GROWTH AND EFFICIENCY OF POST-WEANING GAIN IN LAMBS FROM MERINO FLOCKS SELECTED FOR HIGH AND LOW WEANING WEIGHT

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Summary

An examination has been made of the growth and post-weaning growth efficiency of lambs from three flocks, one selected for high weaning weight (Weight Plus), one for low weaning weight (Weight Minus), and a control flock (Random). Weight Plus lambs were 20% heavier at birth than Weight Minus lambs and grew faster to weaning. Although there were significant differences between the flocks in skeletal size, feed intake after weaning, and weight of carcase components, they were proportional to the differences in body weight and there were no differences in efficiency of conversion of feed to meat.

I. INTRODUCTION

Body weight changes in three Trangie selection flocks have been described by Pattie (1965*a*, 1965b). These flocks were selected for high weaning weight (Weight Plus), low weaning weight (Weight Minus) and at random for a control flock (Random). This paper describes the growth to weaning, the efficiency of post-weaning gain, and the carcase composition of six-months old lambs from each flock.

II. MATERIALS AND METHODS

The selection history, management and environment of the three flocks have been described by Pattie (1965*a*).

The lambs used were born to mature ewes (three to six years old) in August 1964. Samples of ten ram and ten ewe lambs, each consisting of six twins and four singles, were chosen from each flock. Commencing at three weeks of age, the lambs were weighed and measurements made every two to three weeks of leg length (elbow to coronet), cannon bone length, chest depth and width of hips. The lambs were weaned on October 21, but regular measurements continued until November 12, 1964 (101 days old). Age variations in each measurement were corrected by interpolation.

On November 14, 1964 a further sample of seven single-born ram lambs was chosen from each flock, and after one month on a pre-treatment ration, were fed lucerne pellets ***ad libitum*** for 72 days. The lambs were weighed each week and the weights corrected for wool growth. Data from the last 21 days were discarded following the introduction of a new batch of pellets which caused scouring and loss of appetite among the lambs. After slaughter on March 4, 1965 the carcases were separated into bone, meat and fat.

III. RESULTS

Mean body weights for each flock from birth to 101 days (Figure 1) and mean growth rates were significantly different ($P < 0.05$). There were significant

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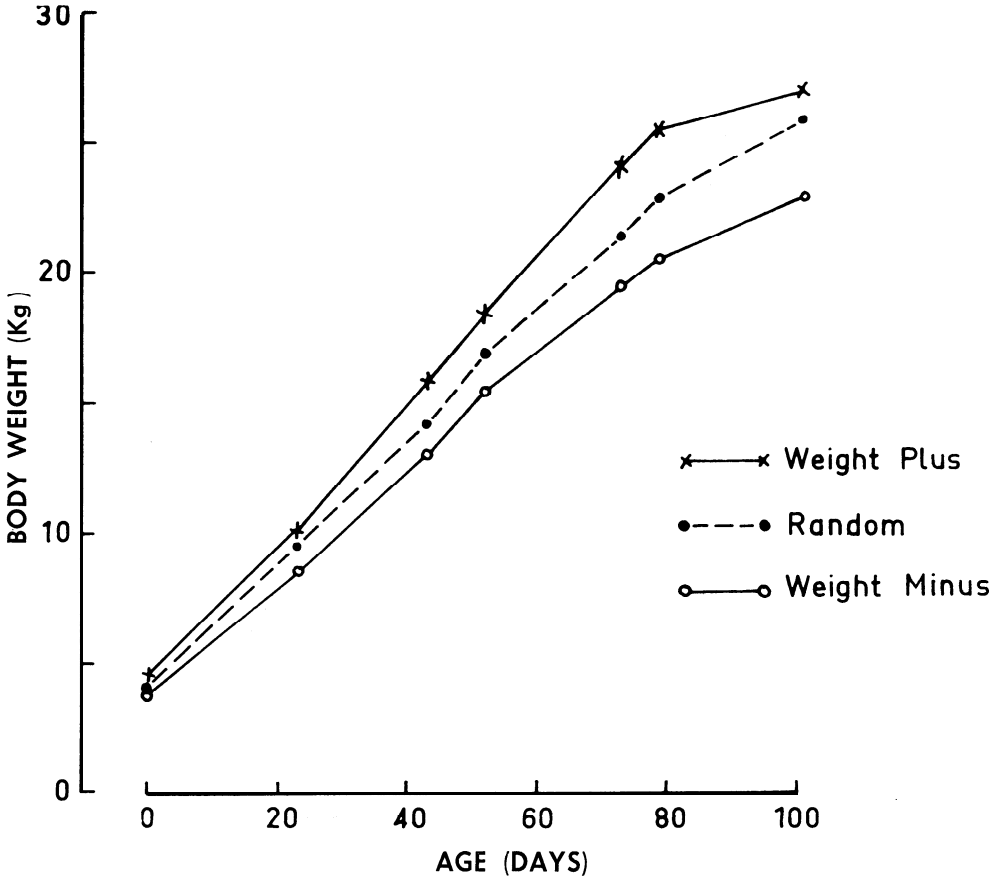

