

## EFFECT OF DOCKING ON GROWTH AND DEVELOPMENT OF AWASSI LAMBS

By

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### SUMMARY

An experiment included 20 docked Awassi male lambs and 20 normal Awassi ones was carried out to study the effect of docking on body weight, measurements and mutton characters. Lambs were weighed and measured once every two weeks and then once every month. Measurements taken were heart girth, height at withers and length of body. Ten lambs from each group were slaughtered when they were about one year old. Results obtained can be summarized as follows :

(1) Docked lambs were inferior to normal ones in body weight and dimensions till animals were about 13 months of age. Differences between the two groups in these aspects were statistically significant.

(2) Normal lambs were superior to docked animals in carcass weight, dressing percentage and measurements of carcass.

(3) Docked animals produced whiter carcass than normal lambs, fat was distributed around the tail region and around the internal organs of the docked animals.

### INTRODUCTION

Although sheep in Iraq are raised for mutton, wool and milk, yet the greatest proportion of income comes from the sale of lambs. Milk is usually consumed by the farmers as the main source of animal protein.

Docking in sheep is not a routine procedure in the Middle East and it is only practiced for experimental work. This investigation was carried out to study the effect of docking on the growth and development of Awassi lambs. Dressing percentage as well as mutton characteristics of normal and docked lambs were also investigated. Such experimental work is needed in this country where about 70% of the slaughtered animals are sheep and also most of the sheep when exported are utilized for mutton production.

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## MATERIAL AND METHODS

Forty single male lambs born during one week between the 11th. and 17th. of November 1962, were bought from the animal breeding section in Abu-Gharib experimental farm. The lambs were transferred with their dams to the College Farm one week after lambing. The dams were all approximately of the same age. Twenty lambs were chosen at random and docked before they were two weeks of age using the rubber ring method. All lambs were kept with their dams till weaning age at four months old.

After weaning, good hay was provided till they were about 10 months old when they were fed concentrates. The mixture used composed of 80% ground barley, 20% cottonseed cake and 2% salt. Lambs were gradually fed on this mixture with hay and straw. At the beginning of the fattening period every animal was given 1/4 of a Kilogram per day of this mixture, then the amount was increased gradually till it reached one kilogram daily after four weeks. The fattening period lasted for about two months.

During the experimental period, lambs were weighed and measured once every two weeks and then once every month. Measurements taken were heart girth, height at withers and length of body. Weights were taken to the nearest 0.10 pound and measurements to the nearest inch. Lambs were given phenothiazine when they were 6 months old and were shorn after the 9th. month of age. Three lambs were lost during the course of the experiment.

Ten docked and ten normal lambs were slaughtered when they were about 13 months old. Data on carcass weight, dressing percentage, weight of wholesale cuts and carcass traits were collected. Photographs were taken for the whole carcass and the different cuts. Means, correlation coefficients and other statistical parameters were calculated according to Snedecor (1956).

## RESULTS

### *Body Weight and Measurements :*

Table 1 and Graph 1 show the weights of docked and normal animals from birth till 13 months of age. Graphs 2,3 and 4 present the heart girth, height at withers and length of body respectively for the two groups of lambs.

It can be seen from the above mentioned table and graphs that normal animals are superior to docked lambs in body weight and dimensions at different ages. Although difference between the birth weights of the two groups is negligible being 0.05 lbs, yet the superiority of the normal lambs over the docked ones is noticeable with advance in age. All differences between the two experimental groups in weight and dimensions were statistically significant.

Differences in weight during the first year of the lambs life ranged between 3.1 and 11.5 lbs and the superiority of normal lambs was more pronounced during the first few and the last month of the experiment. The same trend was observed for the data collected on body measurements.

