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A COMPARISON OF THE CARCASS COMPOSITION OF STRAIGHTBRED AND CROSSBRED LAMBS*

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ABSTRACT

Carcass composition of Naeemi (N), Chios (C), Texel (T), Naeemi x Texel (NxT) and Naeemi x Border Leicester Merino (NxBLM) lambs were studied at a mean slaughter weight of 45±4.5 kg. One half of each carcass was dissected into subcutaneous fat, muscle and bone, where dissected components were separately weighed to determine composition of individual carcasses. The aim of the study was to compare dressing percentage and carcass composition of lambs of the five genetic groups.

The overall means for dressing percentage, half-carcass weight, and weights of subcutaneous fat, muscle and bone in the half carcass were 44.9% and 10.1, 0.79, 7.4 and 1.69 kg, respectively. Dressing percentage was the lowest for N (39.4%) and the highest for NxT (47.5%), subcutaneous fat was the lowest for T (0.32 kg) and the highest for NxT (1.39 kg) and muscle was the lowest for N (6.6 kg) and the highest for NxT (8.1 kg). Breed differences were significant for dressing percentage, half-carcass weight and subcutaneous fat ($P<0.01$), but were not significant for muscle and bone.

INTRODUCTION

Traditionally, lamb and mutton are preferred by the people of the Arab arid region. In Kuwait, per capita consumption of lamb/mutton is 32.5 kg and estimated demand was 50,375 ton for the year 1995. This demand will increase to 89,700 ton in the year 2010 (AAD, 1995). About 96% of the total demand for lamb and mutton is imported mainly as live animals of poor grade. Lamb and mutton are priority commodities in Kuwait, and there is an increasing demand for locally produced Naeemi or crossbred prime lambs sired by Naeemi or Awassi rams. Therefore, investigations were undertaken in collaboration with the Kuwait Livestock Transport and Trading Company (KLTT) to evaluate carcass characteristics of lambs produced locally in an intensive system of flock management using local and imported breeds of sheep. The objective of this study was to compare the carcass composition of Naeemi (N), Texel (T), Chios (C), Naeemi x Texel (NxT) and Naeemi x Border Leicester Merino (NxBLM) lambs to evaluate their suitability for meat production in an intensive system of sheep rearing.

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MATERIAL AND METHODS

The study involved 39 lambs of five breeds groups born in the spring of 1994 in a feedlot operation. The number and breeds of lambs used in the study were 6 N, 10 C, 8 T, 6 NxT and 9 NxBLM. After weaning at eight weeks, the lambs were housed in individual pens of 1.5 x 1 m dimensions. They were offered a balanced diet containing a 4:1 ratio of concentrate and alfalfa hay of 16% crude protein. The feeding of lambs was *ad libitum*. At the end of the four-months fattening period, the lambs were slaughtered (45 kg average weight) and dressed according to standard commercial procedures. The carcasses were sawed into equal halves. One half of each carcass was dissected into subcutaneous fat, muscle, including inter- and intra-muscular fat and bone. Subcutaneous fat was defined as fat overlaying all the tissues and lying directly under the skin. The bone component also included cartilage and small quantities of muscle, fat and tissues that were difficult to separate. The method of carcass fabrication was the same as described by **Kleemann et al. (1988)**. The half carcass was defined as the sum of the subcutaneous fat, muscle and bone weights of one side of the whole carcass. The dressing percentage was calculated as the ratio of dressed carcass weight to live weight multiplied by 100. The analysis of variance, using general linear model of SAS System, used the live weights as a covariate in a special order to adjust for differences in the life weights while evaluating differences among carcasses components.

Table 1: The chemical composition of the experimental diet.

Ingredients	Composition
Soyabean	16%
Corn	39.5%
Barley	16%
oats	6%
Alfalfa	20%
Vit. & Minerals	0.5
Limestone	1.2%
Chemical composition	
Dry matter	92.00
Crude protein	16.00
Ash	7.28
Ether extract	1.65
Crude fiber	3.52
ME, Mcal/kg (calculated)	2.84

RESULTS AND DISCUSSION

Overall means for dressing percentage, half carcass weight, and weights of subcutaneous fat, muscle and bone calculated on a half-carcass basis were 44.9% and 10.1, 0.79, 7.4 and 1.69 kg, respectively (Table 1).

The mean dressing percentage for he N lambs ranked the lowest (39.4%) and NxT carcasses, the highest (47.5%). Similar rankings were observed for the half-carcass weight. Texel carcasses had the lowest amount of subcutaneous fat (0.32 kg, half-carcass basis), and NxT carcasses had the highest amount of subcutaneous fat (1.39 kg, half-carcass basis) among the breeds studied. Breed differences in dressing percentage, half-carcass weight and subcutaneous fat weight were significant ($P<0.05$). Half-carcass muscle and bone weights ranged from 6.6 to 8.1 and 1.58 to 1.81 kg, respectively, with no significant differences between breeds.

The results of this study showed that, at the same live weight (live weight used as a covariate), the carcasses of Texel lambs were superior to those of N, C, NxT and NxBLM. **Clarke and Kirton (1990) and Sakul et al (1992)** also reported Texel carcasses to be leaner subcutaneously than the other breeds studied by them. The subcutaneous fat weight differences between the N and T carcasses in the present study were not significant. The main disadvantage of the N breed was in its lower dressing percentage and, consequently, lower dressed carçass weights than the T, C, NxT and NxBLM breeds. The relatively higher amounts of subcutaneous fat in the NxBLM and NxT indicates that these lambs should be slaughtered at lower weights to avoid excessive accumulation of fat under the skin.

Table 2. Least-squares Means & SE for Dressing Percentage, Half-Carcass Weight, Subcutaneous Fat Weight and Bone Weight Adjusted for Live Weight

Breed	Half-carcass Components					
	N	Dressing Percent	Half-carcass Wt., (kg)	Subcutaneous Fat Wt., (kg)	Fat Muscle* Wt., (kg)	Bone Wt., (kg)
Naeemi	6	39.4±1.4^{a}	8.7±0.5^{a}	0.54±0.16^{ab}	6.6±0.7^{a}	1.67±0.12^{a}
Chios	10	45.0±1.1^{b}	9.7±0.5^{ab}	0.77±0.13^{bc}	7.4±0.6^{a}	1.58±0.10^{a}
Texel	8	46.5±1.1^{b}	10.3±0.5^{bc}	0.32±0.13^{a}	7.3±0.6^{a}	1.81±0.10^{a}
Naeemi x BLM	9	46.1±1.3^{b}	10.4±0.5^{bc}	0.94±0.15^{c}	7.8±0.7^{a}	1.64±0.11^{a}
Naeemi x Texel	6	47.5±0.5^{b}	11.3±0.5^{c}	1.39±0.15^{d}	8.1±0.7^{a}	1.77±0.11^{a}
Overall		44.9±0.2	10.1±0.2	0.79±0.06	7.4±0.3	1.69±0.05

* Includes intermuscular fat

N = Naeemi

BLM = Border Leicester Merino

^{abcd} Means within a trait having different superscripts differ significantly between breeds ($P<0.05$).

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