

Comparison between Carcass Traits of Two Age Groups of Fat Tailed Sheep

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SEVENTEEN, 18-month and eleven, 3-year-old, Rahmani rams were used to compare their carcass trait when reared in feedlot. The dressing percentage and percentage of edible offal parts were significantly ($P < 0.05$ or < 0.01) increased with age. The pooled correlation coefficients between slaughter weight and empty body weight and warm carcass and liver weights, were highly significant ($P < 0.001$).

Rahmani sheep, the heaviest of the indigenous breeds, are raised in Egypt mainly for meat production. These sheep at variant ages, are usually finished for a short period of time before being slaughtered.

Some information is available on the carcass traits of Rahmani lambs (Badreldin, 1951 and Younis *et al.*, 1972) and yearlings (El-Ashry, *et al.*, 1972) but no information has yet been reported on the effect of age on the carcass traits of this breed. Besides, there is limited information on the relationships among measurements taken from slaughter data, which may help in prediction of some carcass traits from live weight (Galal, *et al.*, 1974). It was decided, therefore, to compare the carcass traits of Rahmani breed at different age-groups reared in feedlot and to estimate some correlations between live weight and carcass traits.

Material and Methods

Two groups of Rahmani rams were stationed in the experimental farm of Faculty of Agriculture, Ain Shams University, seventeen 18-month-old (group 1) and eleven, 3-year-old (group 2). Within each age-group, the rams were classified on the basis of weight for convenience of assigning the required allowances for finishing recommended by Tomini (1963). In terms of starch equivalent, all sheep were fed 60% of the ration as roughages and 40% as concentrates. The ration which was offered for 90 days consisted of rice straw, clover hay and a pelleted concentrate mixture.

At the end of the finishing period, all animals were weighed after 18 hr holding of food then slaughtered. After skinning, all thoracic and abdominal organs were removed and weighed. The gastrointestinal tract was weighed, its contents removed, then its empty weight was recorded.

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The statistical design was that of the completely random with unequal group sizes (Huntsberger, 1969).

Results and Discussion

The main values for dressing percentage, edible and non-edible offal parts relative to live weight at slaughter, are shown in Table 1. The dressing percentage based on live weight increased significantly ($P < 0.05$) with advancing age being 50.4 and 58.5%, for groups 1 and 2, respectively. In agreement with this finding were the data reported by Gaili, *et al.* (1972) who concluded that the increase in dressing percentage with advancing age is due to higher growth rates of carcass tissues, especially muscle and fat, and the slower growth rates of the early developing parts since animals of group 2 were at three years of age, it is easy to say that much of the increase observed in their dressing percentage is mainly due to fat deposition in their carcasses. This conclusion is confirmed by the significantly ($P < 0.01$) higher weight of the tail in group 2 (6.71%) as compared with group 1 (5.69%), since the tail in the fat tailed sheep is usually considered as fat stores in the animal body.

Calculating dressing percentage on the basis of empty body weight gives a more accurate estimate for measuring the carcass percentage in an animal, than dressing percentage based on live body weight since the former estimate eliminates the variations due to digestive tract filling. The mean dressing percentage calculated on this basis for groups 1 and 2 respectively, were: 55.0% and 64.8%; a difference of about 10 percentage units.

The older Rahmani animals of this trial (group 2) had more of the digestive tract contents (7.4 kg) in comparison to the younger group (6.4 kg), although the differences in the weight of the empty digestive tract in both groups was small (0.21 kg). It is possible that with advancing age, the visceral smooth muscle of the tract becomes adapted for a degree of stretching that can accommodate greater quantities of food.

Analysis of the proportion of some edible offal parts relative to live weight revealed a significant ($P < 0.01$) age effect (Table 1); the weights of liver, kidneys, heart and lungs plus trachea increased with age. Conversely, head weight relative to live weight decreased with age (8.95 and 6.57% for groups 1 and 2, respectively). If the head is considered one of the early developing parts (Hammond, 1932), then with advancing age the weight of the animal increases resulting in a decrease of head weight relative to live weight.

No significant difference ($P < 0.05$) was detected between the two groups regarding the relative weights of legs, pelt and spleen.

Variations and covariances pooled with age groups were used to calculate the simple correlation coefficients given below. Live weight (LW) was significantly ($P < 0.001$) correlated with each of empty body weight (EBW), warm carcass weight (WCW) and liver weight (L.VW). Based on those significant correlations, the following regression equations were calculated:

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$$\begin{aligned} \text{EBW} &= 0.935 \text{ LW} - 1.420 & r &= 0.981^{***} \\ \text{WCW} &= 0.727 \text{ LW} - 12.14 & r &= 0.952^{***} \\ \text{LVW} &= 0.0075 \text{ LW} - 0.188 & r &= 0.796^{***} \end{aligned}$$

The proportion of the variance of the dependant variables that can be attributed to their linear regression on LW were (r^2); 0.962, 0.906 and 0.634, respectively.

TABLE 1. Mean and analysis of variance of different traits.

Trait studied	Group 1	Group 2	Mean squares	
			Between age df = 1	Within age df = 26
Number of sheep	17	11	—	—
Live body weight, kg.	59.7	75.2	1804**	78.2
Empty body weight, kg.	55.1	67.8	1088**	60.4
Empty digestive tract, kg.	3.98	4.19	10.3**	0.81
Warm carcass weight, kg.	30.3	44.0	1978**	43.1
Dressing 1%	50.4	58.5	137*	96.0
Dressing 2%	55.0	64.8	—	—
Tail, percent of live weight	5.69	6.71	13.7**	1.25
Edible offal parts, percent of live weight :				
Head	8.95	7.57	22.6*	1.01
Legs	2.11	2.11	0.016	0.037
Heart	0.27	0.35	0.037**	0.0027
Lungs and trachea	1.01	1.47	1.34	0.039
Liver	1.03	1.04	0.275**	0.007
Kidneys	0.23	0.34	0.155**	0.002
None edible offal parts :				
percent of live weight				
Pelt	7.53	9.34	21.5	16.6
Spleen	0.16	0.14	0.0127	0.0121

* $P < 0.05$ and ** $P < 0.01$.

1. Based on live body weight.
2. Based on empty body weight.

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مقارنة التصافي بين عورين من الأغنام ذات الذيل الغليظ

عبد الفتاح الصرقي ومحمد العشري وفهمى سويدان
كلية الزراعة - جامعة عين شمس

استعملت في هذه التجربة 17 كبش رحمانى من سن شهر واحد عشر شهرا و 3 أعوام . وقد استخدمت هذه الكبش لمقارنة نسبة التصافي في مجاميع غذائية مختلفة . ووجد أن نسبة التصافي ونسبة الجزء المأكول زادت معنويا (أكثر من 1% ، 5%) بزيادة العمر . ووجدت علاقة معنوية بين وزن الذبح ووزن الجسم الخالي ووزن اللبحة الدافئة ووزن الكبدة (أكثر من 1%) .