

Meat Production from Rahmani Lambs

M.Y.H. DARWISH,

Animal Production Department, Faculty of Agriculture, Kafr El Sheikh, Central Delta University.

S. EL-SAMMAN, AND E.R.M. ABOU-HUSSEIN

Animal Production Department, Faculty of Agriculture, University of Cairo

TWENTY Rahmani ram-lambs were used. Nine lambs were castrated at two weeks old. All the lambs were killed and dressed out at an average age of 7 months. The results obtained could be summarized as follows :

1. The average body weight of the castrated and non-castrated lambs were 24.23 and 27.93 kgs respectively with corresponding out percentage of 41.89 and 41.86.

2. The percentage of head, fleece, legs ; liver, spleen and lungs and heart to the live weight were 7.8, 9.80, 2.68, 1.36, 0.136 and 1.85 in the castrated lambs and were 7.55, 9.45, 3.198, 1.39, 0.125 and 1.96 for the non-castrated ones.

3. In the castrated lambs, the average fresh weight of the leg, loin, ribs, breast, neck and shoulders were ; 1.52, 0.42, 0.58, 0.57, 0.44, and 0.92 kgs respectively meanwhile such values for the non castrated were 1.793, 0.47, 0.72, 0.62, 0.55 and 1.06 respectively.

4. In the castrated lambs the average percentage of lean fat and bone of the whole carcass were 66.95, 7.68, and 24.13 respectively. In the non-castrated lambs, such values were 68.51, 6.15, and 24.23 respectively.

5. There was no statistical differences between the castrated and non-castrated lambs in the percentages of lean fat, and bone of different meat cuts.

6. The average percentage of moisture, crude protein, ash either extract, and carbohydrate for the whole carcass were 64.18, 24.08, 1.50, 10.19, and 0.06 respectively in the castrated lambs and were 68.28, 23.44, 1.30, 6.87 and 0.038 in the non castrated ones respectively.

Castration is widely used all over the world as a mean of improving meat quality. Palsson (1955) have shown that sex differences in growth may be suppressed or even reversed by severely restricted nutrition. Hammond (1932) reported that entire lambs are more susceptible than castrates to the effect of feed. Prescott (1969) and Turton (1969) concluded that there was no satisfactory explanation for the absence of a castration effect on sheep.

In Egypt, although shepherds practice castration on newly born lambs, yet published work concerning its effect on Egyptian breeds of sheep is limited. It is therefore, thought to carry out a trial to study the effect of carcass percentage, bone meat ratio, different carcass cuts and the chemical composition of the meat.

Material and Methods

Twenty Rahmani ram-lambs born and reared on the Faculty of Agriculture farm, Cairo University were used in this experiment in 1963. Nine lambs were castrated at two weeks old after birth by use of the Burdizzo. Lambs were kept with their mothers up to the weaning which took place at 4 months old. During rearing, dams were provided with concentrates (a mixture of crushed cotton seed cakes, corn grains, and rice bran) at the rate of $\frac{1}{4}$ kgs per head daily plus roughages provided *ad. lib.* After weaning lambs were fed at the rate of $\frac{1}{4}$ kg concentrates per head per day plus roughages.

Animals were left fasting for 12 hours prior to killing and live weight was recorded. Killing animals were followed according to the Islamic rules at an average age of 9 months. Bleeding was completed, the animals were skinned and dressed out. The weight of the hot carcass as well as the weights of the different organs and offals were recorded. Hot carcasses were split carefully into two sides as is customary. The right half of the carcass was divided into the following cuts and weighed, leg, loin, ribs, breast neck, and shoulders (fore-legs). Also, some carcass measurements were recorded in cms (*i.e.* diameter of longissimus dorsi and the depth of the chest).

The carcass composition or bone, fat and lean content was estimated by separating and dissecting the meat cuts. Exterior fatty tissue and that between muscles including connective tissues in the fat were trimmed from lean and classified as separable fat while cartilage was weighed with bone and tendons were weighed with lean meat.

