AGE AT WEANING — ITS EFFECT ON GROWTH AND PRODUCTION OF YOUNG MERINO SHEEP

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Summary

Merino lambs at the Kybybolite Research Centre in South Australia were weaned at 12, 20, or 28 weeks of age in two consecutive years.

In a season with adequate pasture growth it was observed that:

(i) lambs weaned at 12 weeks were heavier at 20, 28, and 45 weeks than lambs weaned at 20 weeks or 28 weeks;

(ii) liveweight differences between these groups were no longer apparent at 70 weeks (hogget shearing);

(iii) lamb fleece weights were heavier from lambs weaned at 12 weeks than from those weaned at 20 or 28 weeks, but hogget (1½ year) fleece weights were not affected by age at weaning.

In a dry season with limited pasture production in late winter, results favoured lambs weaned at 12 weeks in the following ways:

(i) liveweights at ages up to 72 weeks were significantly higher;

(ii) greasy fleece weights as both lambs and hoggets were higher;

(iii) mortalities and culling percentages were lower.

It is concluded that where a period of pasture shortage is a regular feature of the winter months, weaning at 12 weeks average age has a beneficial effect on the growth rate and wool production of young Merino sheep.

1. INTRODUCTION

Clarke (1954) in New Zealand showed that the early weaning of Romney Marsh lambs greatly assisted farm and livestock management, especially in the hill country. Gerring and Scott (1955), also in New Zealand, stressed the inefficiency of the double conversion (grass to milk, and milk to meat) especially during the late stages of lactation when the ewe maintenance requirement was high.

Satisfactory results from early weaning under Australian conditions have been reported by Hyland (1957), Godlee (1958), and Cannon (1960), but the last-named reported lower carcass weights from fat lambs weaned at 8 weeks even when run under extremely good conditions. At Rutherglen, McHugh and Cannon (1959) showed that Merino x Corriedale lambs weaned at 12 to 14 weeks of age on to good pasture gained in weight over unweaned lambs.

Wardrop and Tribe (1959) stated that the lamb's rumen has reached a mature stage of development by 8 weeks of age. They reported unsatisfactory results when lambs were weaned on to maturing pasture.

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The environment and pastures at Kybybolite Research Centre have been described by Allden and Anderson (1957). Mean annual rainfall is 21 ·70 inches, with an effective season of 8 months (April-November).

The general practice with Merino flocks in the area is to lamb in April-May. Shearing is carried out in September and October and lambs are usually weaned at this time. The normal age at weaning has thus been about 20 weeks.

The stocking rate of Merino flocks at the Centre has been maintained at 2 to 2½ ewes per acre.

II. METHODS

One hundred and seventy lambs of mixed sexes were used for the experiment commenced in 1958, and 197 in 1959. They were allocated to one of three groups on the basis of sex, type of birth, and birth weight. Details are shown in Table 1.

TABLE 1

WEANING TREATMENTS-1958 and 1959

Group	Age at Weaning (wk)	1958		1959	
		Weaning Date	No. of Lambs	Weaning Date	No. of Lambs
W1	12	August 4	57	July 31	66
W2	20	September 30	57	September 25	66
W3	28	November 25	56	November 20	65

At the first and second weanings in 1958 both lambs and their dams were taken from the flock. This had the effect of reducing flock size and stocking rate for the ewes and lambs yet unweaned. Ewes when removed were run at increased stocking rates.

In 1959 when the first weaned lambs and ewes were removed an equal number of ewes with lambs of the same age replaced the animals removed. Flock size and overall stocking rates were thus maintained.

Lambs when weaned were moved to good quality pasture which had been reserved. For the most part this comprised first-year pasture in which Wimmera ryegrass was dominant.

Half of each weaning group was shorn in March in both 1959 and 1960. This action in 1960 explains the break in the growth curves when means altered slightly.

III. RESULTS

Mean liveweights at each weaning date, again at 45 weeks (43 in 1960), and just prior to hogget shearing (70 weeks in 1959 and 72 weeks in 1960) are set out in Table 2 together with greasy fleece weights at both lamb and hogget shearing. Mean liveweight changes in the lambs throughout the experiment are also shown in Fig. 1.

