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RESEARCH ARTICLE

The current situation of small ruminant enterprises of Burdur province

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Özet

Elmaz Ö, Ağaoğlu ÖK, Akbaş AA, Saatcı M, Çolak M, Metin MÖ. Burdur ili küçükbaş hayvancılık işletmelerinin mevcut durumu.

Amaç: Bu çalışma Teke yöresi olarak bilinen Burdur ili merkez ilçeye bağlı köy ve beldelerdeki küçükbaş işletmelerinin mevcut durumunu ortaya koymak amacıyla yapıldı.

Gereç ve Yöntem: Araştırmanın verileri çiftçilerle yüz yüze yapılan anketlerden elde edildi. Veriler 32 köy ve beldeden olmak üzere 48 keçi ve 64 koyun işletmesinden toplandı. Anket 5 temel bölüm içermektedir; işletmelerin demografik bilgileri, işletmelerin barınak ve çevre düzenlemesi ile ilgili bilgileri, işletmelerdeki bakım – besleme yöntemleri, işletmelerdeki sağım yöntemleri ile hijyen kriterleri ve çiftlik yönetimi konularını içermektedir.

Bulgular: İşletme başına düşen anaç koyun sayısı ve anaç keçi sayısı sırasıyla 93.3 ve 117.9 baş olarak bulundu. Koyun ve keçi işletmelerinde çalışan yetiştiricilerin sırasıyla %85.9 ve %77.2 oranıyla ilkokul mezunu oldukları tespit edildi. İncelenen koyun işletmelerinin %84.4'ü yarı açık barınak ağıl tipindedir. Keçi işletmelerinde bu oran %70.4'tür. Koyun işletmelerinde kuzuların süt emme süresinin 4 ile 6 ay arasında; keçi işletmelerinde ise oğlakların süt emme süresinin 4 ile 7 ay arasında değiştiği saptandı. Araştırma kapsamında incelenen koyun ve keçi işletmelerinde ortalama günlük süt verimi sırasıyla 0.5±0.09 lt/gün/koyun ve 0.5±0.3 lt/gün/keçi'dir.

Öneri: Bu araştırma, Teke yöresinin önemli bir merkezi olan Burdur ilinin küçükbaş işletmelerinin mevcut durumunu ortaya koyan ilk çalışmadır. Bu sonuçlar Burdur ilinde ileride yapılacak olan koyun ve keçi yetiştiriciliğini geliştirme çalışmalarına önemli bir veri tabanı oluşturacaktır.

Anahtar kelimeler: Koyun, keçi, işletme yapısı, üretim özellikleri, yönetim uygulamaları

Abstract

Elmaz O, Agaoglu OK, Akbas AA, Saatci M, Colak M, Metin MO. The current situation of small ruminant enterprises of Burdur province.

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Aim: The aim of this study was to determine the present situation of small ruminant enterprises of Burdur province in the West Mediterranean region of Turkey known as "Goat Region"

Materials and Methods: Research data obtained from farmer by face to face questionnaires. Data were collected from 48 goats and 64 sheep enterprises at 32 villages and town. The questionnaire contained five main sections: demographic data about the enterprise; the enterprise's housing and landscaping; data about the feed and feeding methods used in the enterprises; milk production and hygienic criteria in the enterprises and farm management.

Results: The average number of sheep and goat per enterprise were found 94.8 and 117.8 heads respectively. It was determined that sheep and goat breeders graduated from primary school at the rates of 85.9% and 77.2% respectively. Examined sheep enterprises 84.4% was semi-open type barn. This rate was 70.4% in goat enterprises. Duration of suckling period of lambs in sheep enterprises were between 4 to 6 months, kids suckling period ranged between 4 and 7 months in goat enterprises. In this research average milk yield was found in sheep and goat enterprises in 32 villages; 0.5±0.09 l/day/sheep and 0.5±0.3 l/day/goat, respectively.

