

THE INFLUENCE OF THE POLL GENE AND CASTRATION ON LAMB GROWTH

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Summary

1. The presence of one poll gene had no influence on the growth rate of cross-bred lambs (Dorset Horn rams x Border Leicester-Merino ewes, [$P^1P^1 \times Pp$]).

2. Entire male lambs and lambs sterilized by removal of the epididymal tails were 5 per cent. heavier ($P < 0.05$) than castrated lambs, and lambs with one half of each testis removed.

I. INTRODUCTION

There is some evidence (Dun, 1958—not confirmed by Dolling and Carter 1961) that the presence of one poll gene may influence the body weight of Merinos. As the poll gene segregates in commercial fat lamb crosses, it was decided to investigate its possible influence on growth rate. In this experiment it was also possible to examine the effect of castration upon lamb growth, following the work of Walker (1950).

II. MATERIALS AND METHODS

Three hundred two-tooth Border Leicester x Merino ewes (heterozygous polled [Pp]) were mated to Dorset Horn Rams on March 3, 1961, at Tamworth Agricultural Research Station. The Dorset Horn rams are of the horned genotype (P^1P^1). This mating is expected to yield horned (P^1p) and polled (P^2P) progeny in the ratio of 1: 1.

Lambing commenced on August 9, 1961, the first 280 lambs born being used in the experiment. At two weeks of age lambs were marked, male lambs being caught at random and assigned in turn, within poll phenotypes, to one of the following four castration treatments:

- (a) Lambs left entire.
- (b) Epididymal tails removed.
- (c) One-half of each testis removed.
- (d) Castration.

Ewe lambs were simply classified into two groups—horned and polled.

On November 1, 1961, the lambs were weighed, their horn volumes measured, and the extent of adhesion between penis and prepuce of the males was scored as outlined by Dun (1955).

Body weights were individually corrected for age by interpolation. The data were examined by analysis of variance (fitting constants), singles and twins being separately treated. The sums of squares and degrees of freedom for main effects and interactions were pooled for final analysis.

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III. RESULTS

Mean body weights for each group, horn volumes, and preputial adhesion scores are presented in Table 1.

TABLE 1
MEAN BODY WEIGHTS (lb) HORN VOLUMES, AND
PREPUTIAL ADHESION SCORES

Horn Genotype	Type of Birth		Ewes	Ram Treatments				Estimated Mean
				A	B	C	D	
Polled (P ¹ P)	Singles	No.	24	5	2	4	5	57.5
		Mean	62.2	64.8	66.3	64.3	62.0	
		Var.	25.5	84.7	33.6	15.3	11.7	
	Twins	No.	38	8	9	9	12	
		Mean	50.5	51.0	49.6	48.0	49.7	
		Var.	41.1	63.0	54.2	19.1	22.6	
Horned (P ¹ p)	Singles	No.	16	12	6	9	5	57.9
		Mean	60.2	67.9	70.3	63.6	62.9	
		Var.	44.7	11.5	7.5	121.9	58.4	
	Twins	No.	38	6	12	7	12	
		Mean	50.0	49.8	52.9	52.3	52.5	
		Var.	30.7	49.3	34.3	54.2	45.7	
Mean Horn Volume (cu. in.)			0.89 (0.02)*	4.32 (1.36)*	4.00 (1.26)*	2.11 (0.38)*	1.73 (0.21)*	
Estimated Treatment Mean			55.8	58.8	60.3	56.8	56.7	
Mean Preputial Adhesion Score				2.8	2.6	1.1	1.0	

* Variance.

Significance order: Differences between treatments in brackets are not significant.

(a) Body Weight (Treatments B, A) > (Treatments C, D and Ewes) . . P<0.05

Singles-Twins P<0.01

Horned- Polled N.S.

Interactions -Genotype x Treatment . . . N.S.

Type of birth x Treatment N.S.

(b) Horn Volume: (Treatments A, B) > (Treatments C, D) > Ewes . . P<0.05

(c) Preputial Adhesion Scores: (Treatments A, B) > (Treatments C, D) . P<0.05

Body weight differences between polled and horned lambs were small and non-significant, and there was no poll genotype x treatment interaction.

Males from treatments A and B were significantly heavier, showed greater horn development and more extensive breakdown of preputial adhesions than males from treatments C and D.

IV. DISCUSSION

These results do not provide any evidence that the presence of one poll gene influences the body weight of lambs. There is thus no reason why polled breeds may not be as valuable for lamb production as their horned counterparts.

As expected, entire and sterilized ram lambs showed a 5 per cent. increase in body weight relative to castrates. The economic value of these lambs at the completion of the experiment will be of interest, as sterilization offers several possible advantages:

1. Reduced danger of fertilization of ewes by old lambs.
2. Sterilized poll lambs have the appearance of wethers.
3. Carry-over lambs would be resistant to pizzle rot.

In relation to point 2 above, it is unfortunate that treatment C produced castrate type lambs. This is attributed to the fact that the remaining half testes had regressed to small hard lumps, and had probably ceased to produce hormone.

V. REFERENCES

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