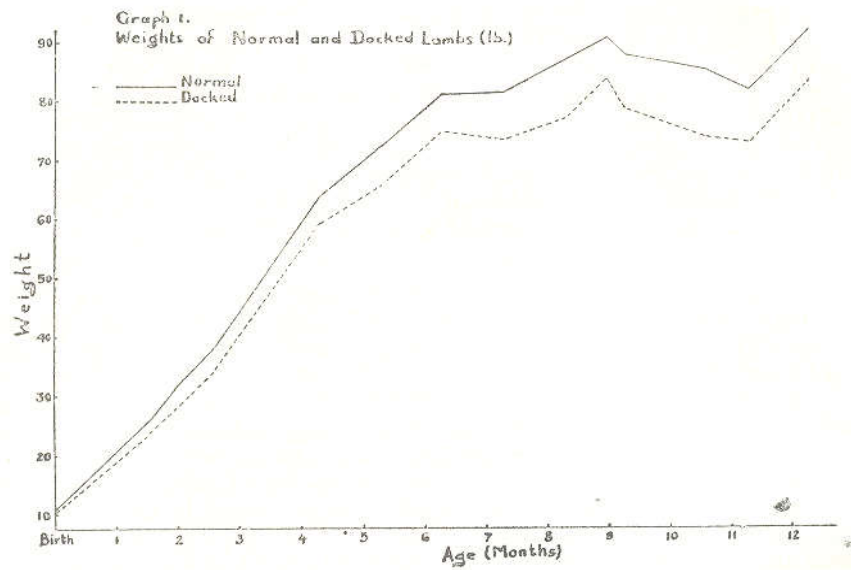
It is interesting to compare the normal Awassi lambs with the Awassi sheep in Turkey and with the breeds raised in Egypt which resemble the Awassi to some extent in some phenotypic characters. The investigations reported by Sonmez (1955) and Yarkin (1959) on Awassi sheep in Turkey indicate that the Awassi raised in Iraq are bigger in size and heavier in weight than the former group. Comparing the present results with those reported by Ragab et al (1953) and Asker et al (1957) on the growth and development of the Rahmani breed in Egypt shows that this breed is lighter in weight and smaller in body dimensions than the Awassi sheep in Iraq. Actually weights at birth, 4, 6 and 8 months for the Rahmani breed were 8.8, 53.7, 68.2 and 81.7 lbs compared to 10.5, 63.9, 81.4 and 87.8 pounds for the Awassi, respectively.

Examining Table 1 shows that normal lambs gained about 53.4 lbs from birth till weaning at four months of age, while docked lambs gained only 48.8 lbs during the same period. The daily gain for the two groups in the same order mentioned before was found to be 0.43 and 0.38 lbs, respectively. The daily gain decreased after weaning to 0.19 and 0.15 lbs for the normal and docked lambs, respectively. Actually the total gain from weaning till eight months of age came to 23.9 and 18.2 lbs for the two groups, respectively. It is worth noting that the Awassi breed in Iraq was found to be superior in daily gain to the Awassi in Turkey and to the Rahmani breed in U.A.R. which is the heaviest breed of sheep in this country. Drop in weights and measurements after the ninth month (Table 1, Graph 1, 2, 3 and 4), were due mainly to shearing which took place after the ninth month of age.

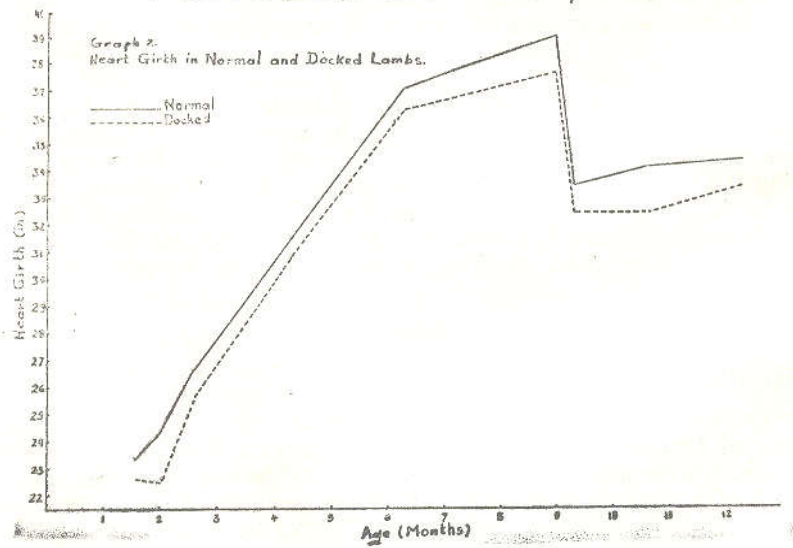
The correlation coefficients between body weight on one hand and heart girth and height at withers on the other are presented in Table 2 for the animals studied. The number used in estimating the correlation coefficients was 19 for the docked and 18 for the normal ones. The estimates obtained as the correlation coefficients were all statistically significant. Although the number of observations used in calculating the correlation coefficients is limited, yet our results are in accordance with those reported by Ragab et al (1953) studying the same problem in Rahmani sheep. Table 2 indicates that correlation coefficients obtained for docked lambs, which are non significant, are higher than those found for normal animals and estimates for both groups when animals were eight months of age were the lowest compared to other correlations.

