



Comparison of Fattening and Carcass Characteristics of Different Sheep Breeds Under the Conditions of Eastern Mediterranean Region

Cüneyt YAVUZ, Mahmut KESKİN*, Sabri GÜL

Hatay Mustafa Kemal University, Faculty of Agriculture, Department of Animal Sciences, Antakya, Hatay, TURKIYE.

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* Corresponding Author

mkeskin@mku.edu.tr

ABSTRACT

This study was carried out for comparison of fattening performance and some carcass characteristics of Kıvırcık, MerinosxWhite Karaman Corssbreds and Awassi sheep each of which are breeds of different regions. The animal material of the study were consisted of 12 lambs of each breed. Lamb fattening ration was consumed individually and ad libitum by the lambs. The fattening lasted for 63 days. At the end of fattening, in order to determine the carcass composition and carcass characteristics of the groups, 3 lambs in each group close to the average of live weight were slaughtered. In the study, daily weight gains values for Kıvırcık, Merino crossbreds and Awassi lambs were determined as 240.5 ± 8.32 g, 246.9 ± 8.60 g and 269.8 ± 9.19 g, respectively. At the end of study, it was stated that Kıvırcık which is the best native sheep breed in terms of meat quality and the Merino crossbred lambs which have higher muscle proportion in carcass could be recommended to breeders in Amik plain for fattening in addition to Awassi lambs.

Farklı Koyun Irklarının Besi ve Karkas Özelliklerinin Doğu Akdeniz Bölgesi Koşullarında Karşılaştırılması

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* Sorumlu Yazar

mkeskin@mku.edu.tr

ÖZET

Bu çalışma farklı bölgelerde yetiştirilen Kıvırcık, Merinos x Akkaraman melezleri ve İvesi koyunlarının bazı besi ve karkas özelliklerinin karşılaştırılması için yapılmıştır. Çalışmanın hayvan materyalini her ırktan 12 baş kuzu oluşturmuştur. Kuzular bireysel bölmelerde ve ad libitum olarak kuzu besi yemi ile beslenmişlerdir. Besi 63 gün sürmüştür. Besi sonunda grupların karkas kompozisyonu ve karkas özelliklerinin belirlenmesi için her gruptan ortalama canlı ağırlığı temsil eden üçer baş kuzu kesilmiştir. Çalışmada, Kıvırcık, Merinos melezi ve İvesi kuzular için günlük canlı ağırlık artışı, sırası ile 240.5 ± 8.32 g, 246.9 ± 8.60 g ve 269.8 ± 9.19 g olarak belirlenmiştir. Çalışma sonunda et kalitesi en iyi yerli koyun ırkı olan Kıvırcık ve karkasta yüksek kas oranına sahip olan Merinos melezlerinin, İvesi koyununun yetiştirilme alanı olan Amik ovasındaki yetiştiricilere tavsiye edilebileceği belirtilmiştir.

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Introduction

As can be seen from the red meat crisis that is being experienced in recent years, sheep farming is indispensable and not neglected for Turkey. Both climate and geographical conditions indicate that sheep breeding should be expanded. While doing this expenditure, different breeds should be used for different regions to increase milk yield, fattening performance and litter size of local breeds.

Sheep farming in the province of Hatay located in Turkey's eastern Mediterranean region is usually done by Awassi (İvesi) and White karaman (Akkaraman) sheep. Awassi sheep had a twinning rate of 10-20% (Özcan, 1989; Gül and Keskin, 2010), milk yield of 116.5 kg during the 150-day milking period (Biçer et al., 2019) and a daily weight gain of 213-232 g (Şahin et al., 2003). While Merino crossbreeds which are reared in Central Anatolia and Marmara region are known with their good fattening performance, Kıvrıkcık sheep which are reared in the Marmara region are known with their high meat quality in Turkey (Özcan, 1989).

It is observed that animal mobility has increased as well as human mobility in the globalizing world. In this context, it is important to investigate the performance of different sheep breeds in different regions in order to help the breeders choose their breed they will raise and to help them make more profitable production. In this study, it was aimed to compare the fattening performance and some carcass

characteristics of Kıvrıkcık, Merino x White Karaman crossbred and Awassi sheep each of which are breeds of different regions in Hatay region.

Material and Methods

This study was carried out at Livestock Research and Training Farm of Mustafa Kemal University. Animal material of the study, which are 12 heads and males from each breed group, were consisted of Awassi lambs, Konya Merino lambs (Merino x White Karaman) obtained from Konya and Kıvrıkcık lambs obtained from Çanakkale. Ration containing 15.04% of crude protein and 2481 kcal ME per kg dry matter was consumed individually and ad libitumly by the lambs. The fattening lasted for 9 weeks (63 days). The animals were weighed for three days at the same time and on a full stomach to determine the initial live weigh. The animals were weighed once a week on the same day and hour with 100 g precision weigher in order to follow the development during the fattening period. Live weight changes and daily live weight gains were calculated weekly and throughout the whole fattening period by using these values. For the determination of feed consumption, feed was weighed at the same time daily and given to animals. Before the new feed was given, the remaining feed in the feeder was weighed and the daily feed consumption of each animal was determined from the difference between the feed given and the feed left in the feeder. During the study, the interior of the pen was

continuously illuminated. Lambs were allowed to reach the water whenever they wanted. At the end of fattening, in order to determine the carcass composition and carcass characteristics of the groups, 3 lambs in each group close to the average of live weight were slaughtered. The animals were fasted during approximately 12 hours before slaughtering and slaughter weights were determined. Carcasses were stored at +4 °C for 24 hours. At the end of this period, cold carcass weights and different carcass measurements were taken by Standard Method developed for Mediterranean Countries in reported by Güney et al. (1990). Oneway Anova and Duncan procedure were used for statistical analysis of quantitative data in SPSS package program (SPSS 13.0 for windows).

