SLAUGHTER AND CARCASS CHARACTERISTICS OF TUSHIN AND RED KARAMAN LAMBS RAISED IN SEMI INTENSIVE CONDITIONS

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Summary: This study was carried out to investigate the slaughter and carcass characteristics of Tushin and Red Karaman male and female lambs reared in semi-intensive conditions which is similar to local lamb breeding practice in Kars region. Totally 20 lambs at age of 6 months belonging to two different breed and sex groups were used. All carcasses were divided into five cuts namely; leg, shoulder, loin, back and remainders.

Slaughter weight, cold carcass weight, dressing percentage (cold), leg weight, shoulder weight, back weight, loin weight, remaining weight, fat tail weight, eye-muscle area and skin weight were found to be 41.36kg, 18.53kg, 44.80%, 5.66kg, 2.95k, 1.30kg, 1.31kg, 3.83kg, 2.85g, 9.84cm² and 4.06g for Tushin male lambs; 32.72kg, 14.95kg, 45.69%, 4.63kg, 2.42kg, 1.78kg, 2.90kg, 1.94kg, 8.90cm² and 3.77kg for Tushin female lambs; 42.48kg, 18.58kg, 43.74%, 6.04kg, 3.26kg, 1.36kg, 1.55kg, 3.74kg, 2.10kg, 10.46cm² and 3.95kg for Red Karaman male lambs; 37.80kg, 16.29kg, 43.10%, 5.36kg, 2.72kg, 1.23kg, 1.32kg, 3.45kg, 1.52kg, 10.00cm² and 4.07kg for Red Karaman female lambs respectively. On the basis of investigated characteristics of lambs belonging to different breeds and sex groups showed similar and low performance. Because of the short pasture season, generally low slaughter and carcass performances were observed.

Key Words: Tushin, Red Karaman, Lamb, Slaughter and Carcass Characteristics

INTRODUCTION

Sheep population in Turkey is approximately 29.5 million that is consisted of native breeds and their crossbreds1. Red Karaman is among the native sheep breeds and has the second largest sheep population in Turkey. Tushin is another native sheep breed, which is merely bred in Kars, Artvin and Iğdır provinces in Turkey2. Tushin sheep is also bred in Caucasian region, particularly in Georgia.

Extensive breeding is a common sheep breeding method in north east of Turkey. Geographical structures of the east of Turkey do not show optimal conditions for agricultural practices, therefore sheep breeding is the most important practice in the region. In order to reduce costs of winter-feeding, breeders tend to sell increasing number of male and female lambs at the end of the pasture season.

Previous fattening studies on male lambs showed that slaughter weight, cold carcass weight, cold carcass dressing percentage, leg weight, shoulder weight, loin weight, back weight, the remainders weight, tail weight, eye-muscle area and skin weight values were as follows: 34.7-42.8kg, 13.2-20.7kg, 40.0-49.6%, 3.7-5.4kg, 2.3-3.1kg, 1.1-1.4kg, 0.86-1.88kg, 3.7-5.0kg, 1.4-4.0kg, 13.2-14.4cm² and 3.7-5.4kg respectively for Tushin breed3-6; 32.0-44.8kg, 12.1-21.9kg, 39.5-49.5%, 3.9-5.4kg, 2.1-3.1kg, 0.76-1.2kg, 0.68-1.3kg, 3.4-5.4kg, 1.2-4.1kg, 12.3-13.6cm² and 3.8-4.5kg respectively for Red Karaman breed7-11 and 51.3kg, 24.6kg, 47.9%, 7.2kg, 4.4kg, 2.2kg, 2.0kg, 6.9kg, 0.5kg, 12.3cm² and 7.3kg respectively for Karayaka breed12. Same characteristics in crossbred male lambs of some meat breeds and fat tailed native breeds were found 44.7kg, 21.7kg, 48.5%, 7.8kg, 3.9kg, 2.0kg, 1.8kg, 5.5kg, 0.61kg, 13.1cm² and 6.1kg respectively for German

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Black-headed Mutton (GBM) x Awassi (A) (F1): 45.6 kg, 21.9 kg, 48.0%, 7.2 kg, 3.9 kg, 1.9 kg, 1.8 kg, 5.7 kg, 0.68 kg, 14.0 cm² and 6.5 kg respectively for GBM x White Karakam (WK) (F1): 45.2 kg, 23.0 kg, 51.0%, 7.7 kg, 4.1 kg, 2.1 kg, 1.9 kg, 6.0 kg, 0.69 kg, 14.8 cm² and 5.6 kg respectively for Hampshire Down (HD) x A (F1): 44.8 kg, 22.3 kg, 49.7%, 7.3 kg, 4.0 kg, 2.0 kg, 1.8 kg, 5.6 kg, 0.86 kg, 14.8 cm² and 6.2 kg respectively for HD x WK (F1). Also some fattening studies reported that cold carcass weight of Karakas male lambs was 16.5-22.2 kg, additionally cold carcass weight and eye-muscle area values for White Karakam were 19.6-20.2 kg and 11.7 cm² respectively.

