



Survival Rates of Lambs, Greasy Fleece Weight and Live Weight at Parturition of Fat-Tailed Hamdani Sheep Grown in East Anatolia Region of Turkey

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SUMMARY

This research has been carried out to determine the survival rates of lambs, greasy fleece weight and live weight at parturition of fat-tailed 125 Hamdani ewes under extensive village conditions in Çıgılı village of Çukurca province in Hakkari, Turkey. The survival rates (SRs) for lambs were found to be 98.5%, 96.2%, 96.2%, 94.6%, 93.9%, 93.9%, 93.9%, 99.2% and 99.2% for from birth (SR1), from birth to 1th (SR2), from birth to 2th (SR3), from birth to 3th (at weaning) (SR4), from birth to 4th (SR5), from birth to 5th (SR6), from birth to 6th (SR7), from 3th to 5th month (SR8) and from 3th to 6th month (SR9), respectively. The adjusted values related to average greasy fleece weight (GFW) and average live weights at parturition (LWP) of Hamdani ewes were found to be 2.29 ± 0.13 kg and 71.57 ± 1.28 kg, respectively. Significant effect of age and birth type on LWP of ewes were found (P<0.05). As a result, it was determined that SRs of lambs, average GFW and average LWP of Hamdani ewes with this study. Hamdani sheep had a better performance for mentioned traits compared with Turkish native sheep breeds and some certain cross breeds developed recently known in Turkey.

Key Words: Greasy fleece, Hamdani ewes, Lamb, Parturition weight

ÖZET

Doğu Anadolu'da Yetiştirilen Hamdani Koyunlarında Kirli Yapağı Verimi, Doğum Zamanı Canlı Ağırlık ve Kuzularda Yaşama Gücü Özellikleri

Bu çalışma, Hakkari ili Çukurca ilçesi Çıgılı bölgesinde ekstansif köylü koşullarda yetiştirilen 125 baş Hamdani koyununun doğumdaki canlı ağırlık özellikleri, kirli yapağı verimleri ve kuzularda yaşama gücü özelliklerinin belirlenmesi amacıyla yapılmıştır. Kuzularda, doğumda (SR1), doğum-30. gün (SR2), doğum-60. gün (SR3), doğum-sütten kesim (90. gün) (SR4), doğum-120. gün (SR5), doğum-150. gün (SR6), doğum-180. gün (SR7), sütten kesim-150. gün (SR8) ve sütten kesim-180. gün (SR9) yaşama gücü oranları (SRs) sırasıyla %98.5, %96.2, %96.2, %94.6, %93.9, %93.9, %93.9, %99.2 ve %99.2 olarak hesaplanmıştır. Ortalama kirli yapağı verimi (GFW) ve doğumdaki canlı ağırlık (LWP) sırasıyla 2.29 ± 0.13 ve 71.57 ± 1.28 kg olarak bulunmuştur. Doğum dönemi canlı ağırlık değerleri üzerine koyun yaşı ve doğurma tipi faktörlerinin etkilerinin önemli (P<0.05) olduğu belirlenmiştir. Sonuç olarak bu çalışmada Hamdani koyunların GFW ve LWP verimleri ile kuzularda yaşama gücü değerleri tanımlanmıştır. Hamdani koyunlarının gerek yerli ve gerekse bazı melez koyun ırklarıyla karşılaştırılabilir özelliklere sahip olduğu sonucuna varılmıştır.

Anahtar Kelimeler: Kirli yapağı, Hamdani koyun, Kuzu, Doğum ağırlığı

INTRODUCTION

Sheep production has retained its importance for centuries in agriculture and the economy as well, besides its role in human nutrition in Turkey. It is well-known that Turkey has a rich domestic animal population but has low animal productivity. This is mainly due to the high number of the native breeds having low productivity and traditional extensive production methods. Although developments have been observed in sheep breeding structure, the traditional extensive production method is still a common practice for the breeders. Ninety-four per cent of the sheep

population is of native breeds whereas only 6% is pure Merino and its crosses (TÜİK 2014).

Protection of genetic resources of indigenous breeds is important for the future creation of new types and necessary genetic material for the concerns that may arise in the future as a result of environmental conditions throughout the World. In addition, examination and evaluation of the infrastructure of the traditional sheep breeding are important for breeding programs (Kaymakçı 2006).

