EFFECT OF CREEP GRAZING ON THE GROWTH RATE OF PRIME LAMBS

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Summary

Two experiments were carried out to test the effect of creep grazing on the growth rates of lambs set stocked on perennial grass/clover pastures.

Neither forward creep rotational grazing nor the provision of a fixed lamb creep area of perennial grass/clover pasture showed any improvement in lamb growth rates over set stocking.

Lamb growth rates were improved by creep grazing on to lucerne, but only when the ewe grazing pressure was high. Maximum growth rates were obtained from set stocking ewes and lambs at a moderate grazing pressure.

I. INTRODUCTION

Spedding (1965) has described the systems of creep grazing management commonly used for lamb production. The use of such systems has been widely advocated in the United Kingdom, where they have generally given higher lamb liveweight gains than conventional rotational grazing (Dickson 1959; Spedding and Large 1959). Jefferies, Dreaver and Wilson (1961) in Tasmania, and Wallace (1963) in New Zealand found little difference between forward creep rotational grazing and set stocking at moderate stocking rates. Even at very high stocking rates, where creep rotational grazing was superior, there was still little advantage over conventional rotational grazing. The only work noted from mainland Australia (Arnold and Bush 1962) suggested that the growth rates of lambs set stocked with their dams could be improved by creep grazing on to lucerne, but not on to annual grass/clover pasture.

For prime lamb production in the lower south-east of South Australia, set stocking at moderate stocking rates has proved superior to rotational grazing (Geytenbeek 1963). The work reported in this paper tested the effect of creep grazing on the growth rates of lambs set stocked on perennial grass/clover pastures.

II. MATERIALS AND METHODS

Two experiments were carried out during 1963 and 1964 at Kybybolite in the lower south-east of South Australia. The environment is typically Mediterranean in nature with periods of winter rainfall and summer drought. The average rainfall is 55.6 cm (2 1.9 in), effective for eight months in the period April to November.

(a) Animals and management

First' cross Border Leicester x Merino ewes with lambs sired by Dorset Horn rams were used in both years. The animals were allotted to the different treatment groups at random after stratification on the basis of lamb birth weight, type of

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birth (single or twin) and sex. They were brought on to the experimental areas (which had been kept free of stock for the previous two months) when the lambs were four days old. Stocking rates were increased progressively to the final levels over a period of three to four weeks as the ewes lambed.

The experiments started in mid-August and ended in mid-December when the lambs reached a mean age of 16 weeks. Ewe liveweights were recorded at the beginning and end of the experiments and lambs were weighed shortly after birth, at a mean age of 8 weeks, and again at a mean age of 16 weeks. Lambs with liveweights of 29.5 kg or more at 16 weeks were slaughtered, and their carcasses were graded according to export standards.

The ewes were drenched to control' internal parasites before lambing, but neither ewes nor lambs were so treated during the course of the experiments.

(b) Experiment 1

In 1963, the growth rates of lambs on ***Phalaris tuberosa*** L. subterranean clover *(Trifolium subterraneum* L.) pastures were compared under three management systems: (i) set stocking; (ii) set stocking with a fixed lamb- creep area; and (iii) forward creep rotational grazing. Ewes in treatment (ii) had access to the whole area for the first four weeks, after which one-sixth was fenced off and made available only to the lambs. The forward creep rotational grazing area (treatment iii) was divided into four paddocks of equal size, and ewes and lambs were moved through these at intervals adjusted to prevent the pasture ahead of the ewe flock (the lamb creep area) becoming either too heavily grazed or too rank.

Each treatment comprised 28 ewes and 40 lambs on an area of five acres (2 ha).

(c) Experiment 2

In 1964, lamb growth rates were measured at two 'locations (A and B) where ewes and lambs were set stocked on phalaris/subterranean clover pasture with and without a lamb creep area of lucerne ***(Medicago sativa*** L). Lucerne pasture comprised one-sixth of the total area in the creep grazing treatment. Each treatment at location A comprised 5 1 ewes and 56 lambs on 10.2 ac (4.1 ha), and at the adjacent location B comprised 72 ewes and 75 lambs on 14.4 ac (5.8 ha).

III. RESULTS

(a) Experiment 1

The results of Experiment 1 are summarized in Table 1.

Ewe Iiveweight losses were considerable, and lamb growth rates, particularly between 9 and 16 weeks of age, were poor. Neither the provision of a lamb creep area nor forward creep rotational grazing showed any advantage over set stocking.

