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## THE ROLE OF GRASSLAND IN MANAGEMENT

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THE PROPERTY to be discussed is a mixed sheep and cropping unit, situated eight miles east of Ashburton and midway between the Rakaia and the Ashburton rivers. Average annual rainfall is 27 in., evenly spread, but there is very high summer evaporation and therefore frequent droughts. On average, the soil is below wilting point for 40 to 50 days each summer. Winters are cold with the soil temperature being below 48°F for about four months each year. The soil is a Lismore stony silt loam averaging 9 in. in depth over gravel.

The farm is 500 acres, subdivided into 30 paddocks and has adequate stock water but inadequate shelter. At present there are 310 acres of pasture, 110 acres of mature lucerne, 30 acres of new lucerne, 36 acres of wheat, and 10 acres of fodder beet. The usual rotation is from old lucerne or grass to turnips and then to either a winter-sown wheat crop and then new grass, or a spring sowing of lucerne. The Government capital valuation is \$112 per acre.

This year 3,200 Corriedale and Border Leicester/Corriedale mixed-age breeding ewes plus rams have been wintered. This is a slight increase on last winter and a large increase on previous winters. A rapid increase in numbers has not allowed much culling and quality of stock could be improved. The farm is on excellent sheep country with the ewes averaging six crops of lambs. Sheep are replaced by buying two-tooths or four-year-old ewes.

Cultivation, which is kept to an absolute minimum, is all done with a chisel plough. Less than 1½ hours per acre is spent on cultivation and drilling. The system is fast, economical and a good soil structure is maintained.

It is a one-man farm plus casual labour at shearing and for occasional tractor driving. Contract services are used for dipping, lime-sowing, heading, post-driving, and bulk cartage on to and off the farm. We have our own baler, topdresser and general agricultural plant.

In the five years since the farm was taken over, the emphasis has been changed from cropping, which gave

a quick return for a low capital outlay, to predominantly sheep. At present prices, wheat, at an average yield of about 45 bushels per acre, gives a slightly greater gross margin than the present 7 ewe equivalents. Market prospects for sheep are more likely to improve than for wheat, so the present policy of growing only a small acreage of wheat is to continue. A summary of production over the past five years is given in Table 1.

TABLE 1: FARM PRODUCTION

Year	Crop Area (Acres)	Total E.E.	Per Acre		Ewe Wool Weights (lb)	Lambing %
			E.E.	Grazed		
				Wool (lb)	Meat (lb)	
1963-4	115	1,500	4	50	120	116
1964-5	50	1,850	4	39	108	99
1965-6	75	2,150	5	56	120	100
1966-7	30	2,400	5	64	138	100
1967-8	55	3,100	7	73	193	102
1968-9	36	3,230	7			

**Notes:**

- (a) Year 1964-5 was extremely dry.
- (b) In the last two years, half the ewes were six years old or older.
- (c) Acres grazed is total farm less cropping acreage.
- (d) Wool includes estimate of wool sold on sheep (including lambs) less wool bought on sheep.

Following this general picture of the farm, some of the more important management techniques will now be discussed under the following headings : Stock management; pasture management; efficiency of feeding; balance of pasture and lucerne; artificial nitrogen; and future prospects.

STOCK MANAGEMENT

Because the summers are nearly always dry, the aim is to draft lambs and cull ewes as quickly as possible (80 to 90% before Christmas) and then feed the ewes as well as possible until after tupping, resorting to feeding hay if necessary. During most of April, May and June, the ewes are break-fed on turnips and receive about 30 to 40 bales of hay per day. At this time, lucerne paddocks are used as run-offs. Autumn-saved pasture is then ration-feed until lambing begins in mid-August We first lamb on to pastures which are then set-stocked, and then graze as many

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lucerne paddocks as the season requires. Drafting begins in early November at about 10 to 13 weeks of age with the remaining lambs being drenched and weaned on to lucerne. Lamb drafts average 29 lb.

#### PASTURE MANAGEMENT

##### LUCERNE

Some of the stands are used as run-off paddocks during the winter when the lucerne is dormant. This builds up the fertility and suppresses weeds. As far as is possible, during the growing season, rotational grazing of the stands is practised, the ideal being to allow them to reach early flowering before grazing. If, at this stage, lucerne is not needed for grazing ewes and lambs or weaned lambs, it is made into hay.

##### PASTURES

Closing all pastures for autumn-saved pasture during April allows the build-up of plant reserves after the harsh treatment they have probably had during the summer. When grazing begins on them again in July-August, they have sufficient density and vigour to produce well during the spring. During the summer, both lucerne and pastures are mob-stocked and rotational grazed.