Conclusions: This research was the first study to demonstrate the current status of small ruminant enterprises of Burdur province in the Mediterranean region of Turkey. It is thought that the results of this research will form important database for future research about development of sheep and goat farming in Burdur province of Turkey

Keywords: Sheep, goat, enterprise, production trait, management practices

Introduction

Sheep and goat farming is one of the most important sectors in agriculture both economically and socially in the West Mediterranean region of Turkey. Goat and sheep are kept as an important source of livelihood in many enterprises of Mediterranean region of Turkey and also have cultural, folklore and social value. Breeding of small ruminants in Turkey has an important share in the Turkish economy and cultural. The ovine flocks usually convert the short and infertile pasture fields and other land that are not suitable for agricultural production to products like meat, milk, wool and leather (Akçapınar 1984, Kaymakçı et al 2005). In Turkey, 97% of the goats, spreading among all the regions, are the Turkish Hair goat (Kıl keçisi). They are mostly raised inside and near of the forests. On the other hand, Angora goat makes up only the 3% of the whole goat population in Turkey. Dairy breeds and their crossbreeds like Malta, Kilis, Saanen are mostly being breeding on the Western Anatolian Coast (Kaymakçı and Dellal 2006). In Turkey, the total number of sheep and goat is calculated as 25 892 582 and 8 199 184, respectively (TURKSTAT 2012). The same amount for Burdur province is 126 735 and 87 170, respectively (DOMARA 2012). The majority of enterprises of small ruminants in Burdur is also available in the form of small-scale family farms. In this context; in the Burdur province both to provide need of food of animal origin such as cheese, yogurt, raw milk, meat and in order to contribute agricultural income, the profitability of farms raising small ruminants should be increased. For this purpose, profitability - efficiency analysis should be done by examined the structural characteristics of these enterprises as well as problems should be identified and offers for the problems should be developed.

The West Mediterranean region of Turkey is a mountainous area and goat production is the primarily income source for the families living in the mountainous villages. More than two million people live in these areas and they constitute the poorest farmers in the country (Erkan et al 2001). The excess of small-scale farming among the agricultural and livestock enterprises is one of the subjects which should be taken into account. The number of small ruminants which increased from the 1950s to the 1980s and also the number of enterprise has been in a rapid decline. Many factors have a role in shaping this situation (Ocak et al 2010). Today, in terms of preventing these reductions, it is very important that enterprises should indicate their current status.

This research was conducted to determine the general characteristics of the existing sheep and goat enterprise and to contribute to the determination of more profitable and forward-looking strategies using data obtained in the province of Burdur.

Table 1. Summary of demographic data on sheep and goat farming enterprises.

	Sheep			Goat		
	The number of enterprises (n= 64)		Percentage (%)	The number of enterprises (n= 48)		Percentage (%)
Education						
Illiterate	1		1.5	4		8.3
Primary school	55		85.9	37		77.2
Intermediate school	4		6.3	3		6.2
High school	4		6.3	4		8.3
Enterprise type						
Settled	57		89.1	45		93.7
Nomadic	7		10.9	3		6.3
The Number of Enterprises Planted Feed Crops	38		59.3	33		68.7
Forage Crops Production Areas (da)						
1-10	12		18.7	7		21.2
11-30	13		20.3	11		33.3
31-50	7		18.4	8		24.3
>51	6		15.7	7		21.2
The maximum forage production						
Barley	33		86.6	33		100
Wheat	27		71.1	25		75.7
The Number of Enterprises Member of SGBAB*	38		59.3	35		72.9
The mean number of Sheep & Goat per farm	Mean	Min.	Max.	Mean	Min.	Max.
	94.8	6	635	117.8	4	320

* SGBAB = Sheep&Goat Breeders' Association of Burdur.

Table 2. Summary data on enterprise housing and facilities.

	Sheep		Goat	
	The number of enterprises (n= 64)	Percentage (%)	The number of enterprises (n= 48)	Percentage (%)
Housing type				
Open barn	4	6.3	3	6.3
Semi-open barn	54	84.4	34	70.8
Closed barn	6	9.3	11	22.9
Floor				
Concrete	4	6.3	2	4.2
Stone	3	4.6	2	4.2
Soil	57	89.1	44	91.6
Bedding				
Straw	10	15.6	8	16.8
Nothing at all	54	84.4	40	83.2
Roof				
Tile	33	57.8	18	43.8
Soil-nylon	10	15.6	10	20.8
Nylon canvas	11	17.2	10	20.8
Etermite	6	9.4	7	14.6
Cleaning frequency				
Daily	34	53.1	22	45.8
Weekly	20	31.3	16	33.3
Monthly	3	4.7	5	10.4
Once every six months	5	7.8	1	2.1
Yearly	2	3.1	4	8.4
Usage of disinfectants				
Yes	39	60.9	23	47.9
No	25	39.1	25	52.1
Evaluation of fertilizer				
Used in the field	52	81.3	24	50
Sold	12	18.7	24	50