Fig. 1.—Mean body weight for each flock from birth to 101 days of age.

differences between the flocks in body measurements made at the same age, but these were eliminated when the means were adjusted for body weight. In Figure 2 body measurements are plotted against age and body weight.

TABLE 1

Mean ***body weight, feed intakes and body weight changes*** of ***ram lambs during their 51 day feeding*** *period*

	Weight Plus	Random	Weight Minus
Body weight (kg)			
Mean	33.1	30.9	29.4
S.E.	1.1	1.3	1.1
Feed intake (g/day)			
Mean	1660	1590	1540
S.E.	60	80	70
Growth efficiency (body weight change/intake)			
Mean	0.112	0.118	0.115
S.E.	0.003	0.005	0.005

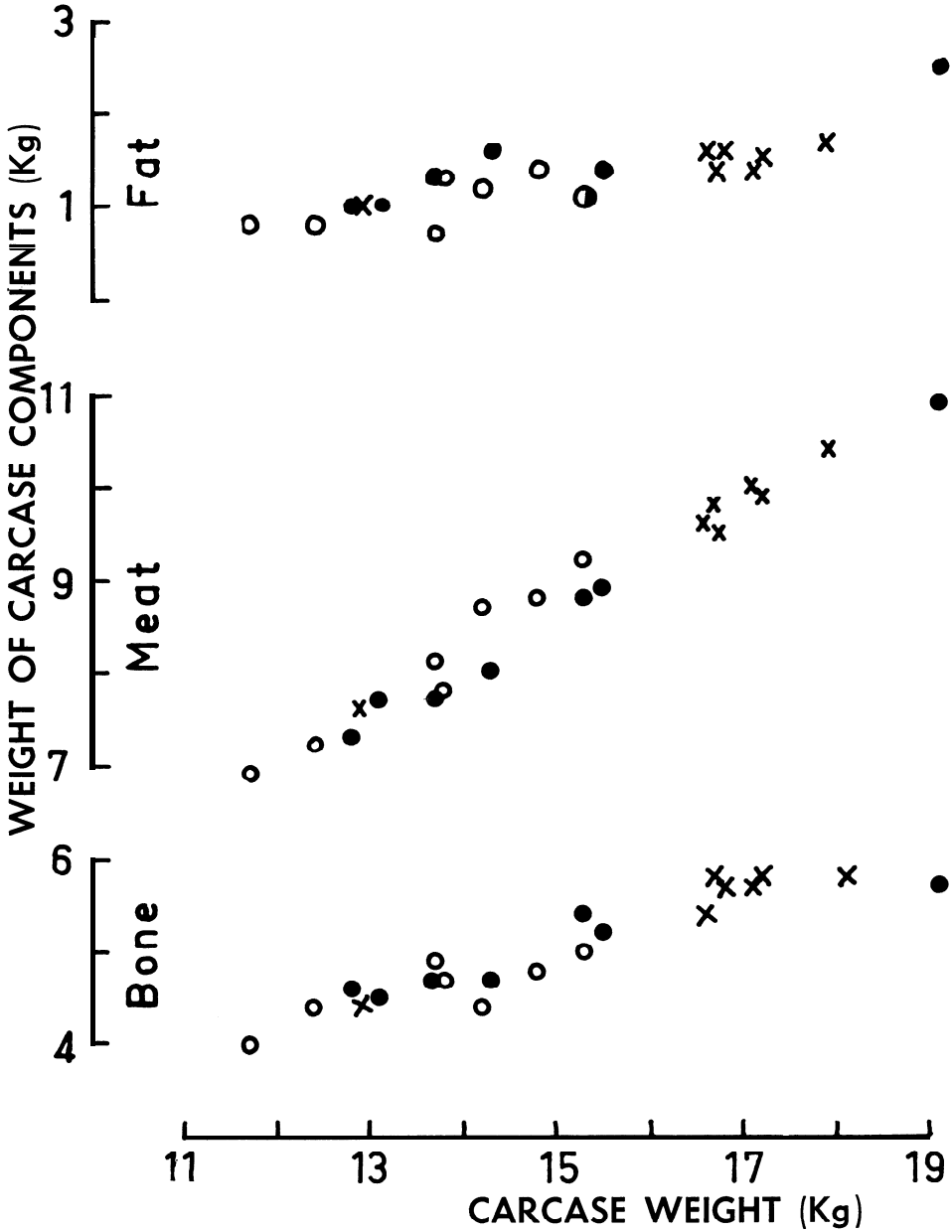

Fig. 4.—Mean weights of separable bone, meat and fat plotted against carcase weight.

Mean body weights, feed intakes, and growth efficiencies during the feeding period are given in Table 1. Only the differences in body weight were significant. Figure 3 shows feed intake plotted against body weight. There were no significant differences between the flocks in the regression coefficients, or in mean intakes adjusted for body weight.

TABLE 2

Mean weights of separable bone, meat and fat in the carcases of seven ram lambs from each selection group

	Weight Plus	Random	Weight Minus
Bone (kg)			
Mean	5.52	4.98	4.59
S.E.	0.19	0.17	0.14
Meat (kg)			
Mean	9.49	8.46	8.10
S.E.	0.34	0.47	0.32
Fat (kg)			
Mean	1.45	1.39	1.02
S.E.	0.09	0.20	0.09

