
RECENT ADVANCES IN GRASSLAND MANAGEMENT IN EASTERN SOUTHLAND AND WEST OTAGO

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Abstract

The build-up in general soil fertility and productivity in eastern Southland and West Otago are discussed, with references to indices such as sheep numbers, grassland fertilized and fertilizer sown.

Annual and seasonal dry matter production figures from browntop dominant and ryegrass dominant swards are compared. Reference is made to the decreasing importance of winter fodder crops in the region as soil fertility has built up and as pasture growth has been extended.

Wintering systems for ewes, hoggets and cattle using grass, hay and grain are discussed. The implications of a rotational grazing system with ewes and lambs in early spring are reviewed, and topics for future research to try and harvest the spring-summer flush of growth are suggested.

INTRODUCTION

AT THE 22nd Conference of this Association held in Invercargill 18 years ago, Faithful (1960) gave an introductory paper on farming in Southland-its problems and progress in recent years. It is my task today to continue on from where he left off-to discuss changes that have occurred since then, and perhaps to suggest the options open to progressive farmers in this region.

In 1960, Faithful reported on many of the problems facing farmers in the south: problems of drainage, under- and over-liming, fertilizer requirements, trace element problems (such as cobalt, boron, and molybdenum deficiencies), insect pest problems, and weeds. He reported on the answers to many of these problems: answers that he had developed, answers that had been developed by scientists, advisers and leading farmers.

PRODUCTION INCREASES

This early work paved the way to the enormous production increases that have occurred in the south. The economic climate of the early 1960s and the knowledge that was available to them encouraged farmers in the south to develop their land. Figure 1

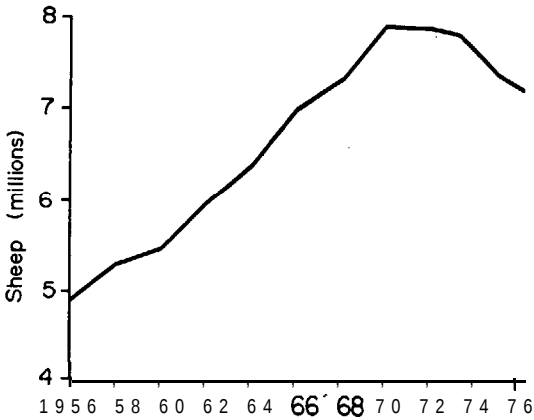


FIG. 1: *Total sheep numbers, Southland, 1956-76.*

shows how sheep numbers have moved from under 5 million in 1956 to just under 8 million by 1970. Present numbers have dropped, but it is anticipated that this year will again show an increase. Figure 2 shows that a threefold increase has occurred in fertilizer usage in this time.

These ingredients-stock and fertilizer-have completely changed the farming pattern in the region. Pastures do not now run out because of poor fertility.

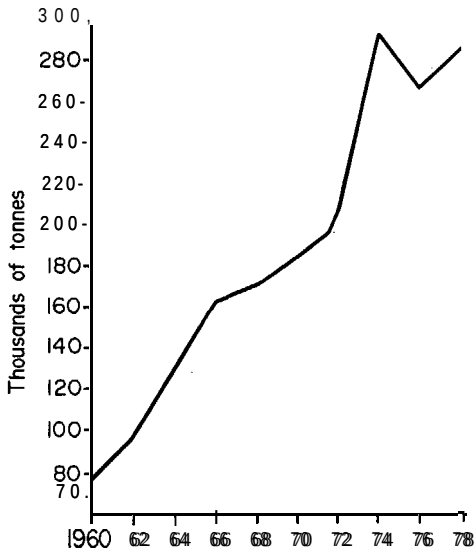


FIG.. 2: *Fertilizer sales, Southland Co-operative Phosphate Co., 1960-78.*

Faithful (1960) reported that it was obvious then that the rotation length of 8, 10, or 12 years in ley before ploughing for a fodder crop was increasing, and this trend is continuing. On one property to be visited on the field day we may see a pasture sown down in 1941. It is still a high producing sward. Pasture longevity is only one side of the coin; improved pasture production, and especially improved cold-season production, is an equally important factor. Figure 3 illustrates both sides of the coin (A. J. Harris, pers. comm.).