TABLE 2

EFFECT OF AGE AT WEANING ON LIVEWEIGHT AND WOOL PRODUCTION OF YOUNG MERINO SHEEP

	Age (wk)	Age at Weaning			Level of Significance		
		W1 12 wk	W2 20 wk	W3 28 wk	W1-W2	W1-W3	W2-W3
		(lb)	(lb)	(lb)			
1958-59							
Liveweight	12	36·5	36·1	36·0			
	20	58·1	52·1	52·1	***	***	
	28	63·8	59·7	60·7	***	**	
	45	75·6	71·0	75·3	**		
	70	97·2	94·9	96·1	N.S.		
Greasy fleece wt.							
Lambs	23	3·5	3·1	3·3	***	**	
Hoggets	74	10·5	10·2	10·5	N.S.		
1959-60							
Liveweight	12	40·5	39·6	40·1			
	20	61·4	47·5	47·2	***	***	
	28	71·5	62·1	59·7	***	***	
	43	72·9	64·3	62·7	***	***	
	72	90·5	84·3	80·9	**	***	
Greasy fleece wt.							
Lambs	23	3·6	2·9	2·9·	***	***	
Hoggets	75	10·6	9·4	9·7	***	**	

*** $P < 0·001$ ** $P < 0·01$ * $P < 0·05$

In 1958, group W 1 (weaned at 12 weeks) was significantly heavier ($P < 0·001$) at 20 weeks than groups W2 (weaned at 20 weeks) and W3 (weaned at 28 weeks). It remained heavier than group W2 at 28 weeks ($P < 0·001$) and at 45 weeks ($P < 0·01$). Group W3 gained on group W1 and was comparable to it at 45 weeks. Liveweight differences between all groups had almost disappeared at 70 weeks.

Wool production of group W1 was significantly heavier than that of groups W2 and W3 at lamb shearing, but not at hogget shearing.

In 1959, group W1 was significantly heavier than groups W2 and W3 at all stages from 20 to 72 weeks. During the spring of 1960 group W2 improved in liveweight, but was still about 6 lb lighter than group W1 at hogget shearing.

Wool production of group W1 at hogget shearing was 1·2 lb and 0·9 lb heavier than that of groups W2 and W3 ($P < 0·001$ and $P < 0·01$ respectively).

Greasy fleece weights of the dams used in each season are set out in Table 3. In both seasons the dams (El) of the W1 group lambs cut more wool than did the dams (E2 and E3) of the W2 and W3 groups, but the differences were not significant. .

IV. DISCUSSION

Liveweight changes in lambs in both 1958 and 1959, as depicted in Fig. 1, must first be interpreted in terms of seasonal conditions. Fig. 2 indicates the contrasting rainfall pattern of the two years.