Results and Discussion

In the experiment, KIVIRCIK lambs from Marmara region and Merino x Akkaraman crossbreds from Central Anatolia region were brought to Amik plain which is the natural breeding area of Awassi. All breeds were reared under the same conditions and fed same ration during the study. Since the estrus and mating periods of these breeds were different in their natural rearing area, the weights of lambs in the groups were different at the beginning of fattening. Since the beginning live weights of animals will affect fattening performance, fattening traits of the breeds were determined without any statistical comparison (Table 1). As seen in Table 1, In terms of live weight gain during the fattening, KIVIRCIK, Merino

crossbreds and Awassi lambs gained 15.1 kg, 15.6 kg and 17 kg live weight respectively. Awassi lambs gained more live weight than other groups with the effect of that it is an animal of the region. Daily live weight gain values in fattening were consistent with those reported for KIVIRCIK, Awassi and Merino crossbred lambs by different researchers (Eliçin et al., 1984; Torun et al., 1992; Şahin et al., 2003; Altın et al., 2005). Feed conversion ratio for all groups was calculated as similar.

As seen in Table 2 that shows some slaughter and carcass characteristics of the groups, hot dressing percentage was calculated as 50.5%, 49.5% and 50.3% for KIVIRCIK, Merino crossbreds and Awassi lambs, respectively. It is seen that the characteristics given in the Table regarding the carcass are consistent with the results reported by various Researchers (Güney and Özcan, 1982; Güney and Biçer, 1985; Akgündüz et al., 1993; Demir, 2001; Keskin et al., 2007). The highest muscle ratio was determined for the Merino crossbreds and the highest fat ratio was found in Awassi lambs.

In the study, it was determined that there were differences between breeds in terms of muscle and fat ratio in carcass. Muscle, bone and fat ratios were compatible with the reports by Aktaş and Bahtiyarca (2002) and Keskin et al. (2007) for the same breeds. Lower rate of intramuscular fat in Awassi sheep may be due to the fact that these animals are fat-tailed and the fat is stored primarily in the tail and rump region

Table 1. Some fattening characteristics for breed groups (mean \pm standard error)

Items	Kıvırcık	Merino crossbreds	Awassi
Initial weight (kg)	22.6 \pm 0.73	33.7 \pm 1.06	25.5 \pm 0.66
Final weight (kg)	37.7 \pm 0.88	49.3 \pm 1.67	42.5 \pm 1.00
Average daily gain (g)	240.5 \pm 8.32	246.9 \pm 8.60	269.8 \pm 9.19
Feed conversion ratio	5.7 \pm 0.27	5.6 \pm 0.24	5.4 \pm 0.23

Table 2. Some slaughter and carcass characteristics for breeds groups (mean \pm standard error)

	Kıvırcık	Merino crossbreds	Awassi
Slaughter weight (kg)	35.9 \pm 0.23	46.7 \pm 0.95	38.9 \pm 0.71
Hot carcass weight (kg)	18.2 \pm 0.31	23.1 \pm 0.35	19.6 \pm 0.46
Hot dressing percentage (%)	50.6 \pm 1.14	49.5 \pm 0.82	50.3 \pm 0.53
Cold carcass weight (kg)	18.0 \pm 0.30	22.8 \pm 0.36	19.3 \pm 0.15
Cold dressing percentage (%)	50.1 \pm 1.13	48.9 \pm 0.90	49.6 \pm 0.53
Bone (%)	20.3 \pm 1.12	18.8 \pm 1.06	16.5 \pm 0.93
Muscle (%)*	44.6 \pm 2.29 ^a	48.6 \pm 2.33 ^b	44.9 \pm 2.48 ^a
Sub cutaneous fat (%) *	16.9 \pm 1.10 ^a	15.9 \pm 1.01 ^a	19.5 \pm 0.73 ^b
Intramuscular fat (%)	14.5 \pm 0.50 ^b	13.4 \pm 1.49 ^b	11.7 \pm 1.03 ^a
Waste (%)*	2.9 \pm 0.33 ^a	2.7 \pm 0.22 ^a	3.7 \pm 0.42 ^b
Evaporation loss (%)	0.7 \pm 0.14	0.6 \pm 0.10	0.7 \pm 0.16

*P<0.05

Conclusion

It will be beneficial for the breeders who make lamb fattening in Amik plain to benefit from different breeds besides Awassi. Yavuz et al. (2019) published the adaptation part of this study. In this publication, it was stated that Kıvırcık and Merino crossbreds do not have any adaptation problems in the region. The fattening performances of the breeds identified in the current study indicate that they can be reared in the region. As conclusion, Kıvırcık which is the best native sheep breed in terms of meat quality and the Merino crossbred lambs which have

higher muscle proportion in carcass could be recommended to breeders in Amik plain for fattening in addition to Awassi lambs.

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