ruminant breeding farms that participated in the study 33.6 % had animal assets ranging between 201-400 followed by 23.5 % with 401-600 and 9.2 % with 801-1000. While 88.2 % of the goat species in the farms were hair goats, 11.8 % were Honamlı goat. Beekeeping is not practiced in 97.5 % of the farms. Cattle breeding is also not practiced in 95.8 % of the farms. Table 4 presents the findings on the socio-economic structure of farms.

As can be seen in Table 4, 55.5 % of the participants responded to the, "What is your reason for working in the field of animal breeding?" as "Passed down from previous generations", 52.1 % responded to the question, "Do you always live in the village?" as "yes", while 86.6 % responded as "Social Security Organization for Artisans and the Self-Employed." to the "What is your social security status?" question. Of the participants, 86.6 % responded to the "What is your production expertise?" as "animal production". The question of, "What do you think about your income level?" was responded by 77.3 % of the participants as "moderate". Whereas the question of "Are you a member of any breeder association?" was responded by 96.6 % as "yes". The question on, "State of benefiting from supports" was responded by 94.1 % as "I do not benefit from supports". Table 5 shows the findings on the socio-economic status of the farm owners.

As can be seen in Table 5, 83.2 % responded to the question of, "Do you have a residence?" as "yes". The question of, "Do you live with your family?" was responded as "yes" by 95 % of the participants. The question of, "What is the net monthly income level of the

Table 5. Findings on the socio-economic status of the farm owners

Socio-economic status	Value	Number	Frequency (%)
Do you have a residence?	Yes	99	83.2
	No	14	11.8
	Tent	6	5
	Total	119	100
Do you live with your family?	Yes	113	95
	No	6	5
	Total	119	100
What is the net monthly income level of the family?	0-300 US Dollars	11	9.2
	301-520 US Dollars	69	58
	521-775 US Dollars	32	26.9
	776-1000 US Dollars	6	5
	1000 US Dollars and over	1	0.8
	Total	119	100
How many years have you been working in animal breeding?	0-5 year	1	0.8
	6-10 year	17	14.3
	11-15 year	26	21.8
	16-20 year	18	15.1
	20 and over	57	47.9
	Total	119	100
What is the number of labor in the family?	1	18	15.1
	2-3	94	79
	4-5	6	5
	5 and over	1	0.8
	Total	119	100
What is the number of worker/shepherd you hired monthly?	1	11	9.2
	2-3	1	0.8
	4-5	0	0
	5 and over	0	0
	I do not hired any	107	89.9
	Total	119	100
Do you have electricity in your house?	Yes	113	95
	No	6	6
	Total	119	100
Do you have income other than animal breeding?	Yes	13	10.9
	No	106	89.1
	Total	119	100

family?" was responded as "521-775 US Dollars" by 26.9 % of the participants. The question of, "How many years have you been working in animal breeding?" was responded as "20 years and above" by 47.9 % of the participants. Whereas the question of, "What is the number of labor in the family?" was responded as "2-3 people" by 79 %. The question of, "What is the number of worker/shepherd you hired monthly?" was responded as "I do not hired any", by 89.9 %. While the question of, "Do you have electricity in your house?" was responded as "yes" by 95 %. The question of, "Do you have other means of income other than animal breeding?" was responded as "no" by 89.1 %. Figure 2 presents the electrical household appliances in the homes of breeders.
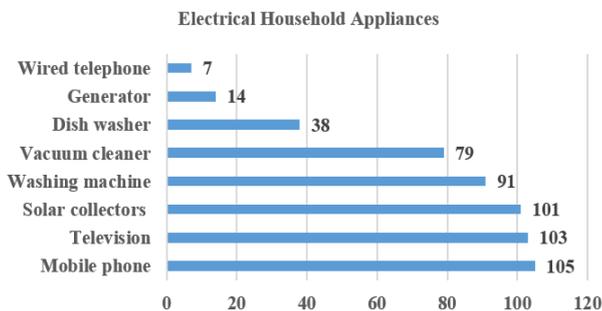

Figure 2. Electrical household appliances in the homes of breeders

As can be seen in Figure 2, cell phone was ranked number one with 105 selections among the electrical household appliances in the homes of breeders, followed by television with 103 selections and solar energy panels with 101 selections.