Chemical analysis

Two left half carcasses of castrated lambs and two of non-castrated were used in this analysis. The half carcass was cut down to the six cuts previously mentioned. The whole weight of every cut was recorded and then deboned and the remainder (lean, fat, tendons and connective tissues) were minced thoroughly. Small pieces for duplicate chemical analysis (*i.e.* moisture, crude protein, ash, ether extract, and carbohydrates). The procedures as outlined by the A.O.A.C. (1960) were followed in the chemical analysis.

Statistical analysis was carried out following the methods recommended by Snedecor (1959).

Results and Discussion

As shown in Table 1 the average body weight was 24.23 kgs and 27.93 Kg for the castrated and non-castrated lambs respectively.

The corresponding dressing out percentages of 41.89, and 41.86.

The percentage of head, fleece, legs, liver, spleen, lungs and heart to the live weight were 7.07, 9.80, 2.68, 1.36, 0.136 and 1.85 for the castrated lambs and were 7.55, 9.45, 3.198, 1.39, 0.125 and 1.96 for the non castrated ones. The lower legs (cannon bones) appears to be relatively heavier in the non-castrated than those in the castrated ones.

The percentage of the digestive cannal empty was 7.87, and 7.48 in the castrated and non-castrated lambs.

The average weight of the Fat-tail and the kidney with its fat were 0.36 and 0.170 kgs in the castrated lambs with corresponding percentage of 1.48 and 0.49 respectively. Such values in the non-castrated animals were 0.446 and 0.14 kgs with corresponding relative values of 1.597 and 0.501 to the live weight.

The present results are relatively lower than those reported by Badrel-din, (1951) and Younis *et al* (1972) as the experimental animals in the present study were given only a growing ration and were not under fattening conditions.

The results of Table 2 show that the average weight of the half carcass in the castrated and non-castrated lambs were 4.69 and 5.48 kgs respectively. The average weight of the fore and hind quarters were 2.48 and 1.96 kgs for the castrated and were 2.92 and 2.43 kgs for the noncastrated. The average length of the silver side of the legs were 33.39 and 35.09 cms in the castrate and entire lambs respectively. It appears that castration has no effect on the length of the leg. Hammond (1932) reported that muscular development in the ram is greater than in the ewe but the proportion of muscle to bone is not higher because of the greater thickening of bones in the former. Castration prevents this thickening and raised the proportion of muscle to bone in young animals.

The average shape index of the longissimus dorsi at the last rib (calculated by dividing diameter A by diameter B) was 72.58 in the castrate and 62.67 in the entire. Referring again to the results of the dressing out percentage, it is clear that the shape index is not a good criterion for the dressing percentage.

It is shown in Tables 3, 4 and 5 that castration has no effect on the relative weight of the meat cut in the castrate except for the neck which was somewhat smaller and shorter in the castrate. The loin being the least affect characters. However, such difference were not significant Table 6. It is suggested that late maturing parts (*i.e.* loin) are the least affected by castration when animals are killed at relatively young age.

TABLE 1. Average of actual and relative weight of body, carcass, and different organs of Rabmani lambs

Treatment Items	Castrated		Non-castrated	
	Actual weight (kgs)	Relative weight % to live weight	Actual weight (kgs)	Relative weight % to live weight
Live weight	24.23	100.00	27.93	100.00
Carcass	10.17	41.89	11.69	41.86
Head	1.72	7.08	2.109	7.55
Fleece	2.38	9.80	2.64	9.45
Legs.	0.65	2.68	0.893	3.198
Liver	0.33	1.36	0.390	1.396
Spleen	0.033	0.136	0.035	0.125
Lungs + heart	0.45	1.85	0.547	1.96
Heart	0.11	0.453	0.147	0.536
Digestive system Full	6.33	26.07	6.77	24.24
Digestive system empty	1.91	7.87	2.09	7.48
Fat — tail	0.36	1.48	0.446	1.597
Kidnies and its Fat	0.12	0.49	0.14	0.501
Testes	—	0	0.107	0.38