This study was carried out to investigate the slaughter and carcass characteristics of Tushin and Red Karakam male and female lambs reared in semi-intensive conditions, which is similar to regional breeding practice.

**MATERIALS and METHODS**

This study was carried out in Research Farm of Kafkas University. Animal materials were constituted of male and female lambs of Tushin and Red Karakam sheep breeds. All lambs were kept with their mothers until 90th day of age (weaning age) and later kept as a flock with other lambs separated from their mothers and were reared in semi-intensive conditions until 6 months of age. Lambs were grazed on pasture and were also fed daily to 150g-concentrated feed, which contained 16% crude protein and 2500kcal/kg metabolic energy as a lamb growing supportive feeding. A total of 20 lambs were divided into four groups for slaughtering and 5 male and 5 female lambs were slaughtered from each genotype.

Lambs were not allowed to eat for 12 hours until slaughtering. Slaughtering weights were recorded just before the slaughter. Weights of carcass, skin, head, feet, liver, lung, heart, spleen, testicles, small intestines, and 4 stomachs were also recorded after slaughter. All carcasses were divided into five cuts namely; leg, shoulder, loin, back and remainders.

For the analysis of inspected characteristics, t-test from Minitab computer program was used.

**RESULTS**

Slaughtering Characteristics: According to breed and sex groups, mean values of slaughtering traits of lambs were presented in Table 1.

The highest slaughtering weight of lambs was found in Red Karakam males (42.48 kg) and the highest hot carcass weight was found in Tushin males (19.35 kg). The mean values of hot dressing percentage of four slaughter groups were

<table>
<thead>
<tr>
<th>Slaughter Traits</th>
<th>Tushin</th>
<th>Red Karakam</th>
<th>Tushin</th>
<th>Red Karakam</th>
<th>Tushin</th>
<th>Red Karakam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slaughter wt. (kg)</td>
<td>41.36</td>
<td>42.48</td>
<td>1.18</td>
<td>37.80</td>
<td>1.65</td>
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<tr>
<td>Hot carcass wt. (kg)</td>
<td>19.85</td>
<td>19.85</td>
<td>0.83</td>
<td>16.78</td>
<td>0.81</td>
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<tr>
<td>Hot carcass dressing percentage (%)</td>
<td>46.78</td>
<td>44.61</td>
<td>1.07</td>
<td>44.39</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>Skin wt. (%)</td>
<td>4.06</td>
<td>3.95</td>
<td>0.05</td>
<td>4.07</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Feet wt. (g)</td>
<td>826.3</td>
<td>996.7</td>
<td>21.4</td>
<td>754.0</td>
<td>20.2</td>
<td></td>
</tr>
<tr>
<td>Head wt. (kg)</td>
<td>2.16</td>
<td>2.31</td>
<td>0.07</td>
<td>1.57</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Liver wt. (g)</td>
<td>546.3</td>
<td>526.1</td>
<td>17.1</td>
<td>401.2</td>
<td>27.3</td>
<td></td>
</tr>
<tr>
<td>Lung wt. (g)</td>
<td>496.6</td>
<td>503.7</td>
<td>15.8</td>
<td>427.2</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>Heart wt. (g)</td>
<td>163.1</td>
<td>165.0</td>
<td>14.1</td>
<td>161.2</td>
<td>5.94</td>
<td></td>
</tr>
<tr>
<td>Spleen wt. (g)</td>
<td>85.5</td>
<td>82.6</td>
<td>9.36</td>
<td>78.4</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Testicles wt. (g)</td>
<td>236.9</td>
<td>273.4</td>
<td>34.6</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Internal fat wt. (g)</td>
<td>313.2</td>
<td>322.0</td>
<td>107.0</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>+ Stomachs wt. (kg)</td>
<td>1.14</td>
<td>1.55</td>
<td>0.05</td>
<td>1.42</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Small intestine wt. (g)</td>
<td>865.3</td>
<td>860.9</td>
<td>43.7</td>
<td>652.4</td>
<td>34.4</td>
<td></td>
</tr>
</tbody>
</table>

*: empty wt., #: P<0.05
Table 2. The mean values of carcass characteristics of Tushin and Red Karahan lambs (n=5).  