The mean weights of separable bone, meat and fat (Table 2) are plotted against total carcase weight in Figure 4. There were significant differences between the flocks in the weight of each component at the same age, but not at the same carcase weight.

IV. DISCUSSION

Selection for weaning weight has increased body weight at a given age without changing the animals' relative shape or carcase composition. Feed intake has changed in proportion to body weight so there has been no change in the efficiency of conversion of feed to meat. This is in contrast to selection for fleece weight, where increased production per head comes mainly from increased efficiency of conversion of feed to wool (Williams 1966). From these results, selection for weaning weight in Merinos would be of no value as a means of increasing meat production per acre.

V. ACKNOWLEDGMENTS

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VI. REFERENCES

PATTIE, W. A. (1965*a*). Selection for weaning weight in Merino sheep. I. Direct response to selection. ***Australian Journal of Experimental Agriculture and Animal Husbandry 5:*** 353.

PATTIE, W. A. (1965b). Selection for weaning weight in Merino sheep. 2. Correlated responses in other production characters. ***Australian Journal of Experimental Agriculture an Animal Husbandry*** 5: 361.

WILLIAMS, A. J. (1966). The efficiency of conversion of feed to wool during limited and unlimited feeding of flocks selected on clean ***fleece*** weight. ***Australian Journal of Experimental Agriculture and Animal Husbandry 6: 90.***