#### *Carcass Weight and Wholesale Cuts:*

During January 1964 ten docked and ten normal lambs were slaughtered to collect information on mutton qualities. Table 3 includes the characters studied for the two groups of lambs. It can be seen from this table that normal lambs were superior to docked animals in weight of carcass, dressing percentage and other traits. Dressing percentage for the normal lambs was found to be 41.2% while it came to 38.6, for the docked group. Differences between the two groups in dressing percentages were statistically significant ( $P < 0.05$ ).



GRAPH 1.—Weights of Normal and Docked Lambs.



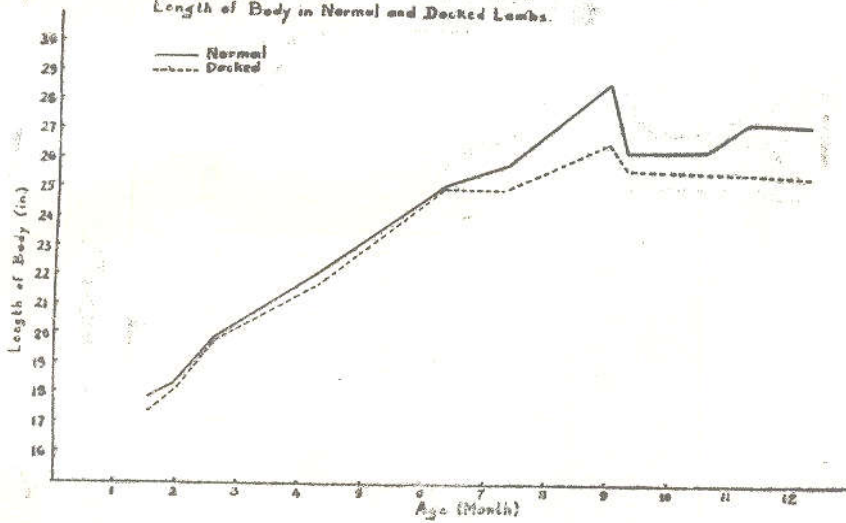
GRAPH 2.—Heart Girth in Normal and Docked Lambs.

Graph 3.  
Height at Withers in Normal and Docked Lambs.



GRAPH 3.—Height at Withers in Normal and Docked Lambs.

Graph 4.  
Length of Body in Normal and Docked Lambs.



GRAPH 4.—Length of Body in Normal and Docked Lambs.

TABLE 1.—Weights of Normal and Docked Lambs from Birth till 13 Months of Age

Age Group	Weight of Lambs (lbs.) at Different ages (Months)													
	Birth	1	2	3	4	5	6	7	8	9	10	11	12	13
Normal	10.50	26.5	31.9	38.5	63.9	72.2	81.4	81.7	87.8	91.3	88.3	85.9	82.4	93.2
Docked	10.35	23.4	28.1	34.4	59.1	65.8	75.0	73.7	77.3	84.4	79.0	14.4	73.2	84.0
Diff. (lbs)	0.15	3.1	3.8	4.1	4.8	6.4	6.4	8.0	10.5	6.9	9.3	11.5	9.2	9.2
Diff. % . . .	0.50	11.7	11.9	10.4	7.5	8.9	7.9	9.8	12.0	7.6	10.5	13.4	11.2	9.9

TABLE 2.—Correlation Coefficients Between Body Weight and Body Measurements.