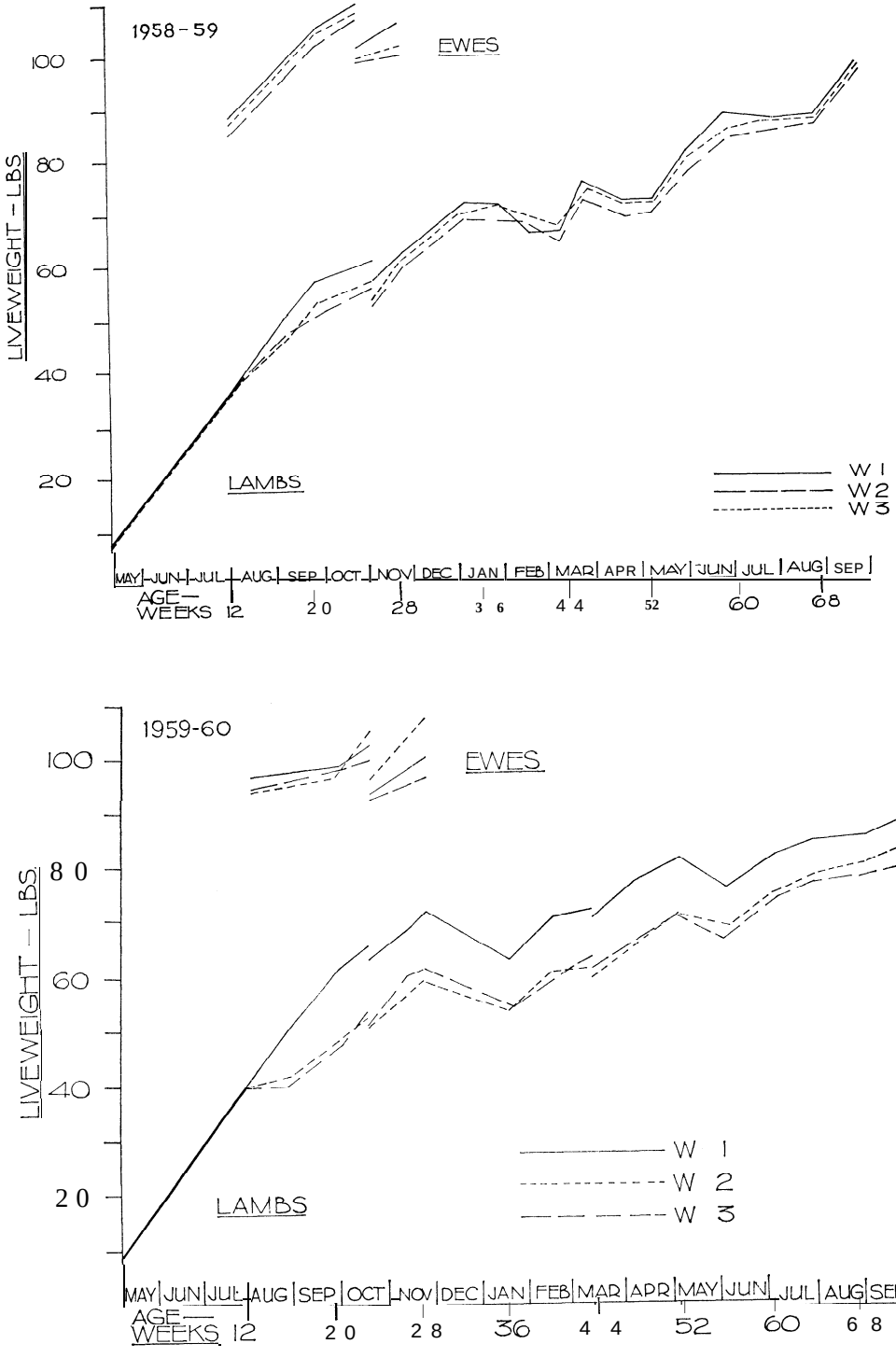

Fig. 1—Liveweight changes in young Merino sheep in seasons 1958-59 and 1959-60

TABLE 3

MEAN FLEECE WEIGHTS (lb) OF EWES

Year	E1	E2	E3
1958	8·93	8·80	8·85
1959	8·99	8·79	8·71

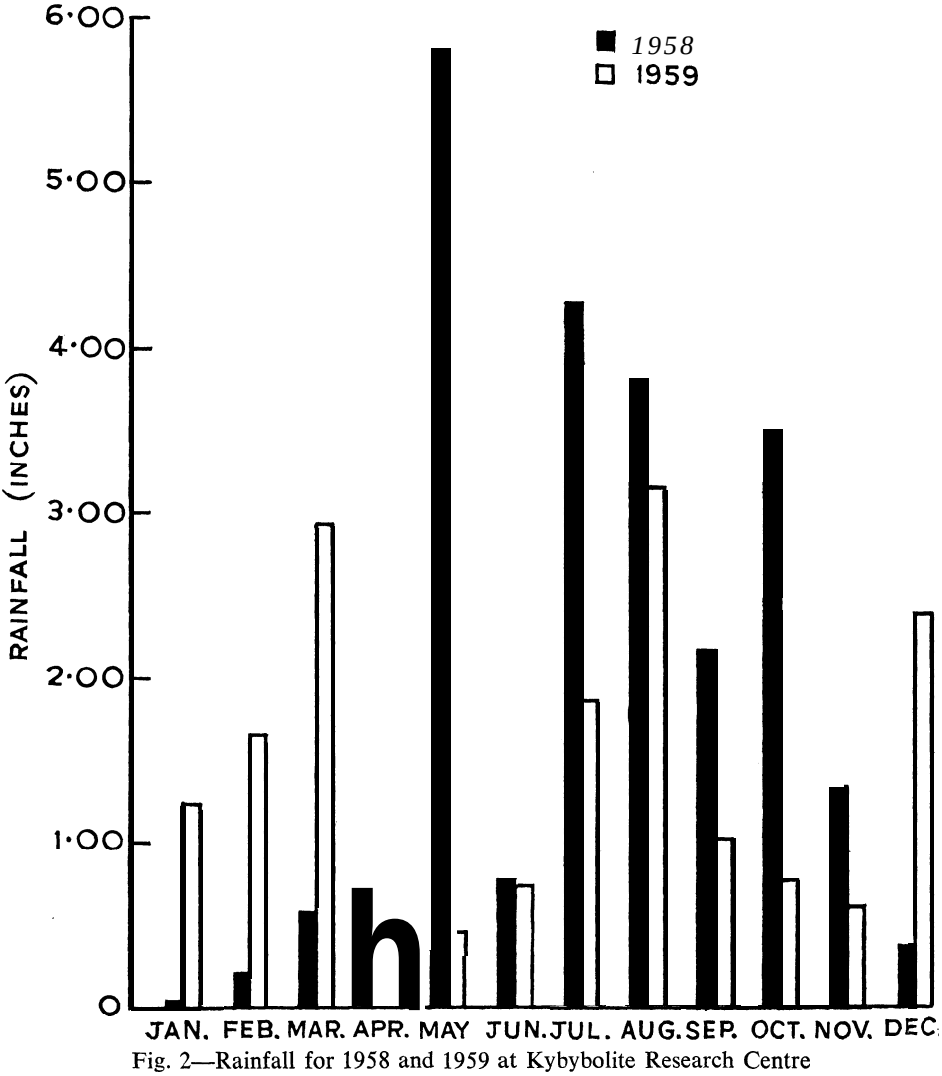

Fig. 2—Rainfall for 1958 and 1959 at Kybybolite Research Centre

The year 1958 had a dry autumn, good opening rains, and above-average rainfall for July, August, and September. The season was prolonged, and green feed was available until mid-December. It was not considered that feed was limiting during the period May-December.