People in rural areas have used their natural resources (agricultural areas, forests, pastures, water sources, etc.) by way of implementing the methods they have learned from their ancestors in Turkey (Türkoğlu et al., 2016; Kaşıkçı et al., 2019). Nomadic and transhumance systems were popular in the Mediterranean regions of Turkey.

Nomadic flocks follow seasonal growth of vegetation and migrate to the highlands in summer and in winter migrate to the coastal areas. Thus, social conditions on the high mountain slopes are challenging. The two traditional systems use the whole family members to take an active role in the management activities of the herd. However, modern sedentary production systems have been the recent trend in goat production, replacing these time old traditions (Daşkıran et al., 2018). The socio-economic and geographical structure make small ruminant production an important profession and it is also a significant source of income for people in rural areas (Ocak et al., 2019).

3.1. Results of the Kruskal Wallis test carried out with regard to the cities where the breeders live

Table 6 presents the results of the Kruskal Wallis test carried out for determining the differences in the opinions of breeders with regard to the cities they live in (Antalya, Isparta, Burdur).

Antalya is a city where goat breeding is carried out extensively in the study carried out on the differences with regard to the regions where the study has been carried out. The city of Antalya is followed by the city of Burdur. Even though Isparta has wide grazing areas, it is ranked behind the other cities in goat breeding. When the canopy coverage of the shrublands in the city of is taken into consideration, it is observed that less number of goats have bred in comparison with the general grazing capacity (Yılmaz et al., 2014; Armağan, 2019). The fact that the farms are small and scattered, making them prone to exploitation in the marketing of the goods as well as the purchasing of the inputs, insufficient yield levels of the already existing sheep and goat species and the fact that grazing is more and more dependent on the weakening meadows which in short can be stated as low yield resulting in the inability to compete with other animal species and the insufficient use of technology are among the reasons for the decrease in the number of goats. The

Table 6. Kruskal wallis test results carried out with regard to the different regions that the breeders

Questions of research	Chi-Square	df	Asymp. Sig.
Numbers of small ruminants in farms	30.341	2	0.000*
What is your reason for working in the field of animal breeding?	7.732	2	0.021*
Do you always live in the village?	0.634	2	0.728
What is your social security status?	0.634	2	0.728
What is your production expertise?	0.883	2	0.643
Which production is more profitable for you?	3.601	2	0.165
What do you think about your income level?	3.624	2	0.163
Are you a member of any breeder association?	2.262	2	0.323
State of benefiting from supports	5.689	2	0.058
Do you have a residence?	12.,446	2	0.002*
Do you live with your family?	2.517	2	0.284
What is the net monthly income level of the family?	8.623	2	0.013*
How many years have you been working in animal breeding?	35.970	2	0.000*
What is the number of labor in the family?	8.586	2	0.014*
What is the number of worker/shepherd you hired monthly?	2.450	2	0.294
Do you have electricity in your house?	10.680	2	0.005
Do you have income other than animal breeding?	1.278	2	0.528

profession of goat breeding is gradually dwindling in the Isparta province. It was observed as a result of the analysis of the study data that those who are currently working as goat breeders consider it as a profession passed down from previous generations and thus continue this profession. It was determined that new breeders no longer join this profession. When the breeders in the city of Isparta are compared statistically with those in other cities, it was observed that they have adapted to a settled life and that they have a permanent residence.