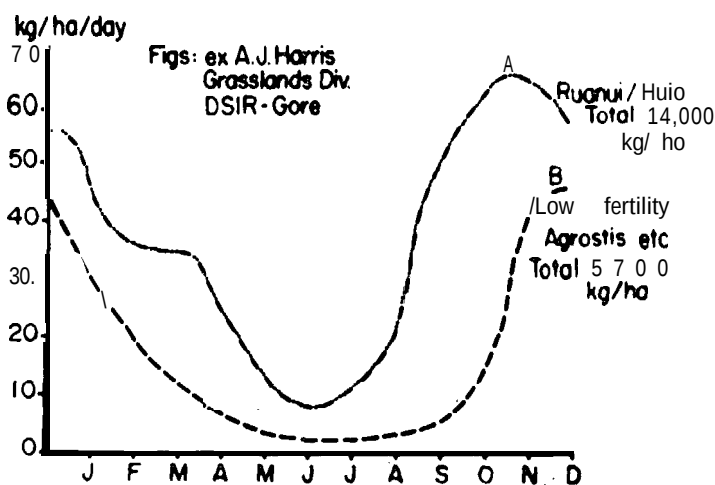


FIG. 3: Pasture production in Southland.

Under low fertility conditions the improved species pasture very quickly reverts to the low fertility browntop (*Agrostis tenuis*) dominant situation, where total production can be as low as 40% of a vigorous *Lolium perenne* 'Grasslands Ruanui' perennial ryegrass, and *Trifolium repens* 'Grasslands Huia' white clover dominant pasture. Greater pasture longevity and improved winter growth have had a drastic effect on the fodder crop programme. Figures 4 and 5 show the reduction in area of fodder crop, and the even more dramatic reduction in area of fodder crop/1000 sheep that has occurred over the last 20 years. Instead of growing 13 ha of crop/1000 sheep, farmers in the south are now growing 5 ha.



FIG. 4: Fodder crop area, Southland, 1956-76.

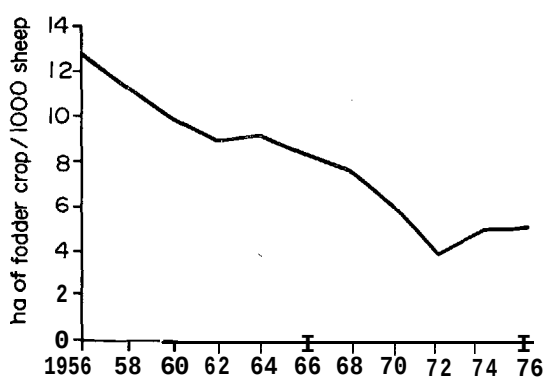


FIG. 5: Hectares of fodder crops per 1000 sheep, Southland, 1956-76.

ECONOMICS

Economics have an important bearing on wintering systems adopted by farmers, and there is no doubt that cost increases and unreliability of crop yields have influenced the decline in cropping area. This economic factor is illustrated in Table 1.

GRAZING SYSTEMS

Greater total pasture growth, better spread of production, reduced need to renew pasture, and cost have brought about the present situation where very few breeding ewes in the south are fed brassica crops. Instead, a variety of wintering systems based

TABLE 1: COMPARATIVE FEED COSTS

	<i>Cost of Dry Matter (cents/kg)</i>
Swedes	1.6
Swedes with regrassing and. loss of production	5.7
Swedes followed by kale	4.1
Hay, farm-produced	4.0
Silage (self-fed)	2.5
Oats, farm-produced	5.6
Oats at \$110/tonne	11.45
Hay at \$1/bale	5.5
Pasture	0.17

on the use of pasture *in situ* have been developed. And virtually without exception these systems have as a common denominator a rotational system of grazing. Halford (1972) described the development of grass wintering systems for ewes. He emphasized the importance of having a rotation of adequate length to allow sufficient regrowth of pasture for ewe requirements at lambing.

LENGTH OF ROTATION

On the Southland Plains a rotation length of 60 days appears adequate, but in eastern Southland and West Otago 75 to 90 days is required. This area is further inland, and the greater part of it at a higher altitude, and therefore winter temperatures tend to be lower, with consequently poorer pasture growth rates.

Rotation lengths are maintained in a variety of ways and vary from holding ewes at a stocking rate of 200/ha for 5 to 7 days, to stocking rates of 1400 to 2000/ha for 1 day. Supplementary feed varies from as little as $\frac{1}{2}$ bale of hay per head to $1\frac{1}{2}$ bales, or its equivalent in silage. On steeper, colder country some farmers maintain their rotation length by putting ewes on self-fed silage for up to 50 days in June and July. Self-fed silage is the cheapest alternative to pasture fed *in situ*, and silage conservation at peak growth periods assists in maintaining control of the pasture. The vacuum silage technique using small harvester units capable of working on steep slopes has proven efficient and economic. Silage can be cut off the relatively small flatter areas, and stacked and covered on the bottom of a ridge, or on a south face. The stock concentration on these lower fertility areas assists in pasture improvement.

