

# Effect of different fattening methods on slaughter and carcass characteristics of Tuj male lambs

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## Abstract

This study was conducted to determine effect of different fattening methods on slaughter and carcass characteristics of Tuj male lambs. Tuj lambs ( $n=18$ ) were used in three groups with six lambs in each group. Group 1 was only grazed on the pasture and group 2 was supplemented 200 g concentrate with the pasture. Group 3 was supplemented 400 g concentrate with the pasture. Lambs were grazed on the pasture for 8 h/day. Concentrate with 18.5 % CP and 2 650 kcal/kg ME was fed to lambs in addition to pasture. At the end of three months of experiment, the lambs were slaughter and carcass characteristics and carcass measurements were evaluated. Slaughter weights of group 1, 2 and 3 were 44.10, 44.86 and 46.00 kg, respectively, and hot carcass weights were 20.66, 21.36 and 22.15 kg, respectively, hot dressing percentage 46.85, 47.56 and 47.64%, respectively. The differences between groups of slaughter and carcass characteristics and carcass measurements of lambs were not statistically significant ( $P>0.05$ ). As a conclusion, supplementations of concentrate feed to grazing lambs on the pasture were no effect on slaughter and carcass characteristics and carcass measurement in lambs.

**Keywords:** Tuj lamb, pasture, slaughter and carcass characteristics

## Introduction

Approximately 95.8% of Turkey's sheep population (21 749 508 heads) are native breeds. Sheep meat (135 687 t) is an important to red meat production amounting to 17.37% of the total meat production (780 718 t) of Turkey. Tuj makes up 0.3% of the Turkish sheep population. There are 350 969 heads of sheep in Kars, 1/7 of which is Tuj breed (Anonymous 2005, Tuik 2011). The Tuj breed is raised in throughout the north-east of Turkey generally for meat production. Breeders are not normally willing for expenses of any supplementation and almost never use supplement but hay. Therefore, performance of the lambs depends on the pasture and hay. In order to increase the proportion of lambs that reach appropriate weights at sale, supplementary feed could be provided (Saatci *et al.* 2003).

The production of meat in Turkey is principally based on the use of grass pasture and forage as the most economic feed ingredient. The use of these sources is limited due to the seasonal fluctuation of nutritive value in grass, nutritional stress and low animal productivity. Meat production also is influenced of breed, age, sex and some environmental factors. Insufficient feeding is among the most important environmental factors that giving rise to

low yield (Yilmaz *et al.* 2007). Therefore; different fattening methods are used for improve of meat yield and quality in lambs. Supplementary feeding can have an important influence on the growth and development of weaned lambs (Francis *et al.* 2000). Soder *et al.* (1995), Elicin *et al.* (1988), Macit *et al.* (2003) and Saatci *et al.* (2003) found the use of supplementary concentrate on Tuj lambs during grazing season to increase slaughter and carcass weight. Positive effect of supplementary barley on Morkaraman lambs in terms of body and carcass weight reported by Bolat *et al.* (1995).

The aim of this study was to determine the effect of different fattening methods on slaughter and carcass characteristics and measurements of Tuj male lambs based on pasture, supplementation of pasture+200 and pasture+400 g concentrate.

## Material and methods

This experiment was conducted at the Application and Research Farm of the Faculty of Veterinary Medicine, Kafkas University in Kars, Turkey. All lambs were single born from dams aged 3-5 years. Lambs suckled their dams and grazed on pasture with no additional feed until 3 months of age. At the age of 3 months, Tuj lambs ( $n=18$ ) were divided into 3 groups with 6 lambs in each one. Group 1: only pasture grass; Group 2: pasture grass and 200 g per day of commercial feed concentrate with 18.5 % CP and 2 650 kcal/kg ME; and Group 3: pasture grass and 400 g per day of commercial feed concentrate with 18.5 % CP and 2 650 kcal/kg ME. Lambs were grazed on the pasture 8 h in a day and water was offered to the animals *ad libitum*. The experiment was finished at the end of 3 months.