#### EFFICIENCY OF FEEDING

Maximum net returns seem to result from relatively high stocking-relatively, because obviously it is possible to go too far and place too much stress on plants and animals. On the other hand, too few stock do not stimulate and utilize the full growth potential of the pasture. Each year extra stock have been carried, partly on obvious improvements in the farm but also on the expectation of these extra sheep generating fertility as well. At the same time, better utilization of the available feed results and, of equal importance, a better quality herbage. Ten pounds of sound wool and 105% lambing per ewe from a true mixed-age flock are accepted as being a satisfactory level-per-sheep production.

#### BALANCE OF PASTURE AND LUCERNE

It is important that a balance be established between lucerne, pastures and forage crops so that as far as possible the sheep do the harvesting direct and at a time

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when it is needed for maintenance or for profitable conversion to meat and wool..

With the particular stocking rate and climate, lucerne with its good summer growing characteristics complements pastures with their good winter growth. There is a place for both. At the moment, there are 100 acres of established lucerne but it is intended to increase. this to more than 200 acres with up to half of this oversown with a cereal or a grass each year. With lambing beginning in the second half of August, this should give the best of both systems.

The extra lucerne should :

- (a) Reduce susceptibility to summer droughts.
- (b) Increase total herbage and quality.
- (c) Ease the summer strain on pastures.
- (d) Enable hay reserve to be built up in the occasional wet year.

On the other hand, more lucerne than this would make management more difficult and would mean shifting the productive period towards the risky late spring/summer months.

#### ARTIFICIAL NITROGEN

Sulphate of ammonia has been used on selected pastures for some years and, used properly, it has a place in the system of farming carried out.

With heavy stocking under dry land conditions, pastures are usually under stress in the summer. Once there is adequate moisture in the autumn the use of nitrogen could hasten recovery and over the winter give more autumn-saved pasture. It might not be necessary every year and can probably be justified only with heavy stocking.

On several occasions 1 cwt of sulphate of ammonia has been applied to very poor grass-dominant pastures in July and the resultant spring growth has been equal to some of the better pastures. In one case it was possible to stock at 12 ewes per acre and draft most of the lambs off the paddock.

The rotation adopted often involves sowing down pastures in February following wheat and when soil nitrogen is at a low level. In this case nitrogen aids establishment and if applied as a topdressing a month or so after drilling the clovers are not suppressed.

Nitrogen should be used when oversowing lucerne stands with cereals or grasses.

#### FUTURE PROSPECTS

##### WINTER FORAGE CROPS AND HAY

For the last year or two wintering has been done on about 50 acres of turnips and 3,000 bales of hay. As far as possible both should be reduced. They are expensive, unreliable and reduce the available grazing area. At the moment the following modifications are being considered :

- ( 1 ) Fodder beet instead of turnips. Lincoln College are doing a 10-acre trial on the farm this year.
- (2) Oversowing more lucerne stands to give more early spring greenfeed.
- (3) More artificial nitrogen on pastures in autumn to give more autumn-saved pasture.
- (4) Using bought-in or home-grown grain.
- (5.) Establishment of more lucerne to reduce the summer hay requirement.
- (6) Buying in hay instead of making it.

##### IMPROVED PLANT SPECIES

Two that come to mind are Western Wolths ryegrass and a winter-growing white clover.

##### IRRIGATION

We would like to have irrigation, believing that it could give an additional 3,000 lb D.M. in the summer and therefore allow stock numbers to be substantially increased.

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On this basis I am sure that we have not reached the profitable limit with sheep. At the moment we are consolidating and improving quality of stock. Labour and other factors permitting, we intend to increase again next year.

**DISCUSSION**

Asked his views on Arika ryegrass, Cameron stated that as yet he had no fixed opinions as he had only one paddock, sown last autumn, which had been heavily grazed.

In reply to a question concerning the increase in lucerne acreage, Cameron replied that he had no difficulty in coping with the extra supply, particularly during a summer drought period. In fact, he favoured a combination of fodder beet and lucerne. He could expect from beet about three times the D.M. obtained from turnips, which would reduce the area to be cropped.

To a comment that the application of nitrogen might have a deleterious effect on clover, he said that suppression occurred only if the grass were allowed to grow unchecked. He felt the critical factor was to have sufficient stock to utilize the extra growth. As far as he was concerned, nitrogen was merely an adjunct to autumn-saved pasture, and not an essential part of it.

Replying to a question of what he would do if given another 1,000 acres, Cameron said his first action would be to put on as many sheep as he could afford.

With regard to grass grub and porina, he had had no great trouble with the former as he tried to cover the farm every three years with DDT. Although he did spray for porina last year, he had not found it a great problem, probably because of his high stocking rate.

He was not unduly worried by his comparatively low lambing percentage. He thought it might perhaps be a corollary of heavy stocking, in that feed supplies might be affected at times. However, in his opinion, this was outweighed by the fact that such heavy stocking is the quickest way to increase meat production per acre.

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