(b) Experiment 2

Ewe body weights (Table 2) were significantly ($P<0.001$) greater at location A than at location B. Set stocked ewes were heavier than those in the creep grazing treatment at location A, but not at location B (interaction $P<0.05$).

Lamb liveweights at 16 weeks were affected most by location, but there was also a small but significant ($P<0.05$) positive effect of creep grazing. Although there was no significant interaction, the effect of creep grazing appeared to be greater at location B than A. This is more clearly shown by lamb growth rates

TABLE 1
Results of Experiment 1

		Set Stocking	Set Stocking with Lamb Creep	Forward Creep Rotational Grazing	*P*
Ewes					
Mean initial liveweight	(kg)	50	52	53	NS
Mean final liveweight	(kg)	46	43	46	NS
Lambs					
Mean birth weight	(kg)	4.3	4.3	4.3	
Mean growth rate	(kg/day)				
birth — 8 weeks		0.22	0.23	0.21	NS
9-16 weeks		0.13	0.11	0.14	<0.01
Mean liveweight at 16 weeks	(kg)	24.4	23.4	24.4	NS
% ready for market	($\leq$29.5 kg)	22	15	25	NS

which allow the periods of predominantly milk intake (birth-8 weeks) and predominantly pasture intake (9-16 weeks) to be considered separately. The provision of a lucerne creep area resulted in increased lamb growth rates over the period 9-16 weeks, but only at location B (interaction $P<0.001$). The effect of location was apparent over the whole experimental period.

Both the proportion of lambs ready for market at 16 weeks, and the proportion graded first quality were greater at location A than B. Creep grazing increased the proportion of lambs ready for market, particularly at location B, but did not significantly affect carcass quality.

IV. DISCUSSION

In Experiment 1, neither the provision of a lamb creep area nor forward creep rotational grazing improved lamb growth rates compared with set stocking on perennial grass/clover pastures, even though stocking rates were sufficiently high to cause considerable ewe liveweight losses and prevent optimum lamb growth. This contrasts with the superiority of forward creep rotational grazing over set stocking found at high stocking rates by Jefferies, Dreaver and Wilson (196 1) and Wallace (1963).

TABLE 2
Experiment 2: Mean final ewe weights, lamb growth and marketing data

	LOCATION A		LOCATION B		SIGNIFICANCE††		
	Set Stocking	Creep Grazing	Set Stocking	Creep Grazing	Location	Treatment	Interaction
Final ewe weight (kg)	65	63	56	58	***	NS	*
Lamb weight at 16 weeks (kg)	36.0	36.4	28.8	31.2	***	*	NS
Lamb growth rate (kg/day)							
Birth to 8 weeks	0.30	0.30	0.27	0.27	***	NS	NS
9 to 16 weeks	0.25	0.25	0.15	0.19	***	***	***
% lambs > 29.5 kg at 16 weeks†	84	89	45	72	***	**	NS
% first grade lambs	85	78	71	52	**	NS	NS

†*i.e.*, ready for marketing.
††Significance: $*P<0.05$ $**P<0.01$ $***P<0.001$ NS not significant

In Experiment 2 pasture production at location A, by visual appraisal, was far greater than at location B, and this assessment was substantiated by the large differences in ewe liveweights and lamb growth rates between the two areas. Thus although the stocking rates were similar, stocking rate per unit of available pasture was higher at location B than A.

Since ewes in the creep grazing treatments had access to only five-sixths of the total area, their liveweight gains were expected to be less than those of ewes in the set stocking treatments. That this was not so at location B, may be because these ewes were at first put into the creep area in order to encourage their lambs to use it, and several small-framed ewes continued to use the creep area for the rest of the experiment. At no stage did ewes at location A enter the creep area.

The provision of a lamb creep area of lucerne did increase lamb growth rates, but only to an appreciable extent at location B, where the grazing pressure on the main area of pasture was relatively high. Growth rates were still inferior to those of lambs set stocked at a similar stocking rate but lower grazing pressure at location A. The effect of location was far greater than that of grazing management. Taking the difference in pasture availability between locations A and B to represent a difference in effective stocking rate, this result is in agreement with McMeekan's (1956) observation that changes in stocking rate have a much greater effect on animal production than' variation in grazing management.

The results of these experiments confirm the finding of Arnold and Bush (1962) that lambs creep grazed on lucerne grow faster than lambs either creep grazed or set stocked with their ewes on grass/clover pasture. It did not appear, however, that creep grazing on our type of pasture gave appreciable improvements in the performances of ewes and lambs when compared with, those obtained by set-stocking at the rates and grazing pressures such as were applied in these experiments.

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