<table>
<thead>
<tr>
<th>Carcass Characteristics</th>
<th>Tushin</th>
<th>Red Karahan</th>
<th>Tushin</th>
<th>Red Karahan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \bar{X} )</td>
<td>( s_x )</td>
<td>( \bar{X} )</td>
<td>( s_x )</td>
</tr>
<tr>
<td>Cold carcass wt. (kg)</td>
<td>18.53</td>
<td>0.90</td>
<td>18.58</td>
<td>0.85</td>
</tr>
<tr>
<td>Cold carcass dressing</td>
<td>44.80</td>
<td>1.09</td>
<td>43.74</td>
<td>1.12</td>
</tr>
<tr>
<td>percentage (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leg wt. (kg)</td>
<td>5.66</td>
<td>0.14</td>
<td>6.04</td>
<td>0.24</td>
</tr>
<tr>
<td>Shoulder wt. (kg)</td>
<td>2.95</td>
<td>0.12</td>
<td>3.26</td>
<td>0.15</td>
</tr>
<tr>
<td>Loin wt. (kg)</td>
<td>1.30</td>
<td>0.08</td>
<td>1.36</td>
<td>0.07</td>
</tr>
<tr>
<td>Back wt. (g)</td>
<td>1.31</td>
<td>0.10</td>
<td>1.55</td>
<td>0.34</td>
</tr>
<tr>
<td>Remainders wt. (kg)</td>
<td>3.83</td>
<td>0.50</td>
<td>3.74</td>
<td>0.65</td>
</tr>
<tr>
<td>Kidneys wt. (g)</td>
<td>101.3</td>
<td>6.04</td>
<td>115.9</td>
<td>3.88</td>
</tr>
<tr>
<td>Kidneys fat wt. (g)</td>
<td>64.5</td>
<td>4.54</td>
<td>88.4</td>
<td>17.7</td>
</tr>
<tr>
<td>Fat tail wt. (kg)</td>
<td>2.85</td>
<td>0.53</td>
<td>2.10</td>
<td>0.17</td>
</tr>
<tr>
<td>Eye-muscle area (cm²)</td>
<td>9.84</td>
<td>0.37</td>
<td>10.46</td>
<td>0.54</td>
</tr>
</tbody>
</table>

44.39-46.97% with no significant difference between each other.

The differences of mean values for investigated slaughter characteristics were no significant between genotypes within same sex groups, except feet weight.

Carcass Characteristics: The mean values of inspected carcass characteristics for each slaughter group were given in Table 2.

The lowest cold carcass weight was found in Tushin female lambs. The mean values of cold dressing percentage for male and female groups were 43.74-44.80% and 43.10-45.69% respectively.

There were no statistical differences between Tushin and Red Karahan genotypes within same sex groups for all investigated carcass characteristics.

**DISCUSSION**

In this study, slaughter weights of Tushin and Red Karahan male lambs compared to the results in references, were found higher than those reported by Aksoy and Ihaslan and Gelyi for Tushin and Red Karahan lambs. These result were also higher than the values reported by Karaca et al. for Karakas lambs, but were lower than the results given for Tushin lambs by Macit et al.

Cold carcass weights of male lamb groups in this study were higher than the values reported by Karaca et al. for Karakas lambs and was close to given for Tushin and Red Karahan by Ihaslan and Gelyi, but were lower than the results of some studies.  

Leg weights of male lamb groups were found higher than given for Tushin and Red Karahan but were lower than the results of other studies.

Shoulder weights of male lamb groups in this study were determined to be higher than given for Tushin and Red Karahan by Ulusan et al. and similar to the results of the same breeds reported by Aksoy, but were lower than given for the other genotypes.

Loin weights of male lamb groups were higher than the results given for Tushin and Red Karahan and were similar to the result given for Tushin lambs by Macit et al., but were lower than given for the results of the crossbred genotypes by Akmaz et al.

Back weights of Tushin and Red Karahan male lamb groups were found higher than those values given by Aksoy and Ulusan et al.; on the other hand found to be lower than values of some studies.

Remainders weights of male lamb groups were determined to be higher than given for Tushin and Red Karahan by Ulusan et al., but were lower than the results given for same breeds by Aksoy.  

Kirmizibayrak, Saaect, Aksoy
Fat tail weights of male lamb groups were
determined to be higher than those given for Tushin by
Oslan and Gelyeti and crossbred genotypes reported by
Akmaiz et al.8,10, but were lower than given by the
other studies results for Tushin and Red Karaman8,5,7.

In this study, cold carcass dressing percentage and
eye muscle area values of male lamb groups were
determined to be lower than the results of fattened
lams.5,7,10,14

This study reflected the local lamb breeding
practice in Kars province. Similar slaughter and
carcass performances were observed between Tushin
and Red Karaman lambs that are dominating breeds in
the region. But these results were lower than
published results of some studies that were carried on
fattened lambs. Due to short pasture season in the
region, it may be suggested that intensive feeding
might be applied on lambs after pasture season to
increase meat production before slaughter.

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bestelenen morkarman, tuj ve bunların melezi erkek
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kuzularının entansif şartlarındaki besti performansları ile kesim ve
8 Ögün M: Karayaka erkek kuzularının besti performansı ve
Başlı x İvesi (F1) ve Hampshire Down x İvesi (F1 ve G1)
melezi erkek kuzularının besti performansı ve karkas özellikleri.
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Başlı x Akkaraman ve Hampshire Down x Akkaraman
Melezi (F1 ve G1) erkek kuzularının besti performansı ve
11 Karaca O, Yanlı Y, Kaygısız A, Altın T, Demirel M:
12 Aygün T, Demirel M, Gökdal Ö, Çelikyürek H, Kor A:
Farklı sürəlerde sütten kesilen ve menayık ek olarak kesif
yerine bestelen karaka kuzularının kesim ve karkas
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