Materials and Methods

Data collection

This research was carried out in Burdur province in the West Mediterranean region of Turkey, which is located between northern latitudes of 36° 53' and 37° 50' and eastern longitudes of 29° 24' and 30° 53'. Burdur is situated in the Mediterranean Region in southwestern Anatolia. It is surrounded by Antalya to the east and south, by Denizli to the southwest, and by Afyon and Isparta to the north. The study data were collected between April 2010 and July 2011 from 32 local villages and towns. In the study, the questionnaires were administered under the follow-up of the vaccination staff of the Animal Health Department of DOMARA so as to win the trust of the breeders and to collect healthier data. Village and town names are listed according to alphabetical order; Akyayla, Askeriye, Bayındır, Bozlar, Beşkavak, Cimbilli, Çatağil (İnsuyu), Çallica, Çendik, Çine, Düğer, Gökçebağ, Güneyyayla, Halicilar (Sala), İlyas, Karacaören, Karaçal, Karakent, Kartalpinar, Kayaalti, Kayiş, Kocapinar, Kozluca, Kökez, Kumluca, Merkez, Sariova, Suludere, Ulupinar, Yaylabeli, Yaziköy, Yeşildağ. Data were collected from a total of 112 farms. The 64 enterprise from 25 different village is related to sheep and the other ones (48 enterprise from 22 different village) related to goat enterprises. It was determined that in total 5974 sheep, 2551 lambs, 5659 goats and 2384 kids were grown in 122 enterprises. In these villages and towns in which questionnaires were completed, the number of sheep and goat for the year 2010 was 23.705 and 5.735 respectively. The number of sheep in the farms for which questionnaires were filled accounts for 35.9% of the total number of sheep in these villages and town. However, the number of goat in the farms for which questionnaires were filled accounts for 98.7% of the total number of goat in these villages and town.

Statistical analysis

The study applied the "Sampling and Questionnaire" method within an acceptable error and confidence interval. The stratified sampling method was employed to determine the number of samples (questionnaires) used in the study and to select the villages. The questionnaire contained five main sections: demographic data about the enterprise; the enter-

Table 3. Survey findings regarding feed varieties and feeding methods.

	Sheep		Goat	
	The number of enterprises (n= 64)	Percentage (%)	The number of enterprises (n= 48)	Percentage (%)
When feed is?				
In the winter months	57	89.1	45	93,7
In the summer months	0	0	0	0
Every time	7	10.9	3	6,3
Given the amount of feed (kg/day)	$\overline{X}$	$S\bar{x}$	$\overline{X}$	$S\bar{x}$
Forage	0.6	0.3	0.6	0.3
Concentrated	0.4	0.2	0.3	0.1
Duration of suckling lamb and kids (month)				
3	2	3.2	2	4.2
4	17	26.5	9	18.5
5	23	35.9	15	31.5
6	22	34.4	16	33.3
Time for lamb and kids to start eating forage and concentrated (week)				
1	3	4.7	6	12.5
2	31	48.4	13	27.1
3	13	20.3	13	27.1
4	12	18.8	14	29.2
5	5	7.8	2	4.1

prise's housing and landscaping; data about the feed and feeding methods used in the enterprises; milk production and hygienic criteria in the enterprises and farm management. All statistical analyses were carried out with Microsoft Excel 2010 and Minitab version 16 statistical software (MINITAB 2011).

Results

Demographic data on the enterprises

Information on demographics of enterprises was given in Table 1. The number of family members for sheep and goat enterprises was detected as 4.5±2.1 and 4.7±1.6, respectively. As a result of questions on working experience, 23.9±15.2 and 27.8±16.8 year were determined for sheep and goat enterprises. The number of sheep and goat which reared for lambs and kids per enterprise was found as 94.8 and 117.8 respectively. Anatolian Merino, Awassi, Pırlak, Chios crossbred, Çine Çaparı, Akkaraman are raised on sheep enterprises. In the goat farms Hair Goat, Honamlı Goat, Honamlı x Kıl goat crossbred and Turkish Saanen were reared. It was detected that all workers were the owners of enterprises surveyed. Education has a great importance on economic efficiency and production in these enterprises. The 85.9% and 77.2% of workers on sheep and goat farms were detected as educated at primary school. It was determined that the sheep and goat enterprises type was nomadic on 10.9% and 6.3% respectively. However, 59.3% and 68.7% rates were defined as enterprises planted feed crops on sheep and goat farms. It was identified that primarily forage production based on barley and wheat. These are followed by corn, alfalfa and oats. The membership status of surveyed enterprises to the "Sheep and Goat Breeders Association of Burdur" was found as 59.3% and 72.9% for sheep and goat enterprises, respectively.