Pre-slaughter live weight was recorded after 12 h fasting with free access to water. The lambs were weighed in a scale with an accuracy of 1 g. After the slaughtering the lambs, skin, head, feet, spleen, gastrointestinal tract, and testicles were removed. Then, hot carcass weights were determined and dissected into parts according to Akcapinar (1981) namely, leg, loin, back, forearm, chuck-neck, tail and the remaining. Carcass length I and II and chest circumference were measured on the carcass as described by Ariturk (1983).

In order to determine the effect of different fattening methods on slaughter and carcass characteristics and measurements, variance analysis method was employed using SPPS 12.0 statistical package software (SAS Institute Inc., Cary, NC, USA). Duncan multiple range tests were used to evaluate the significance of the difference among the groups.

## Results

The slaughter and carcass characteristics of lambs in the groups are given in Table 1. The differences among the groups in slaughter weights (44.10, 44.86 and 46.00 kg, respectively), hot carcass weights (20.66, 21.36 and 22.15 kg, respectively) and hot dressing percentage (46.85, 47.56 and 47.64 %, respectively) were not significant ( $P>0.05$ ).

Leg weights of group 1, 2 and 3 were 6.29, 6.36 and 6.47 kg, loin weights were 1.54, 1.59 and 1.68 kg, back weights were 1.61, 1.65 and 1.61 kg, forearm weights were 3.51, 3.66 and 3.75 kg, chuck-neck weights 1.52, 1.55 and 1.66 kg, remaining weights were 3.30, 3.36 and 3.57 kg, tail weights 2.56, 2.83 and 2.91 kg, kidney weights were 0.16, 0.16 and 0.18 kg and kidney fat weights 0.15, 0.16 and 0.18 kg, respectively. The differences among the groups in these characteristics was not found to be statistically significant ( $P>0.05$ ).

Table 1  
Slaughter and carcass characteristics of lambs in the groups

Characteristics	Group 1	Group 2	Group 3	Overall	Significance
Slaughter weight, kg	44.10±1.75	44.86±1.41	46.00±1.69	45.11±0.91	ns
Hot carcass weight, kg	20.66±0.83	21.36±0.87	22.15±1.12	21.39±0.53	ns
Hot dressing percentage, %	46.85±0.28	47.56±0.47	47.64±0.89	47.35±0.33	ns
Leg weight, kg	6.29±0.14	6.36±0.16	6.47±0.25	6.37±0.10	ns
Loin weight, kg	1.54±0.09	1.59±0.10	1.68±0.11	1.60±0.05	ns
Back weight, kg	1.61±0.06	1.65±1.13	1.61±0.06	1.66±0.06	ns
Forearm weight, kg	3.51±0.12	3.66±0.15	3.75±0.19	3.64±0.08	ns
Chuck-neck weight, kg	1.52±0.08	1.55±0.08	1.66±0.09	1.58±0.05	ns
Remaining weight, kg	3.30±0.20	3.36±0.17	3.57±0.21	3.41±0.11	ns
Tail weight, kg	2.56±0.20	2.83±0.16	2.91±0.14	2.77±0.10	ns
Kidney weight, kg	0.16±0.01	0.16±0.01	0.18±0.01	0.16±0.01	ns
Kidney fat weight, kg	0.15±0.01	0.16±0.01	0.18±0.01	0.16±0.01	ns
Carcass length I, cm	81.00±15.40	78.67±17.69	109.50±18.76	89.72±10.00	ns
Carcass length II, cm	70.33±2.94	69.33±5.47	76.50±5.78	72.06±2.76	ns
Chest circumference, cm	78.17±1.53	78.50±0.71	79.17±0.98	78.61±0.62	ns

ns: not significant ( $P>0.05$ )

In Table 1, the means of carcass length I, carcass length II and chest circumference of lambs in the groups are presented. Carcass length I of group 1, 2 and 3 were 81.00, 78.67 and 109.50 cm, carcass length II were 70.33, 69.33 and 76.50 cm, chest circumference were 78.17, 78.50 and 79.17 cm, respectively. The differences among the groups in carcass length I, carcass length II and chest circumference of lambs were not statistically significant ( $P>0.05$ ).