The year 1959 opened with above-average rains for January, February, and March. A prolonged dry period then occurred, and a satisfactory opening rain did not fall until late July. Rainfall for the period April-August (inclusive) was only 45 per cent. of the average for this period. Lambing weather was mild, and early lamb growth was satisfactory, as evidenced by the mean lamb weight at 12 weeks, which was 4 lb greater than in the previous year. With the lack of rain, however, feed was short and could not be regarded as wholly adequate in August and September.

The rapid early gain of weaned lambs over unweaned lambs in the two seasons is apparent from Fig. 1. Subsequent growth and production emphasize that, contrary to the opinion of many producers, weaning at 12 weeks had no detrimental effect.

Visual observation of the early-weaned lambs one month after weaning indicated that these animals had developed a larger gut. Measurement of navel girth following the October shearing in 1958 failed to confirm this observation, though by that late date the earlier extreme visual difference no longer existed.

The check received by the unweaned lambs in 1959 coincided with a pasture shortage in August. The nutritional stress thus imposed was almost certainly associated with a parasite infestation. Scouring was prevalent among lambs, despite drenching at 20 weeks. Post-mortems of lambs that died revealed moderate to severe infestations of both *Ostertagia* and *Trichostrongylus* spp.

TABLE 4

MORTALITIES FROM 12-72 WEEKS OF AGE AND CULLING PERCENTAGES IN EWE HOGGETS

	W1 %	W2 %	W3 %
Mortalities			
1958 drop	3·5	3·5	1·8
1959 drop	1·5	13·6	9·1
Culling percentages in ewe hoggets			
1958 drop	13·3	18·7	11·1
1959 drop	15·6	24·2	46·7

Examination of the mortality figures expressed in Table 4 shows that, of the lambs receiving a check in the winter of 1959, a number failed to survive to hogget classing. Only one lamb in group W 1 died. Weaning at 12 weeks thus increased the total hogget flock and so also the number of ewe hoggets available for selection at 1½ years. This must be regarded as a positive gain.

Pooled data for groups weaned at *20* and 28 weeks indicate that the check to growth rates in the period 12 to 16 weeks in 1959 resulted in a 9 per cent. lower body weight at 1½ years and 10 per cent. lower fleece weights, as compared with the group weaned at 12 weeks. These figures are in close agreement with those of Schinckel and Short (1960) for the effect on adult productivity of a low plane of nutrition from birth to 16 weeks.

Reference to Table 4 indicates that not only were more ewe hoggets available for selection from W1 groups (because of reduced mortalities) but also a higher percentage of the early weaned group were classed into the mating flock at 1½ years of age. While classing takes into account factors other than size, the high culling percentage in the later weaned groups of the 1959-drop lambs indicates that the check received in their first winter persisted through to 1½ years and must represent an economic loss.

A comparison of liveweights between twins and singles in the experiment indicated that in both seasons twin lambs in the 12-week weaning groups grew faster than those in the later-weaned groups. Hammond (1932) has shown an association between low weaning weights and multiple births, and Kybybolite data (unpublished) for Merinos is in agreement. Weaning at 12 weeks would appear to benefit twin lambs and thus to reduce one group that contributes largely to the "tail" of a normal weaner flock.

Benefits from early weaning of Merino lambs can be expected if two factors are operating under field conditions:

(i) pasture growth is inadequate to meet the complete needs of both ewe and lamb; and

(ii) the supply of milk from the ewe, together with the pasture available to the lamb, is of less value than the pasture which can be offered to the lamb as an alternative.

In practice, therefore, it is desirable that early weaning should be a planned procedure rather than an emergency measure if success is to be achieved.

It can be concluded that nutritional stress in late winter has been a major factor leading to low liveweights at the commencement of the summer months. This verifies the earlier statement by Allden and Anderson (1957) who suggested that "the problem of weaner ill-thrift would appear to originate during the pre-weaning period of winter and spring . . ."

If a period of pasture shortage is a regular feature of the winter months, then early weaning allows lambs to be offered the best available feed. This would appear to be the outstanding advantage of early weaning in environments similar to Kybybolite.

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