Enterprise housing and facilities

In the surveyed sheep and goat enterprises, the rates of semi-open barns used as a house type were detected 84.4 % and 70.8 % respectively. Generally, soil was used on floor and not any bedding material was used. It was detected that, intensively, in the sheep and goat barns roof consist of tiles, soil nylon and nylon-canvas. The frequency of cleaning barns, using of disinfectant during barn cleaning and manure were presented in Table 2.

Feed and feeding methods

Within this research in addition to poor pasture conditions for animals feed was mostly was given for a period of 2-3 months, corresponding to the winter months on sheep and goat enterprises. Given the amount of rough and concentrate (kg/day) for sheep and goat enterprises were determined as 0.6±0.3 kg, 0.4±0.2 kg and 0.6±0.3 kg and 0.3±0.1 kg, respectively (Table 3). Duration of suckling for lambs was detected between 4-6 months. This time was defined as 4-7 months for kids.

Table 4. Summary survey data on milk production and animal health.

	Sheep		Goat	
	The number of enterprises (n= 64)	Percentage (%)	The number of enterprises (n= 48)	Percentage (%)
Milking Method				
Hand milking	64	100	48	100
Does the udder before milking cleaning?				
Yes	41	64.1	31	64.6
No	23	35.9	17	35.4
Evaluation of milk and number of milking				
Cheese is made (38 days milking is done)	17	26.6	8	16.7
Only sucking lambs and kids	47	73.4	40	83.3
(34 days milking is done)	—		—	Sx
	X	Sx	X	
Average Milk Yield (lt/day)	0. 5	0.09	0.5	0.3

Milk production

Hand milking was found as a milking type in the surveyed farms (Table 4). The ratio of cleaning of the udders before milking was defined 64.1% and 64.6% for sheep and goat farms. Analysis of the evaluation method of sheep and goat milk; mostly given to lambs and kids in the rate of 73.4% and 83.3%. Average milk yield (lt/day) for sheep and goat enterprises were detected as 0.5±0.09 kg and 0.5±0.3 kg, respectively.

Farm management

It was identified that sheep and goat farms mostly have not keep any specific record and receive any regular Veterinarian control (Table 5). Sheep enterprises received information support at 28.1%. These ones were Mehmet Akif Ersoy University Faculty of Veterinary Medicine (15.7%), Burdur Provincial Directorate of Food, Agriculture and Livestock (6.2%) and Veterinarians (6.2%). Goat enterprises received information support at 16.6%. It was obtained from Burdur Provincial Directorate of Food, Agriculture and Livestock (8.3%) in the first rank and the second one was veterinarians (4.3%). Free mating system was most common for mating season in the sheep and goat farms. Rams were utilized for mating in August and September months. September was the mostly preferred by goat breeders. The parturition was on January- March months. In sheep enterprises shearing time was the months of May and June. It was stated that the amount of wool from sheep is 1 kg of wool/sheep.

Discussion

In this research, the education level of sheep and goat breeder's were 85.9% and 77.2% primary school respectively. The level of education is low among farm owners in sheep and goat enterprises in Burdur province, with similar levels also reported in other studies elsewhere in Turkey and other country (Bett et al 2009, Daşkıran et al 2010).

The production levels of animals depend on animal husbandry system as well as benefiting from the opportunities at the maximum level. Bett et al (2009) reported the low education levels for breeders in 311 dairy goat enterprises in Kenya. It was similar to findings of current study. In the related study, sucking duration was defined shorter than this project because of the main goal was milk production. In addition, on work the vast majority of enterprises registered and animals yields were recorded.

Yılmaz et al (2010), reported that the number of family members in goat enterprises was 5 and average herd size as 304 head in a study conducted in the province of Mugla, which border the western Mediterranean region. In addition it was defined that the goats were kept in called mattress temporarily a simple fenced in opened areas, kids were also kept in shelters in the form of greenhouse and made of branches and trees and the roof of that covered with nylon. The parturition on herd which male were utilize for mating in August-September months was January and February months where the place has mild winters and the coastal areas. These results, in general, was similar to the findings of this study, the values obtained in terms of herd size was large. Tekel and Dellal (2010) determined the rates of settled enterprises in different provinces (Diyarbakır, Şanlıurfa, Gaziantep and Adıyaman) 84.2%, 82.2%, 100.0% and 75.5% respectively. The results were similar to findings about sheep and goat farms of current study. Daşkıran et al (2010) reported the average number of animal on Angora goat enterprise was as 300-600 head. Taşkın et al (2010) detected the average number of goat as 43.3, 28.8, 30.0 and 47.3 head for the provinces mentioned Tekel and Dellal (2010) before.