KEY POINTS FOR WINTERING

While wishing to avoid recipes, there are a number of key points to the present wintering systems.

PASTURE CONTROL

Full control must be kept of pastures at all times of the year. Management of pasture in November-December must be aimed at controlling pasture length and maintaining vigorous vegetative growth with abundant tillering. Ideally, pastures should be rotationally grazed when 10 to 15 cm high, and grazed down to 3.5 cm stubble. In practice, however, this management has to be interrupted and each pasture grazed out hard at some stage to control the seeding of the lower fertility pasture components, which can comprise 20 to 40% of even the better pastures.

A hard grazing in December-January may also assist in the control of *Porina* spp., which are one of the major pasture pests in the south.

START OF ROTATION

The winter rotation should be started as soon as possible after tupping. Experience has shown that ewes can be mobbed up and rotated 20 to 35 days after the ram was introduced without affecting lambing percentage. An early start to the rotation enables a wall of feed to be carried ahead into the winter.

ROTATION LENGTH

It is important to maintain the rotation length to provide sufficient feed behind the ewes for their pre-lambing feeding. This rotation length depends on both level of fertility and climate. In West Otago and eastern Southland 75 days appears to be a minimum.

WET WEATHER MANAGEMENT

In wet weather conditions it appears best to increase the intensity of grazing and move more frequently (a daily or even twice daily shift), as this will minimize treading damage. In extreme cases it is good management practice to move the stock to a sacrifice area and feed hay until surface water has gone.

OTHER FEEDS

Grain feeding, although expensive, is a management tool that must be considered if very wet or very frosty conditions produce a feed shortage just before lambing. If stock are trained to eat grain, small quantities may be fed immediately before lambing to boost energy intakes.

ROTATION OF EWES AND LAMBS

In a slow spring where growth is delayed, there is a case for rotating ewes and lambs 3 to 4 days after birth to build up feed supplies. If this rotation is commenced within a few days of lambing, lambs suffer little if any check and rapidly show the influence of better feed. Ewes also tend to maintain body weight better and grow more wool under this system.

SPRING-SUMMER MANAGEMENT

Winter has traditionally been the boggy of the southern farmer. This is not now the case. Grass wintering systems using a rotation as a base allow farmers to winter ewes very cheaply, using less than $\frac{1}{2}$ bale of hay/head even at stocking rates of 17/ha and above. But this is not enough in itself. The improved standards of pasture management that we are now seeing have improved winter growth rates, but there is still a 13-fold difference between winter and spring-summer daily pasture growth rates. It is vital to maintain control of pasture through the summer months if we want maximum autumn-winter performance.

Efficient use of spring-summer growth is the number one priority for farmers, advisers and scientists alike. There is insufficient store stock available to fully stock farms in the south through this peak flush of growth. Hay requirements are not as great under these wintering systems, and so conserving more hay is not in itself the answer. Increasing lambing percentage is an obvious way of handling the bulk of feed, and increasing stocking rates still further may need consideration.

CONCLUSION

The present wintering systems as outlined are cheap and efficient and are leading to even better pasture production, as pastures are most definitely showing improvement under intelligently planned and controlled grazing systems.

How can we as scientists and advisers assist farmers to fully harvest the increased pasture production from their farms?

We must develop practical systems whereby farmers can monitor ewe intakes under rotational grazing systems- and can more accurately determine how rapidly pastures are growing after grazing-in other words, feed budget.

An unknown but often debated topic is the importance of mob size and stress on sheep. Does a stress factor exist? Does it affect stock performance? How many sheep can 'be run in one mob before stress factors affect individual animal performance? In practice, mob sizes vary from a few hundred to over 4000 ewes on a winter rotation. There is the obvious advantage in larger mobs that less subdivision is required. But is animal performance being sacrificed?

There are plants available even now with better cold weather performance than our standard pasture species. Can these be used economically in our winter grazing systems to lift production still further?

REFERENCES

- Faithful, W., 1960. *Proc. N.Z. Grassld Ass.*, 22: 27.
Halford, R. E., 1972. *Ibid.*, 34: 42.
