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SHEEP UPDATES

Agronomic implications of intensive grazing systems

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KEY MESSAGES

Intensive grazing tactics in winter and spring can be used to manage periods of pasture deficit and surplus that characterise the typical growing season in Mediterranean environments. These tactics can have profound effects on both pasture and animal production.

INTRODUCTION

The large *within*-and-*between*-seasonal variation in pasture growth that characterises Mediterranean environments results in periods of deficit and surplus pasture for the grazing animal. Under continuous set-stocking regimes, season not only dictates the quantity and quality of wool produced, but also the type of pastures that persist.

This paper discusses results from small-scale grazing management research conducted to investigate the effect of intensive grazing tactics [strip grazing and intensive spring grazing] on annual pastures.

REVIEW

In general terms, management for the long-term viability of annual pastures should take into account three distinct periods of growth: 'establishment', 'vegetative' and 'reproductive' (1). Grazing management decisions should be based on feed on offer (FOO), and be matched to objectives for the pastures which:

- **allow pastures to establish in Autumn** (by defer grazing until FOO reaches 500-800 kg DM/ha);
- **maximise pasture growth through the vegetative 'winter' phase** (by maintaining FOO above 1000 kg DM/ha);
- **manage grazing pressure during the reproductive 'flowering' period** in spring to meet seed production and composition objectives.

Slow winter pasture growth rates (PGRs) are the limiting factor controlling stocking rate (SR). Since SR is an important profit driver, tactics that can increase PGR through winter have the potential to significantly increase profitability of grazing enterprises.

Strip grazing (SG) is one management tactic that can be used to increase FOO and PGR during winter (2). PGRs increase because, while recently grazed strips have low FOO, most of the area has levels exceeding 1500 kg DM/ha. Hence, leaf area index is improved over most of the strip-grazed area, resulting in increased PGR and extra FOO (300-500 kg DM/ha). This means higher sheep numbers can be carried through winter without supplementary feeding. In addition, large amounts of readily available nutrients (N, P, K, S) are recycled uniformly across the strips, while under set stocking, nutrients are returned unevenly with much going into stock camps (2). If continued into spring, it is likely SG will result in dominance by grasses and broad leaf plants. SG may be a valuable tool for specialist woolgrowers that want to improve the quality of wool produced, maintain above-average stocking rates or increase SRs.

Intensive spring grazing (ISG) is a tactic that requires regular changes of grazing pressure to maintain FOO at target amounts. The targets will depend on the objective for pastures and animals. Listed below

are some of the effects of ISG to 1400 kg DM/ha, compared to set-stocking at district average rates, in Mt Barker, South Stirlings and Keysbrook.

*Pasture growth rate***:** ISG had minimal effect on PGR in late-winter/early-spring. The higher PGR measured on set-stocked treatments in late spring is due to the inclusion of grass seed in the FOO measurements. Under ISG, little grass seed is present.

Pasture utilisation (PU%): ISG more than doubled PU% to about 70%.

Composition: ISG had a profound effect on maintaining clover composition of pastures between 50-70%. Under set-stocking, clover per cent was halved, due to dominance of grasses in spring.

Seed production: ISG significantly reduced clover seed-set. However, 300-400 kg seed was produced which is sufficient to establish pastures in the next season. Near maximum seed-set occurs when FOO exceeds 4000 kg DM/ha (A.N. Thompson *et al.* unpublished data).

Extended growing season: When soil moisture persists after late season rains, intensively grazed pastures continue to grow compared to set-stocked pastures. This extends the growing season and provides higher quality pasture residues into summer.

Insect control: Under continuous set-stocking grazing regimes, populations of pasture pests can reach 47,000 per square meter, and cause up to 80% loss of clover seed if uncontrolled (3). This loss occurs when clover seedlings are killed early in the season, or plants are damaged during the reproductive period in spring. ISG controls RLEM numbers to a similar degree as spraying (3).

Available nitrogen: Plots that were ISG'd for 3 years at Mt Barker had significantly higher levels of soil minerali nitrogen in Autumn. When cropped, this resulted in higher yields of triticale and oats (4).

CONCLUSION

Results from small-scale research show huge potentials for increased productivity by using intensive grazing management tactics. However, adopting this technology into farm-size operations will require the implementation of flexible management systems. Wool producers are unlikely to adopt SG or ISG practices to be used over the whole farm or for all flocks on the farm. The tactics will be used for particular classes of stock, the purpose being to grow a certain type of wool, to increase stocking rate on the whole farm or to manipulate the composition of selected pastures. Their use by woolgrowers will depend on their production objectives, their farm plan and the prevailing economic conditions (2).

Concentrating sheep to increase grazing pressure on selected areas will leave other areas 'undergrazed' unless other management practices are also altered. Some producers will be able to shift from early to late lambing to increase their spring grazing pressure. They may also decide to sow fodder crops into paddocks that are under utilised. Alternatively, pastures may be managed by mechanical topping/windrowing, by conserving excess pasture as silage or hay, or by herbicide treatments (1).

KEY WORDS

intensive spring grazing, strip/ration grazing, feed on offer

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