Generally speaking, it could be said that under the present condition there were no significant differences between the castrate and the entire in dressing percentage, carcass and meat cut weights when the animals were subjected to only maintenance ration. Such results agrees with the findings of Prescott (1969) who concluded that the degree of differences associated with castration is likely to be most marked in lambs receiving a high plane of nutrition and slaughtered when they have attained puberty. The previous author also concluded that dressing percentage seems in general to be increased by castration, but the effect is small and relatively unimportant. Badr-eldin (1951) working on the same breed found that the entire lambs were superior to the castrated ones in final live body weight at 11 months old.

TABLE 2. Average liveweight, carcass, quarters weight and dressing and percentage in Rahmani ram lamb.

Items	Castrated	Non castrated
Live weight (kgs)	24.23	27.93
Carcass weight (kgs)	10.16	11.69
Dressing out %	41.89	41.86
Weight of half carcass (kgs)	4.64	5.48
Weight of fore quarter (kgs)	2.48	2.92
Weight of hind quarter (kgs)	1.96	2.43
Length of the silver } Side of the leg (cm) }	33.39	35.09
Diameter A of L.D.*	3.27	3.28
Diameter B of L.D.*	4.50	5.24
Shape index	72.58	62.67
Depth of chest (cm)	25.50	26.91

L.D. = Longis muss dorsi.

TABLE 3. Average actual and relative weights of different meat cuts in the castrated and non-castrated Rahmani lambs (As a percentage to the half carcass).

Meat cuts	Castrated		Non-castrated	
	Actual W. (kg)	Relative W. to half carcass %	Actual W. (kg)	Relative W. to half carcass %
Leg	1.520	34.34	1.810	34.22
Loin	0.412	9.26	0.476	8.90
Ribs	0.580	13.09	0.723	13.68
Breast + plate	0.573	12.74	0.672	12.67
Neck	0.439	9.78	0.550	10.35
Shoulder	0.923	20.77	1.064	20.17

TABLE 4. Actual weights of meat cuts and its relative to the half carcass in castrated Rahmani lambs

Meat cut	Leg		Loin		Ribs		Breast plate		Neck		Shoulder	
	W. in kgs	%	W. in kgs	%	W. in kgs	%	W. in kgs	%	W. in kgs	%	W. in kgs	%
Ram-lambs												
1239	1.70	35.56	0.37	7.74	0.63	13.18	0.66	13.81	0.40	8.37	1.02	21.34
1178	1.27	33.51	0.37	9.76	0.50	13.19	0.44	11.61	0.36	9.50	0.85	22.43
1102	1.21	35.38	0.32	9.36	0.43	12.57	0.45	13.16	0.27	7.89	0.74	21.64
1206	1.27	35.38	0.35	9.75	0.50	13.93	0.46	12.81	0.29	8.08	0.72	20.05
1216	1.25	34.63	0.31	8.59	0.55	15.23	0.35	9.69	0.42	11.63	0.73	20.22
1233	1.33	34.37	0.37	9.56	0.46	11.89	0.52	13.44	0.43	11.11	0.76	19.64
1245	1.86	33.15	0.56	9.98	0.76	13.55	0.76	13.55	0.54	9.62	1.13	20.14
1223	1.98	33.44	0.53	8.95	0.80	13.51	0.83	14.02	0.58	9.80	1.20	20.27
1221	1.84	33.64	0.53	9.69	0.59	10.79	0.69	12.61	0.66	12.06	1.16	21.21
Total	13.71	309.06	3.71	83.38	5.22	117.84	5.16	114.7	3.95	88.06	8.31	186.94
Average	1.52	34.34	0.412	9.264	0.58	13.093	0.573	12.744	0.439	9.784	0.923	20.771

W. = Weight.

TABLE 5. Actual weight of meat cuts and its relative weight to the half carcass of non-castrated ram-lamb