From this point of view, it is inevitable to identify and

conserve our native genetic resources such as fat tailed Hamdani sheep. Hamdani sheep geographically are grown in a wide area including Iran, northern Iraq and Turkey's South East regions. Hamdani sheep, also known as "Karadi", are reported to be of Iraqi origin and highly preferred by domestic sheep-raisers. (Aziz and Al-Oramary 2005). It is believed that this breed was brought to the Hakkari and Şırnak provinces from Northern Iraq, 200 - 250 years ago. Hamdani sheep reared in Hakkari, Van, Siirt, Şırnak, Batman, Bitlis provinces located in the Eastern and South Eastern Anatolia regions of Turkey are preferred and demanded by sheep farmers. Therefore, according to market data they are still preferable although the price of their meat is nearly 10% - 20% higher in comparison with other breeds in Turkey (Örkiz et al. 1984). Hamdani sheep are maintained in their sheds through the cold season following lambing in February-March when all of them feed mainly on straw for feeding. The flocks are taken out to graze on pastures and stubble in the rest of the year. Milking once a day was started one month after the weaning. 3 to 4 months after the weaning the ewes were milked twice a day for two months and then once a day in the following months. Sheep are housed in simple and generally unhygienic sheep-sheds during the winter and they are generally fed on straw. The grazing period is about from 6 to 7 months. In meat, milk and wool production, Hamdani sheep is a breed that has a good adaptability to the local agro-ecological conditions (Magid et al. 2003; Alkass and Juma 2005). Hamdani sheep produce, on average, 78.3 kg of milk per lactation (Raaof 2005) and 2.1 kg of coarse wool per year (Al-Barzinji 2009). Generally, wool cutting time is between June and August in the Hakkari region. The fat-tailed Hamdani sheep are known for their white body with a black head and black neck, high-legs and long-ears. The rams and ewes are generally hornless. They can easily be distinguished with this feature from other native breeds and varieties of sheep grown in the region (Öztürk 1998). They have fat tail composed of three parts they have coarse mixed wool. The wool of Hamdani sheep is preferred carpet, pillow and mattress making in the Hakkari region (Aziz 1993).

The structural measures of traditional extensive production systems should be well defined from the standpoint of the nature condition, cultural structure, native breed characteristics, management methods and traditional cooperation among all regions of Turkey.

This research was carried out to determine the survival rates of lambs, greasy fleece weight and live weight at parturition of Hamdani ewes grown under extensive village condition.

MATERIALS and METHODS

In the study, 125 head Hamdani ewes (2 to 4 years old) grown under extensive village conditions in Çıgılı village, Hakkari, Turkey were provided for evaluating quantitative traits viz. the survival rates (SRs) of lambs, greasy fleece weight (GFW) and live weight at parturition (LWP), respectively. The ewes had lambed from mid-December to February and they were kept under similar conditions. For all the ewes and lambs, routine vaccination and parasite treatment were provided. In winter, they were put in a barn with an outdoor lot, and fed hay, straw and a small amount of concentrate feed. In grazing season, animals were only grazed. The study was conducted over a total of 122 lambs, due to the death of the two lambs in the birth period and some other six later. GFW data of 111 head

Hamdani ewes were used while LWP data of 115 head Hamdani ewes were used.

Survival rates of lambs were determined according to the results of the lambing and weaning from 1th to 6th months (Kaymakçı and Sönmez 1996). The following linear model was adopted for analysis of GFW and LWP of Hamdani ewes $Y_{ijk} = \mu + a_i + b_j + e_{ijk}$

Where; Y_{ijk} is GFW or LWP of ewes, μ is the overall mean, a_i is the effect of dam age ($i= 2-4$), b_j the effect of birth type ($k= 1$ (single); 2 (twin)), e_{ijk} = independent and random error.

The present data were analyzed with General Linear Model procedure of SAS (2006) program in order to obtain least square means and standard errors of subgroups and to investigate the significance of differences among the means of subgroups. Mean separation was performed by using the Duncan's Multiple Range Test (Düzgünes et al. 1987).

All procedures were performed using procedures approved by Yuzuncu Yil University Animal Researches Local Ethic Committee 02/05/2014 (decision number 2014/05).

RESULTS and DISCUSSION

Lamb survival rates (SRs)

The first 48 hours of a lamb's life are critical. Around 70% of lamb mortality that occurs between birth and weaning occurs within this period. Lamb survival is related to lamb birth-weight. Lamb birth weight is strongly related to the nutrition of the ewe during pregnancy, particularly late pregnancy. Poor ewe nutrition and low condition at lambing also has detrimental effects on maternal behavior and lamb behavior that contribute to increased mortality. Ideally the ewe and lamb should remain at the birth site for at least 6 hours.

Table 1. Survival rates of Hamdani ewes

Reproductive characteristics	Values (%)
Survival rates of lambs in birth (SR1)	98.5
Survival rates of lambs until 30 th day from birth (SR2)	96.2
Survival rates of lambs until 60 th day from birth (SR3)	96.2
Survival rates of lambs until 90 th (weaning) day from birth (SR4)	94.6
Survival rates of lambs until 120 th day from birth (SR5)	93.9
Survival rates of lambs until 150 th day from birth (SR6)	93.9
Survival rates of lambs until 180 th day from birth (SR7)	93.9
Survival rates of lambs until 150 th day from weaning (SR8)	99.2
Survival rates of lambs until 180 th day from weaning (SR9)	99.2

SRs for lambs are presented in Table 1. This table shows that the survival rates for lambs were calculated as: 98.5%, 96.2%, 96.2%, 94.6%, 93.9%, 93.9%, 93.9%, 99.2% and 99.2% for from birth (SR1), from birth to 1th (SR2), from birth to 2th (SR3), from birth to 3th (at weaning) (SR4), from birth to 4th (SR5), from birth to 5th (SR6), from birth to 6th (SR7), from 3th to 5th month (SR8) and from 3th to 6th month (SR9), respectively.