4. Conclusion

Of the breeders who participated in the study, about 83% are in the 30-60 age interval. While 62,2% were primary school graduates, 19,3% were secondary school graduates. Of the breeders, 97% are shepherds. About 80% of the spouses were in the age interval of 36-55, 75% are primary school graduates and they work as housewives and shepherds at the same time. While tractor is the vehicle that majority of the goat breeders have, it is followed by pickup truck, water tanker and other vehicles. Shearing machine is also among the equipment used. It was observed that goat breeders have animal assets in general ranging from 200-600 animals. It was observed that the hair goat is the most frequently observed goat species and that they do not deal with other fields such as cattle breeding and beekeeping. Goat breeding is carried out as a profession passed down from previous generations and the breeders indicate it as the profession they know best. Majority of the breeders reside in villages and are registered in the "Social Security Organization for Artisans and the Self-Employed" system for social security. Cell phones were the electrical appliances that is most frequently found in the homes of breeders followed by television and solar energy panels.

The following results were obtained as a result of the study on differences between the provinces where the study has been carried out: Goat breeding is carried out extensively in the province of Antalya followed by Burdur and Isparta. Goat breeding is considered as a profession passed down from previous generations and is continued as such. Whereas it is also a profession that is considered as a considerably good profession in the province of Burdur in addition to being considered as one that is passed down from previous generations. It was observed as a result of analysing the study data that goat breeders consider this profession as one that is passed down from previous generations and continue it as such. It was determined that new breeders no longer join in the profession. It was also determined that the breeders in the province of Isparta do not carry out the profession nomadically but that they have settled down and have permanent residences. While the monthly income of the family from goat breeding ranges between 300-900 US Dollars, the minimum income level was 300 US Dollars for

the breeders in the city of Burdur. Majority of the breeders have been in this profession for 11-15 years, while the levels of experience of breeders in other cities are 20 years and above. The breeders in the city of Burdur carry out goat breeding as "1 person" whereas in other provinces this profession is carried out by "2-3" individuals. Goat breeding is continued traditionally in our country. This activity makes up an important portion of the source of income and food for families in rural and forested regions. Since the social structures of the families are quite low and it is a profession passed down from previous generations, goat breeding is still continued but not preferred by new generations due to the difficult conditions and low income levels.

In conclusion, the issues faced by nomadic farms result in the decrease in nomadic goat breeding activities which have always been very important for our national culture. In addition to bringing a high level of income, nomadic animal breeding is a breeding system and a traditional way of life that has been continued for centuries. Socio-economic issues emerge in cities since majority of the population in rural areas of Turkey migrate to large cities. Various precautions should be taken to accommodate the rural population in their own locations and to prevent the economical breakdown that is taking place. Otherwise, the rural agricultural areas will diminish while also the problems in large cities keep on increasing. Nomadic small ruminant breeding activities are not under control and the movement areas are not organized. The strategic importance of nomadic farms is based on the advantages provided by approaches subject to the needs of sheep depending on the climate and vegetation. The most apparent result based on these advantages is the increase in yield and decrease in costs. However, the aforementioned conditions provide the environment required for animals with high performance in brood stock breeding that stands out with regard to sustainable production. In short, it is possible to find the brood stock for whichever species or genotype is bred in the nomadic goat breeding establishment. It can be stated that nomadic farms have almost the same attribution as those of the brood stock establishments under extensive breeding conditions. Small ruminant breeding will make a significant contribution to the country economy when these families are settled down. Public resources have to be mobilized in order to improve the qualities of life of these breeders who make significant contributions to the country economy, natural infrastructure and animal gene resources and culture. Various regulations can be put into effect for minimizing the health, education and socio-cultural needs

Acknowledgements

References

Ainalis AB, Tsiouvaras CN (2004). Forage production of woody fodder species and herbaceous vegetation in a silvopastoral system in Northern Greece. Agroforestry Systems, 42: 1-11.

Armağan ME (2019). Effectiveness of Grazing Management Plan Prepared by Forest Administration: A Case Study on Isparta-Sütçüler Forest Discrict. Master Thesis, Isparta University of Applied Sciences, Isparta, Turkey.

Daskiran I, Savas T, Koyuncu M, Koluman N, Keskin M, Esenbuga N, Kosum N (2018). Goat production systems of Turkey: Nomadic to industrial. Small Ruminant Research, 163: 15-20.

Dulkadir H (1985). Sarıkeçililer. Beşinci Milletler Arası Türkoloji Kongresi, 23-28 Eylül, İstanbul, Turkey.