Meat cut	Leg		Loin		Ribs		Breast plate		Neck		Shoulder	
	W. in kgs	%	W. in kgs	%	W. in kgs	%	W. in kgs	%	W. in kgs	%	W. in kgs	%
Ram-lambs												
1203	2.10	33.55	0.65	10.36	0.77	12.30	0.79	12.62	0.66	10.54	1.29	20.61
1192	1.98	33.73	0.53	9.03	0.79	13.46	0.90	15.33	0.61	10.39	1.06	18.06
1243	1.98	34.58	0.28	6.54	0.69	16.12	0.48	11.21	0.44	10.28	0.91	21.26
1246	1.95	35.07	0.44	7.91	0.87	15.65	0.63	11.33	0.50	8.99	1.17	21.04
1240	1.67	34.86	0.37	7.72	0.57	11.90	0.69	14.40	0.55	11.84	0.94	19.62
1207	1.92	34.78	0.52	9.42	0.75	13.59	0.70	12.68	0.59	10.33	1.06	19.20
1231	1.56	32.21	0.52	10.70	0.64	13.16	0.62	12.68	0.57	11.65	0.95	19.59
1234	1.40	35.26	0.33	8.31	0.56	14.10	0.50	12.59	0.31	7.81	0.87	21.91
1211	1.93	34.04	0.57	10.05	0.71	12.52	0.65	11.46	0.62	10.93	1.19	20.99
1215	1.92	35.16	0.44	8.06	0.71	13.74	0.68	12.45	0.58	10.62	1.09	19.96
1244	2.00	33.22	0.59	9.80	0.84	13.95	0.76	12.62	0.65	10.80	1.18	19.60
Total	19.91	376.46	5.239	97.92	7.938	150.49	7.395	139.37	6.06	113.82	11.71	221.85
Average	1.81	34.223	0.476	8.901	0.723	13.681	0.672	12.670	0.55	10.347	1.064	20.168

W. = Weight.

TABLE 6. "T" test of significancy between castrated and non-castrated lambs in the relative weight of different meat cuts

Items meat cut	Relative wt. to the half carcass %		d.f.	Calculated t	Tabulated t		Signi- ficancy
	Castrated	Non Castrated			P<0.01	P<0.05	
Leg	34.34	34.22	18	0.8797	2.887	2.101	0
Loin	9.27	8.90	—	0.7480	—	—	0
Ribs. . . .	13.09	13.68	—	0.9408	—	—	0
Breast	12.74	12.67	—	0.1235	—	—	0
Neck	9.78	10.35	—	0.9505	—	—	0
Shoulders	20.77	20.17	—	1.3060	—	—	0

0 = Not significant.

In cattle extensive work has been carried out to study the effect of castration on rate of gain and carcass quality in cattle. Tunton (1962) emphasised that bulls had been found by most workers to express their greater growth potential (*i.e.* relative to steers) when fed intensively. Also, conventional castration caused a significant reduction in rate of gain in both stall housed and yarded cattle as reported by Robertson *et al.* (1969).

It is our opinion, that plane of nutrition play the major role in the growth rate of castrated and non-castrated animals. It seems also that the inter action between sex and nutrition play a part of such role. Leathem (1959) Suggested that lower levels of nutrition lead to reduced androgen function. Under such conditions masculine characteristics would be unable to achieve their full expression, in which case the lower the plane of nutrition the less growth rate.

Meat cuts

Table 7 shows that under the conditions of the present experiment and when the lambs were fed only on restricted rations (growing), the average fresh weight of the six cuts *i*; e. leg, loin, ribs, breast, neck and shoulders were 1.52, 0.42, 0.58, 0.57, 0.44, 0.92 kgs respectively for the castrated lambs. Mean while, such values for the entire were 1.793, 0.47, 0.72, 0.62, 0.55 and 1.06 respectively. Such differences were not statistically significant.