## Discussion

There are few studies with effect of different fattening methods on slaughter and carcass characteristics of Tuj male lambs. Slaughter weights of Group 1, 2 and 3 were 44.10, 44.86 and 46.00 kg, respectively. The differences among the groups in slaughter weights was not significant ( $P>0.05$ ). The slaughter weights of Group 1, 2 and 3 found in this study were higher than those reported by Kirmizibayrak *et al.* (2003) and Macit *et al.* (2002) for Tuj male lambs raised in semi intensive conditions. These results were also higher than the values reported by Saatci *et al.* (2003) for Tuj lambs in Group T, Group TC and Group C.

Hot carcass weights of group 1, 2 and 3 were 20.66, 21.36 and 22.15 kg, respectively. The hot carcass weights of three groups in this study higher than those reported by Elicin *et al.* (1988) reporting a range of 14.83-19.60 for Tuj lambs feed pasture, pasture+500 g and intensive concentrate, and reported by Uluhan *et al.* (1996) reporting a hot carcass weight of 13.9 kg for Tuj male lambs feed on pasture.

The hot dressing percentages in this study of 46.85, 47.56 and 47.64% for lambs in three groups are similar with the findings of Macit *et al.* (2003) reporting a hot dressing percentage of 49.09% for Tuj male lambs raised in semi intensive conditions, and Geliyi *et al.* (1984) who reported a range of 45.23-46.33% for Tuj male lambs fed on different roughage rates.

There was no differences among the groups in terms of leg, loin, back, forearm, chuck-neck, remaining, tail, kidney and kidney fat weight ( $P>0.05$ ). The leg, loin and forearm weights of Group 1 and 2 found in this study were higher than those reported by Saatci *et al.*

(2003) for Tuj lambs in Group T and Group TC. In the present study, the leg and loin weights of Group 3 found to be similar reported by Saatci *et al.* (2003) for Tuj lambs in Group C. The same weight values of legs were found to be higher than those reported by Elicin *et al.* (1988) for Tuj lambs fed by pasture, pasture+500 g and intensive concentrate. Ulsan *et al.* (1996) and Kirmizibayrak *et al.* (2003) also reported the similar findings. The weights of tail fat in all three groups in this study were lower than those reported by Geliyi *et al.* (1984), Aksoy (1995) and Saatci *et al.* (2003), but this values were higher than the results reported by Ulsan *et al.* (1996) and Macit *et al.* (2002) for Tuj lambs.

In the present study, the differences among the groups in carcass measurements was not statistically significant ( $P>0.05$ ). The carcass length I and II and chest circumference values obtained in the study were found to be higher than the values reported by Ulsan *et al.* (1996) for Tuj lambs. Again, the chest circumference in this study were found to be higher than the values reported by Teke & Unal (2009) for Akkaraman, Morkaraman and Turkish Merino lambs. However, the chest circumference was found to be lower than the values reported by Aksoy (1995) for Tuj lambs. The differences between this study and other studies with regards to slaughter and carcass characteristics and certain carcass measurements might be due to maternal age, fattening age, fattening duration and slaughter age, the difference on feeding methods, quality of pasture, and the use of different breeds of lambs.

In this study, the differences between groups of slaughter and carcass characteristics and measurements were not statistically significant. The results of this study suggest that a feeding system based on grazing might be appropriate for fattening male Tuj lambs since improvements in slaughter and carcass characteristics and measurements were achieved. Therefore, findings of this study recommends that a feeding system based on grazing might be appropriate for Tuj male lambs weaned at 2-3 months of age in North Eastern Turkey. This situation may be better when high quality of pasture was used.

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