In the present study, the survival rates of lambs SR1, SR4 and SR7 of lambs were found 98.5%, 94.6% and 93.9% respectively. These results are higher than those reported for SR1, SR4 and SR7 on Akkaraman and varieties lambs (Kaymakçı et al. 1995; Gökdağ 1998; Esen and Bozkurt 2001; Yakan et al. 2012), Bafra lambs (Güngör and Akçapınar 2013) and İvesi lambs (Üstüner and Oğan 2013). The present results obtained for SR1 and SR2 are similar to reported on Hamdani lambs (Öztürk 1998).

Grease fleece weight (GFW) and live weights at parturition (LWP) of ewes

The least square means, standard errors, tests of significance for greasy fleece weight (GFW) and live weights at parturition (LWP) of Hamdani ewes and results of Duncan's multiple range tests for lamb weights for each age of ewes and fertility status of ewes have been presented in Table 2. The adjusted values related to average greasy fleece weight (AGFW) and average live weights at parturition (ALWP) of Hamdani ewes were found to be 2.29 ± 0.13 kg and 71.57 ± 1.28 kg, respectively.

Table 2. Least squares means, tests of significance for average greasy fleece weight (GFW) and average live weight at parturition (LWP) results of Duncan's multiple range tests for Hamdani ewes each factor

Factors		GFW (kg)			LWP (kg)			
Age	N	$\bar{X} \pm S\bar{X}$	Min	Max	N	$\bar{X} \pm S\bar{X}$	Min	Max
2	31	2.36 ± 0.03	1.98	2.60	34	71.27 ± 0.29^c	67.21	74.20
3	55	2.30 ± 0.02	1.87	2.55	54	73.51 ± 0.21^a	70.05	77.80
4	25	2.29 ± 0.03	1.96	2.48	27	73.01 ± 0.28^b	69.35	75.11
Fertility status								
Single	96	2.29 ± 0.01	1.87	2.60	100	71.06 ± 0.13	67.21	75.40
Twin	15	2.34 ± 0.03	2.12	2.48	15	74.13 ± 0.36	70.98	77.80
Overall	111	2.29 ± 0.13	1.87	2.60	115	71.57 ± 1.28	67.21	77.80

^{a,b,c}: $p < 0.05$, Min: Minimum, Max: Maximum, N: Number of ewes

Live weights at parturition (LWP): Overall means and standard errors for LWP for both dam age and type of birth are represented in Table 2. Age of dam and the type of lambing had a significant effect on LWP ($P < 0.05$). For LWP, significant effects of age and type of birth were reported in previous studies (Fahmy and Bernard 1973; Özsoy 1974; Özsoy and Vanlı 1986) and in agreement with our results. In the present study, the overall mean of LWP (71.57 kg) in Hamdani ewes was higher to Karakaş (Gökdağ 1998), Norduz (Demirel et al. 2004; Bingöl et al. 2005), Morkaraman (Aktas 2003) and Kıvrıcık (Ceyhan et al. 2007) While lower was reported for Hamdani (Demirel et al. 2000). Since there were differences in maintenance conditions and genotype, it is difficult to make direct comparisons.

CONCLUSION

This study is thought to be important, for it is the first one in which the SRs of lambs, GFW and LWP of Hamdani ewes in rural farm conditions in Hakkari region of Turkey have been searched. The results indicated that some survival rate traits and LWP of Hamdani ewes were concluded to be comparable determined by the characteristics of the study on other domestic ewe breeds. Information obtained from SRs and LWP of this indigenous sheep will be a valuable asset for the studies in this field. According to the results of this study, it can be concluded that Hamdani

Grease fleece weight (GFW): In the present study, the average GFW were found as 2.29 kg varied between 1.87 and 2.60 kg based on age of ewes and fertility status of ewes (Table 2). Age of ewes and the type of lambing had no significant effect on GFW. In the study groups, differences between in age and birth type were found statistically insignificant. In terms of GFW, Hamdani sheep similar to Akkaraman (Güney 1979) while longer than Karakas (Gökdağ et al. 2000), Norduz (Tuncer 2008) and Hamdani ewes (Al-Barzinji 2009). On the other hand, GFW obtained in the study was lower than reported for Hamdani (Öztürk and Odabaşoğlu 2011) and Kıvrıcık ewes (Koyuncu et al. 1996; Ceyhan et al. 2003; Yılmaz et al. 2003). The results and the reports in the literature show that GFW was not only depends on the breed of sheep but depends also on the environmental and/or managerial conditions in which a sheep type/breed raised.

sheep can successfully be raised under East Anatolian conditions.

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