When cuts were dissected to estimate lean, fat, and bone percentage, the following results were obtained Table 7.

TABLE 7. Meat cuts of half carcass. Average fresh weight. The actual and relative percentage of meat components of:

Meat cut	Average weight fresh	Lean		Fat.		Bone	
		Average weight	% weight	Average weight fresh	% weight	Average weight	% weight
<i>(a) Castrated lambs</i>							
Leg	1.52	1.06	69.57	0.138	8.66	0.334	22.22
Loin	0.42	0.27	66.42	0.032	8.01	0.094	22.79
Ribs.	0.58	0.34	58.12	0.280	5.51	0.180	31.80
Breast	0.57	0.38	64.79	0.060	12.23	0.120	20.66
Neck	0.44	0.27	63.41	0.040	10.38	0.110	25.26
Shoulders	0.92	0.66	71.78	0.044	4.91	0.220	23.88
Half carcass	4.45	2.98	66.25	0.342	7.68	1.068	24.13
<i>(b) Non-castrated lambs.</i>							
Leg	1.793	1.28	71.42	0.11	5.66	0.38	21.46
Loin	0.47	0.32	69.37	0.03	7.22	0.13	24.32
Ribs.	0.72	0.45	61.43	0.04	4.93	0.22	29.82
Breast	0.62	0.41	62.88	0.07	10.28	0.14	22.42
Neck	0.55	0.36	66.03	0.03	6.19	0.13	23.49
Shoulders	1.06	0.67	63.51	0.05	4.52	0.27	25.37
Half carcass	5.25	3.59	68.51	0.322	6.15	1.27	24.23

1. In the castrated lambs, the percentage of lean ranged from 58.12 in the ribs to 71.78 in the shoulders. Fat percentage ranged from 5.51 in the ribs to 12.23 in the breast and the percentage of bone ranged from 20.66 in the breast to 31.80 in the ribs.

For the whole carcass the average percentage of lean fat and bone were 66.95, 7.68 and 24.13 respectively.

The average percentage of lean, fat, and bone for every cut were, 69.57, 8.66, and 22.22 for the leg, 66.42, 8.01 and 22.79, 12.23 and 20.66 for the breast, 63.41, 10.38, 25.26 for the neck, and 71.78, 4.91 and 23.88 for the shoulders respective. Also the meat/bone ratio for the castrated lambs were 74.63 : 24.13.

2. In the entire lambs, the percentage of lean ranged from 61.43 in the rib to 71.42 in the leg. Fat percentage ranged from 4.52 in the shoulders to 10.28 in the breast. The percentage of bone ranged from 21.46 in the leg to 29.82 in the ribs.

For all carcass, the average percentage of lean, fat, and bone were 68.51, 6.15, and 24.23 respectively. Also the meat/bone ratio for the entire lambs was 74.66 : 24.23.

"T" test of significance shows that there was no significant differences between lean, fat, and bone percentage of the different cuts of these castrated and entire lambs Table 8.

TABLE 8. "T" Test of significance between the castrated and non-castrated lambs in the different components of meat cuts.

Items	Average %		d.f.	Calculated t	Tabulated t		Signifi- cancy	
	Castrated	Non cast.			P<0.01	P<0.05		
Leg . . .	Lean .	69.57	71.42	17	0.9390 0.4257 0.3344	2.898	2.11	0
	Fat .	8.66	5.66					0
	Bone .	22.22	21.46					0
Loin . .	Lean .	66.42	69.37	17	0.4885 0.6095 0.5451	2.898	2.11	0
	Fat .	8.01	7.22					0
	Bone .	22.79	4.32					0
Ribs . .	Lean .	58.12	61.43	17	0.8694 0.2804 0.7715	2.898	2.11	0
	Fat .	5.51	4.93					0
	Bone .	31.80	29.82					0
Breast . .	Lean .	64.79	62.88	17	0.5753 0.9112 0.6591	2.898	2.11	0
	Fat .	12.23	10.28					0
	Bone .	20.66	22.42					0
Neck . .	Lean .	63.41	66.03	17	0.3233 0.1085 0.6413	2.898	2.11	0
	Fat .	10.38	6.19					0
	Bone .	25.26	23.49					0
Shoulder	Lean .	71.18	63.51	17	0.6943 0.4380 1.1550	2.898	2.11	0
	Fat .	4.91	4.52					0
	Bone .	23.88	25.37					0

0 = Not significant.