Age	Characters	Normal	Docked	Average
4 Months .. ..	} Body Weight and Heart Girth }	0.598	0.888	0.743
8 Months .. ..		0.627	0.727	0.677
12 Months .. ..		0.605	0.881	0.746
4 Months .. ..	} Body Weight and Height at Withers }	0.756	0.831	0.793
8 Months .. ..		0.578	0.452	0.515
12 Months .. ..		0.611	0.779	0.695

Darwish (1963) carried out similar work on the Rahmani breed in Egypt and reported that the dressing percentage for normal males at 11 months of age was 48.1 % compared to 41.2 % for the present study. Results reported on dressing percentage of sheep in U.S.A. were higher than that found for the Awassi sheep (Kamlade, 1955). The dressing percentage is an important character in mutton production and the Awassi breed is inferior in this trait compared to others sheep studied.

Examining the carcass of normal and docked lambs showed that the former group had more fat around the tail region, thicker fat deposits on the brisket, back, loin, neck and legs than the latter group. Namely, the subcutaneous fat was thicker and more dense in the docked animals.

TABLE 3.—Carcass Measurements (inch), Live Weight, Carcass Weight and Weight of Various Cuts of Normal and Docked Lambs

No. of animals	Type	Live weight	Carcass wt.	Dressing %	Fat tail	Legs	Loin	Ribs	Shoulders	Breast and shank	Carcass length	Measurement of Heart girth	Wt. after chilling	Shrinkage in cooler after 24 hours
10	Normal	96.1	39.6	41.2	2.9	11.30	4.88	4.20	9.35	4.83	22.7	31.1	38.97	1.7%
10	Docked	85.7	33.1	38.6	--	10.13	4.33	3.65	8.10	4.40	21.2	29.1	32.55	1.5%



The carcass of the docked group had a whiter appearance than that of the normal group. That was probably due to the thicker subcutaneous fat in the docked group (Figures 1, 2 and 3).

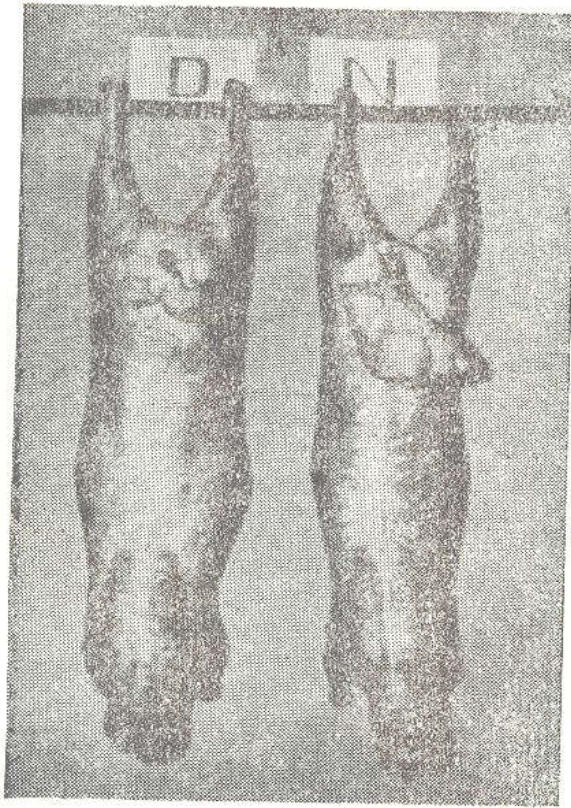


FIG. 1.—Dorsal Carcass View of Normal and Docked Lambs.



FIG. 2.—Side Carcass View of Normal and Docked Lambs.