Günlü A, Alaşahan S (2010). Türkiye'de keçi yetiştiriciliği ve geleceği üzerine bazı değerlendirmeler. Veteriner Hekimler Derneği Dergisi, 81(2): 15-20.

Ince D, Koknaroglu H, Toker MT (2012). Sustainability suggestions for goat husbandry in Isparta, Turkey. Macedonian Journal of Animal Science, 2 (2): 133-138.

Karaca O, Cemal İ, Yılmaz O, Yılmaz M (2010). Halk elinde ülkesel küçükbaş hayvan islahı projesi "Karya koyunu geliştirme alt projesi" bitirme raporu. Tarımsal Araştırmalar Genel Müdürlüğü Yayınları, Ankara, Türkiye.

Kaşıkcı D (2016). Isparta ili mera çalıştayı (Isparta Province Pasture Workshop), 09-10 March, Isparta, Turkey.

Kasikci D, Turkoglu T, Bekiroglu S, Ozmis M, Tolunay A (2019). The comparatıve analysis on the overview of hair goat breedings to sustainable forest resources management. Applied Ecology and Envıronmental Research, 17 (3): 7027-7042.

Kaymakçı M, Tuncel E, Güney O (2005). Türkiye'de süt keçisi ıslahı çalışmaları. Süt Keçiciliği Ulusal Kongresi, 26-27 Mayıs, İzmir, Türkiye.

Kaymakçı M (2006). Goat Breeding. Meta Basım Matbaacılık, İzmir, Türkiye.

Kaymakçı M, Dellal G (2006). Türkiye ve Dünya keçi yetiştiriciliği, keçi yetiştiriciliği, in: Kaymakçı M (eds.), İzmir İli Damızlık Koyun-Keçi Birliği Yayınları No: 2, İzmir, Türkiye.

Kaymakçı M, Engindeniz S (2010). Türkiye'de keçi yetiştiriciliği: sorunlar ve çözümler. Ulusal Keçicilik Kongresi, 24–26 Haziran, Çanakkale, Türkiye.

Koyuncu M, Uzun Ş, Tuncel E (2005). Güney Marmara Bölgesi keçicilik işletmelerinin genel durumu ve verim özelliklerinin belirlenmesi üzerine araştırmalar. Tarım Bilimleri Dergisi, 11 (4): 373-378.

Ocak S, Davran MK, Güney O (2019). Small ruminant production in turkey: highlighting in goat production. Tropical Animal Health and Production, 42 (2): 155-159.

Tolunay A, Babalik A, Yavuz M, Akyol A, Kasikci D, Adiyaman E (2015). Contradiction between Goat and Forest: What was done? What is being done? What should be done?, Journal of Forest and Hunt, No:6, Ankara-Turkey.

Tolunay A, Adıyaman E, Akyol A, İnce D, Türkoğlu T, Ayhan V (2014). An investigation on forage yield capacity of Kermes Oak (*Quercus coccifera* L.) and grazing planning of Mediterranean maquis scrublands for traditional goat farming. The Scientific World Journal, 2014, 398479.

Tolunay A, Ince D, Daskiran I, Turkoglu T, Ozmis M (2018). Role of goat breeding in reducing rural poverty in the Western Mediterranean region of Turkey. 1st International Symposium on Silvopastoral Systems and Nomadic Societies in Mediterranean Countries 22-24 October, Isparta, Turkey.

Türkoğlu T, Bekiroğlu S, Tolunay A (2016). Sustainable goat production in Turkey Current situation and solution proposals. Turkish Journal of Forestry, 17 (2): 99-106.

Yıldırım A, Şimşek, H (2005) Sosyal bilimlerde nitel araştırma yöntemleri. Seçkin Yayıncılık, Ankara, Türkiye.

Yılmaz O, Karaca O, Ince D, Cemal I, Yaralı E, Varol M, Sevim S (2014). Batı anadolu göçer koyunculuğu ve ıslah planlamalarındaki rolü. Journal of Tekirdag Agricultural Faculty, 11 (2): 89-97.