Table 5. Summary survey findings concerning farm management.

	Sheep		Goat	
	The number of enterprises (n= 64)	Percentage (%)	The number of enterprises (n= 48)	Percentage (%)
No enterprises-specific registration system	64	100	48	100
Regular Veterinarian Control	18	28.1	15	31.2
Information Support	18	28.1	8	16.6
*DOMARA	4	6.2	4	8.3
Faculty of Veterinary Medicine	10	15.7	1	2
** SGBAB (supervisor)	0	0	1	2
Free-Veterinarians	4	6.2	2	4.3
Breeding type (free mating)	64	100	48	100
Mating time				
August	27	42.2	7	14.6
September	30	46.9	33	68.7
October	7	10.9	8	16.7
Months of birth				
January-February	30	46.9	22	45.8
February-March	34	53.1	26	54.2
Shearing months				
May	23	35.9	-	-
June	36	56.3	-	-
July	5	7.8	-	-
	$\overline{X}$	*Sx*		
The amount of wool (kg)	1	0.15		

*DOMARA: District Office of the Ministry of Agriculture and Rural Affaires, **SGBAB: Sheep&Goat Breeders' Association of Burdur.

In this research, 84.4% and 70.8% rates were detected as using semi-open barns for sheep and goat enterprises respectively. Koyuncu et al (2006) reported that classical housing type mostly used. Paksoy et al (2006) determined closed barns commonly used in 30 sheep enterprises from 15 villages in Kahramanmaraş province of Turkey. However, concrete, corrugated zinc and tile were used for roof material. While there were differences from the current study about housing type and planting lands, it was similar to research on using tiles (57.8% and 43.8%) for sheep and goat farms respectively. Taşkın et al (2010) reported that the majority of breeders did not have any record and they were not a membership of Sheep and Goat Breeders' Association in their study made in İzmir and Manisa provinces. The rate of membership Sheep and Goat Breeders' Association of Burdur in this study was quite higher than Taşkın et al (2010). While regular veterinarian control for sheep and goat enterprises (28% and 31%) were under the desired level, it was higher than values observed by Taşkın et al (2010). While manure was used for bedding material in related study, it was detected the using of manure for field or selling in Burdur province.

Koyuncu et al (2006) reported that kids weaned at 60th – 90th day age in the vast majority of enterprises raised goat on the South Marmara Region in Turkey. In the current research, it was identified that kids were not weaned for a long time so, they had been suckling approximately 4 - 7 months. In addition, it was determined that sheep and goat were not milked after birth and generally milk was given to lambs and kids in the rate of 73.4% and 83.3%, respectively. It is thought that this situation is about breeders habits coming from back, milk prices and low milk yield of the animals. Parallel to this, the result from the current research about the evaluation of the low rate of goat's milks using as cheese does not coincide with related study. The average sheep and goat milk yield in Burdur is usually less than a litre per animal, which is reported similar values by Degen and El-Meccawi (2009). However, it was seen that the milk was not available in the market regularly. In sheep and goat farming, milk is the second most valuable product after meat. Sheep milk can be marketed quite high prices compared to cow milk especially in West Anatolia (Altın 2001). In this state, in terms of milk production in the western Mediterranean based on local breeds of sheep and goats is far from being efficient and rational.

Conclusions

As a result, it was observed that the breeders in Burdur province in Western Mediterranean which is one of the small ruminant breeding center in Turkey. Breeders did not have enough knowledge about housing, care, nutrition, health and hygiene. It was concluded that the applied educational activities which mentioned about recording system, herd management and practical knowledges on other subjects for the breeders should be useful. There is not another source

of income for the majority of enterprises. Giving farmers technical information related to animal husbandry practically, can carry out enterprise activities in a more profitable and efficient. In addition to several universities and research Institutes, the Ministry of Food, Agriculture and Livestock is currently carrying out some research projects to improve the level of goat and sheep production in Turkey. One of the most important projects is the National Livestock Project under Field Conditions. In this way, some of the changes in the social and cultural lives of the breeders occurred even the shepherds and their families efforts to have their lives more comfortable by producing electricity from solar energy.

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