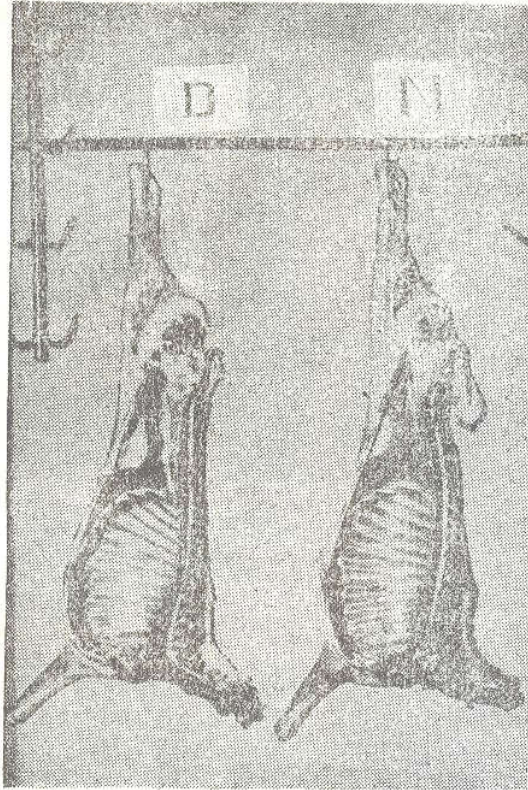


FIG. 3.—Carcass Halves of Normal and Docked Lambs.

The well marked difference in appearance between the various cuts of the two groups lay in the thicker fat layer on all the cuts of the docked group (Figures 4, 5, 6, 7 and 8). There was another marked difference between the amount of fat accumulated around the internal organs of the two groups. Fat deposits around those organs appeared to be more dense in the docked group than the normal group.

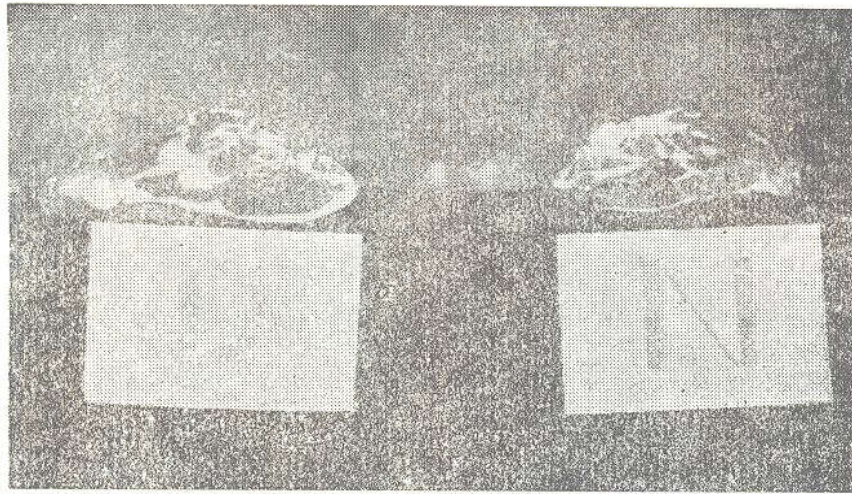


FIG. 4.—Legs of Normal and Docked Lambs.

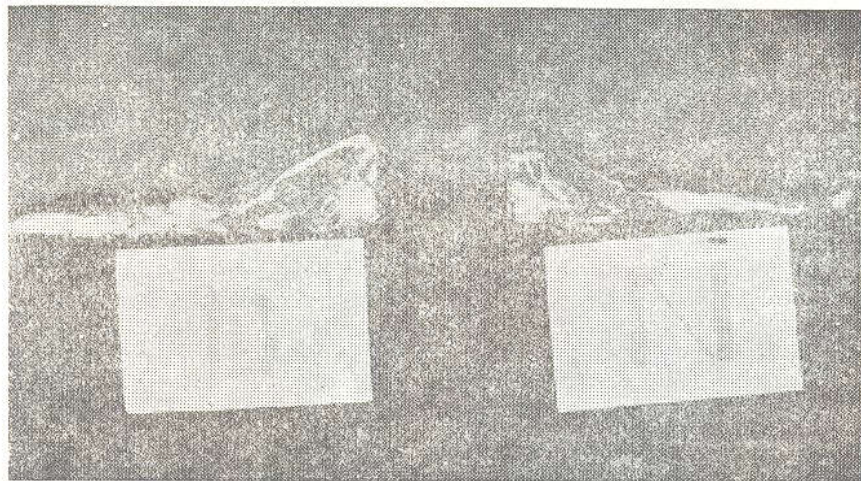


FIG. 5.—Loins of Normal and Docked Lambs.