The Chemical Analysis of Meat Cuts

The results of the chemical analysis of the different meat cuts in the castrated and non-castrated lambs are shown in Table 9. In castrated lambs, the percentage of moisture ranged from 60.10 in the breast to 67.20 in the ribs. It is clear that the breast contain the highest percentage of dry matter while the ribs contain the lowest values.

TABLE 9. Chemical analysis of the Mutton of Rahmani Ram-Lamb. (Calculated on fresh basis).

Condition	Meat cut	Moisture %	Crude protein %	Ash %	Ether extract %	Carbohydrates %	Total %
Non-castrated.	Leg . . .	65.50	25.51	1.22	7.73	0.04	100
	Sir loin . . .	68.80	21.65	1.45	8.09	0.01	100
	Ribs . . .	71.10	21.31	1.40	6.14	0.05	100
	Breast . . .	68.40	22.81	1.26	7.51	0.02	100
	Neck . . .	64.80	27.42	1.22	6.53	0.03	100
	Shoulder . . .	71.50	21.95	1.25	5.22	0.08	100
Average . . .		68.28	23.44	1.30	6.87	0.038	
Castrated . . .	Leg . . .	64.00	26.08	1.52	8.40	—	100
	Sir loin . . .	64.90	22.00	1.44	11.69	0.02	100
	Ribs . . .	67.20	22.98	1.43	8.32	0.07	100
	Breast . . .	60.10	22.12	1.91	15.72	0.09	100
	Neck . . .	62.00	27.91	1.21	8.88	—	100
	Shoulder . . .	66.90	23.42	1.49	8.13	0.06	100
Average . . .		64.18	24.08	1.50	10.19	0.06	—

The highest value of crude protein was in the neck (27.91%?) while the loin contain only 22.00%. The percentage of ash showed little variation from cut to another. However, the loin contain relatively lower value of crude protein (1.99%).

The percentage of ether extracts of the meat cut was the most variable characters. It ranged from 8.13 percent in the shoulders to 15.72 in the breast. Estimation for leg, loin, ribs and neck were 8.40, 11.69, 8.88 percent respectively.

The average percentage of moisture, crude protein, ash, ether extract, and carbohydrate in the whole carcass were 64.18, 24.08, 1.50, 10.19, and 0.06 respectively.

In the non-castrated lambs, moisture percentage varied from 64.80 in the neck to 71.50 in the shoulders. The percentage of crude protein were nearly similar in the loin, ribs, and breast with representative value of 21.65, 21.31 and 22.81 respectively.

Ash percentages were the least variable characters and ranged from 1.22 to 1.45.

Ether extract percentage varied from 5.22 in the neck to 8.09 in the loin.

The average percentages of moisture, crude protein, ash ether extract, and carbohydrates in the fresh meat of non-castrated lambs were 68.28, 23.44, 1.30, 6.87 and 0.38 respectively.

Information from the present study and those of Everitt and Jurey (1966) and Prescott (1969) suggested that castration has relatively small effect on carcass composition. The present study show that castration increased the percentage of ether extract with an average percentage of 10.19 compared with 6.87 of those of the entire. Such increase was more remarkable in the breast and Sir loin with a percentage of 15.72 fat composed with 7.51 of the entire. However, such differences were not significant and this may be due to the relatively few number of animals or to the relatively reduced ration.