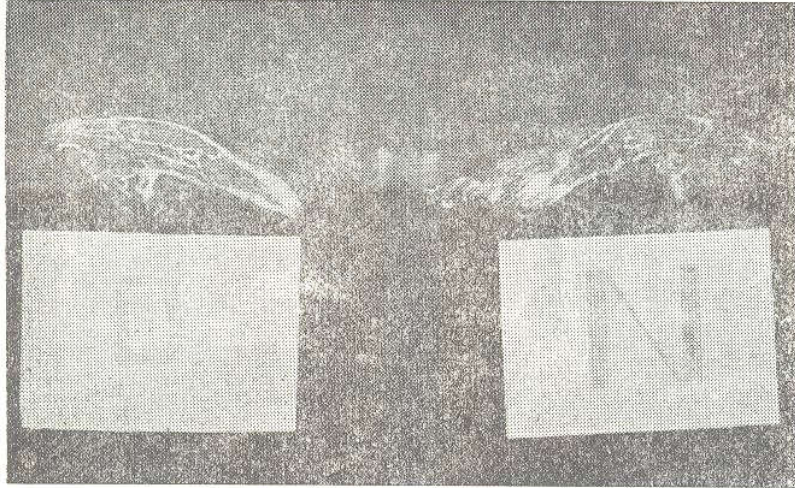


FIG. 6.—Ribs of Normal and Docked Lambs.

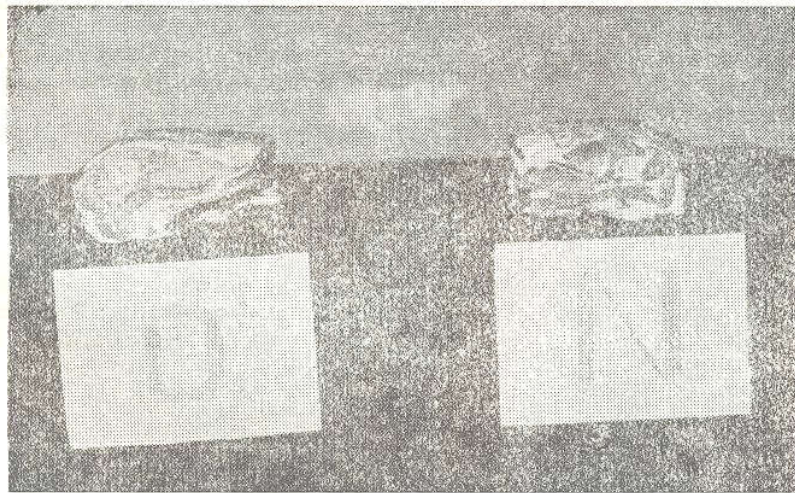


FIG. 7.—Shoulders of Normal and Docked Lambs

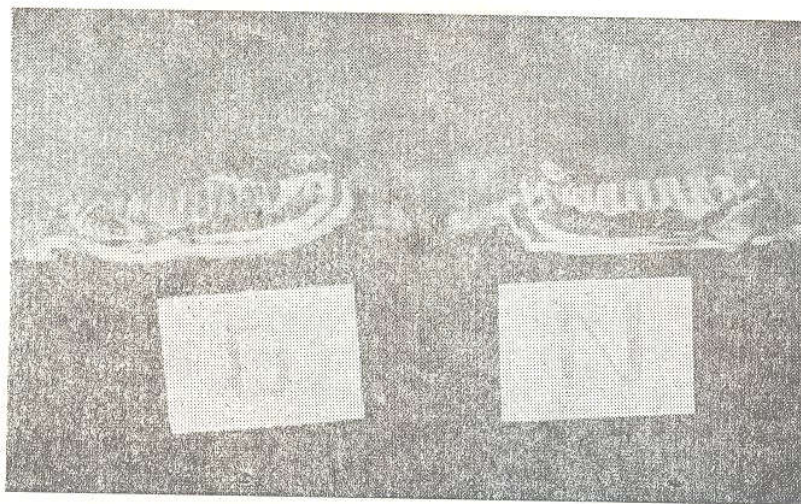


FIG. 8.—Breasts of Normal and Docked Lambs.

#### DISCUSSION

Although cattle, buffaloes, goats and camels are raised in Iraq beside sheep, yet the latter group of animals is the most important in the country. This is due to the fact that sheep excell other animals in number and most of the farmers in Iraq raise sheep. Moreover, in the desert areas, sheep are the dominating and most adaptable animal in these regions and farmers depend to a great extent on sheep as the main source of their income. Improving the economic characters of sheep in Iraq and raising the standard of feeding and management for commercial flocks will definitely raise the income of the average farmer in the country.

This experiment was designed to study the effect of docking on body weight, measurements and mutton qualities of Awassi lambs. Results obtained showed that docking affected the growth and the development of lambs, and undocked lambs were superior to docked ones in body weight and dimensions. Differences in weight between the two groups, sometimes reached 11.5 pounds which amounted to 13.4% of the weight of lambs.

Although lambs are not sold according to their weights, yet animals are evaluated according to their sizes and eventually normal animals will attain higher prices. The present report showed that differences in carcass weight for the docked and normal lambs were statistically significant and the second group was heavier than the first. This superiority amounted to 6.5 pounds or about 16.4% of the carcass weight of normal lambs. Difference in price of carcass between the two groups came to about one Iraqi Dinar which is equivalent to one Pound Sterling.

It can be concluded therefore, that docking the Awassi sheep will not lead to any advantages, and actually docked animals were inferior to normal lambs in all characteristics studied. It is intended however, to investigate the effect of docking on heat tolerance of rams as well as on the fertility of males and females. Hafez et al (1958) have shown that docked rams had a lower skin temperature and respiration rate than normal animals. They mentioned that such better heat regulation may be due to metabolic differences or anatomical changes in the body such as the thickness of subcutaneous fat.

#### ACKNOWLEDGEMENT

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## تأثير بتر الذيل على نمو أغنام العواسى العراقية في مراحل النمو المختلفة

### الملخص

أجريت هذه التجربة لدراسة تأثير بتر الذيل على وزن ومقاييس الجسم وصفات الذبيحة في الأغنام العواسى بالعراق . واستخدم في التجربة عشرون حملا مبتورة الذيل وعشرون حملا تركت طبيعياً بذيلها ووزنت الحيوانات وأخذت المقاييس من الولادة الى عمر حوالى ١٣ شهرا . ثم ذبحت عشرة حملان من كل مجموعة لدراسة تأثير بتر الذيل على صفات الذبيحة وعمر الحملان حوالى ١٣ شهرا .

وتتلخص نتائج التجربة فيما يلى :

- (١) كانت الأغنام مبتورة الذيل أقل وزنا وأقصر في مقاييس الجسم المختلفة عن الأغنام ذات الذيل الى أن وصلت الحملان ١٣ شهرا من عمرها ، كما كانت الفروق بين المجموعتين في الأوزان وبعض المقاييس معنوية .
- (٢) تبين أن الأغنام التى تركت بذيلها قد فاقت الأغنام مبتورة الذيل في وزنها بعد الذبح ( وزن الذبيحة ) ونسبة التصافي ومقاييس الذبيحة .
- (٣) لوحظ أن لون الذبيحة في الحملان مبتورة الذيل أفتح من لون ذبيحة الأغنام الطبيعية وذلك نتيجة لترسيب كميات من الدهن على الذبيحة في المجموعة المبتورة الذيل التى لوحظ فيها أيضا تراكم الدهن حول الأحشاء وحول منطقة الذيل المبتور .