The present results agree with those of Prescott (1969) who reported that under restricted nutrition lean in the 7th-12th rib joint was 11.3 (g/wk) was for the entire and 9.3 for the castrate. Also fat (g/wk) was 8.1 for the entire and 11.3 for the castrate. On the other hand, when the lambs were under high plane of nutrition, lean was 15.9 (g/wk) for the entire and 15.9 for the castrate. Also, fat was 13.4 (g/wk) for the entire and 13.6 for the castrate.

Under the present condition, it is suggested that the degree of difference associated with castration is likely to be most marked in lambs receiving a high plane of nutrition and not slaughtered until they have attained puberty.

Prescott (1969) concluded that the slower gains of the restricted castrates on high level of energy intake was associated with the production of more fat and less lean.

In the present study, entire male had longer carcass and longer and thinner neck than the castrates. Also the entire has relatively heavier head and heavier lower legs (cannons) and heavier fat-tail than those of the castrate. Hammond (1932), in his classical work on castration in sheep observed that castration alters the muscle-bone proportion in a sheep. Muscular development in the ram is greater than in the ewe, but the proportion of muscle to bone is not higher because of the greater thickening of bones in the former.

References

- A.O.A.C., (1960). "Method of analysis" Ninth edition Washington D.C.
- Badraddin, A.L. (1951). Growth and carcass percentage in Ossimi and Rahmani sheep, *Fac. Agric. Cairo University Bull. No. 3* : 16 pp.
- Everitt, G.C. and Jurey, K. E. (1966). "The influence of castration on the growth of lambs in relation to plane of nutrition. Proceedings of a symposium held at the meat Research Institute, April, 1969, Ed. by D.N. Rhodes. J and A Churchil LTD. London. *J. Agric. Sci. 66*, 1., 66, 15.
- Hammond, J. (1932). In Growth and development of mutton qualities in the sheep. Oliver and Boyd. Lond.
- Leathem, J.H. (1959). "In recent progress in the endocrinology of reproduction" Ed. C. W. Lloyd, Academic press Inc. New York and London. Cited by Price; M.A., and Yeates N.T.M.(1969) in Growth rates and Carcass characteristics in steers and partial castrates. Proceedings of a symposium held at the meat Research institute, April, 1969, Ed. by D.N. Rhodes J and A churchil LTD London.
- Palsson, H. (1955). "In Progress in the physiology of farm animals". Vol. 2. Ed. by J. Hammond, London, Butterworths Scientific Publications.
- Prescott, J.H.D. (1969). The influence of castration on the growth of lambs in relation to plane of nutrition. *Proceedings of a symposium held at the meat Research Institute*, 1969, Ed. by D.N. Rhodes, J and A churchil LTD London.
- Robertson, I.S., Hubard Ocariz J.L. ; Wilson, J.C. and Paver, H. (1969). Gonadectomy in intensive beef production in meat production from entire male animals *Proceedings of a symposium held at the meat Research Institute*, April 1969. Ed. by D.N. Rhodes J. and A. churchil LTD. London.
- Snedecor, G.W. (1959). "Statistical methods", 5th ed. The IOWA State University Press, Ames, IOWA, U.S.A.
- Turton, J.D. (1969). Animal Breed. Abstr. 30 : 447 cited by Price, M.A. and Yeates N.Y/ M/ in growth rates and castrates (1969). *Proceedings of a Symposium held at the meat Research Institute*, April 1969. Ed. by D.N. Rhodes. J and A Churchil LTD London.
- Turton, J.D. (1969). "The effect of castration on meat production from cattle, sheep and pigs". *Proceedings of a symposium held at the meat Research Institute*, April, 1969. Ed. by D.N. Rhodes, J and A Churchil LTD London.
- Younis, A.A., Kothby, S., and Kumar G.A.R. (1972). Effect of castration on live body weight and certain carcass traits in Ossimi and Rhmani Lambs (Personnal Communication.)

انتاج اللحوم من الحملان الرحمانى

محمد يحيى حسين درويش ، سعد السمان و السيد رفعت محمود
ابو حسين
قسم الانتاج الحيوانى - كلية الزراعة - كفر الشيخ - القاهرة .

اجريت هذه التجربة بمزرعة قسم الانتاج الحيوانى كلية الزراعة جامعة القاهرة وقد شملت ٢٠ حولى رحمانى خصى منهم ٩ في عمر اسبوعين وبعد النظام غذيت هذه الحيوانات على عليقة نمو عادية وليست للتسمين ثم ذبحت في عمر ٧ شهور وقد قدرت اوزان الذبائح وأجزاء الحيوان المختلفة ثم قطعت كل ذبيحة الى نصفين طويلين وقطع النصف الايمن منها الى قطع اللحم الآتية :

الفخذة - القطن - الضلوع العلوية - أسفل الضلوع ومقدم الصدر - الرقبة - الرجل الامامية وفي جميع هذه القطع قدرت اوزان العظام والدهن واللحم ونسبها المثوية وكذلك أجرى التحليل الكيماوى لمحتويات القطع المختلفة ويمكن تلخيص النتائج كالاتى :

١ - كان متوسط الأوزان الحية للحمدن المخصين وغير المخصية هي ٢٤ر٢٢ ، ٢٧ر٩٣ كجم على التوالي وكانت نسبة التصاق ٤١ر٨٩% في الحملان المخصية ، ٤١ر٨٦% في الحملان الغير مخصية .

٢ - كانت النسب المثوية لكل من الراس والفروة والأرجل والكبد والطحال والرئتين ومهما القلب بالنسبة للوزن الحى من الحيوان في الحملان المخصية هي ٧ر٠٨ ، ٩ر٨ ، ٢ر٦٨ ، ١ر٣٦ ، ١ر٣٦ ، ١ر٨٥ بينما بلغت في الحملان الغير مخصية ٧ر٥٥ ، ٩ر٤٥ ، ٣ر١٩٨ ، ١ر٣٩ ، ١ر٢٥ ، ١ر٩٦ على التوالي .

٣ - كان متوسط الوزن الطازج للفخذ - القطن - الضلوع العلوية - أسفل الضلوع ومقدم الصدر - الرقبة - الرجل الامامية في الحملان المخصية هي ١ر٥٢ ، ٤ر٢ ، ٤ر٥٨ ، ٥ر٥٧ ، ٤ر٤٤ ، ٩ر٢٢ كجم على التوالي . بينما بلغت في الحملان الغير مخصية ١ر٧٩٣ ، ٤ر٧ ، ٥ر٧٢ ، ٦ر٢ ، ٥ر٥ ، ١ر٠٦ كجم على التوالي .

٤ - بلغت النسب المثوية لكل من اللحم والدهن والعظام في ذبيحة الحملان المخصية ٦٦ر٩٥ ، ٧ر٦٨ ، ٢٤ر١٣% بينما بلغت هذه النسب في الحملان الغير مخصية ٦٨ر٥١ ، ٦ر١٥ ، ٢٤ر٢٣% . ولم يكن هناك فروق معنوية في هذه النسب في قطع اللحم بين الحملان المخصية والغير مخصية .

٥ - أظهرت نتائج التحليل الكيماوى على أن نسبة الرطوبة والبروتين الخام ودرماد والمستخلص الأثيرى والكربوهيدرات في ذبيحة الحملان المخصية كانت ٦٤ر١٨ ، ٢٤ر٠٨ ، ١ر٥ ، ١٠ر١٩ ، ٠ر٠٦ على التوالي بينما بلغت في الحملان الغير مخصية ٦٨ر٢٨ ، ٢٣ر٤٤ ، ١ر٣ ، ٦ر٨٧ ، ٠ر٠٣٨ على التوالي .

٦ - يمكن الاستدلال من نتائج هذا البحث أن الخصى يكون قليل التأثير في الأنتام التى تلدح وهى صغيرة العمر أو التى تكون تحت مستوى غذائى منخفض .