

Perennial ryegrass survival through summer

Raquel Waller¹, Peter Sale² and Geoffrey Saul³

¹DNRE, Regional Office, 402-406 Mair St, Ballarat, Vic 3350. www.nre.vic.gov.au Email raquel.waller@nre.vic.gov.au

²Department of Agricultural Sciences, La Trobe University, Plenty Road, Bundoora, Vic 3086. www.latrobe.edu.au Email P.Sale@latrobe.edu.au

³DNRE, Pastoral and Veterinary Institute, Private Bag 105 Hamilton, Vic 3300. www.nre.vic.gov.au Email geoff.saul@nre.vic.gov.au

Abstract

Perennial ryegrass declined irrespective of grazing treatment in established pastures during a 4-year grazing study at Hamilton, Victoria. The decline was attributed to lack of soil water available to the tillers during the summer-autumn period. Observation of tillers through summer-autumn 1997 showed that survival was most likely if tillers underwent seed head development; 26% survived compared with 12% for tillers that remained vegetative. Management strategies to enhance ryegrass persistence and livestock performance are outlined.

Key Words

Rotational grazing, set stocking, continuous stocking, phosphorus, sheep, ewes

Introduction

A grazing experiment with spring-lambing first-cross ewes was conducted at the Pastoral and Veterinary Institute, Hamilton from 1996 to 2000. A tactical grazing management strategy, designed to improve perennial ryegrass persistence without penalising animal production, was compared with continuous stocking. Tactical stocking consisted of a summer-autumn rotation of 10-14 days grazing in each of 8 paddocks, to avoid grazing green pick and maintain herbage cover of 800-1000 kg dry matter (DM)/ha. A rapid rotation was used after the opening rains, initially 3 days per paddock up to 7 days in mid-winter. Continuous stocking was used during lambing and lactation from mid-August to mid-December.

The 2 grazing strategies were compared on upgraded and typical pastures. The upgraded pasture contained perennial ryegrass, phalaris and subterranean clover and was fertilised with 26 kg phosphorus (P)/ha annually. Soil Olsen P was 15 mg/kg. The typical pasture contained naturalised perennial ryegrass, subterranean clover and annual grasses and was fertilised with 6 kg P/ha annually. Soil Olsen P was 6 mg/kg.

Results and discussion

Ryegrass density decreased to less than 20% on all treatments during the study (1). The decline was attributed to the very dry conditions during the study (the annual rainfall between 1997 and 1999 averaged 563 mm compared to the long-term average of 694 mm/year). Other factors were incidental summer rainfall that caused ryegrass buds to break dormancy then die, the gravelly soil with low water-holding capacity, and the high grazing pressure (1).

Tactical stocking enabled the year-around stocking rate to be increased by an average of 9% (2). Tactical stocking on upgraded pasture maintained adequate herbage cover during the summer-autumn despite the higher stocking rate (2), whereas the continuously-stocked upgraded pasture became very bare and overgrazed in summer 1999 and 2000 with less than 500 kg DM/ha by late autumn.

This study reinforced the value of upgraded pastures with 50% higher carrying capacity than typical pasture, and 70% higher lamb weaning weight per hectare (3).

What happened to the ryegrass?

The tillers that survived the summer in 1997 either remained vegetative throughout summer, or flowered and died, but produced daughter tillers. More reproductive tillers survived via production of daughter tillers (26%) than vegetative tillers (12%) (Figure 1). In addition, the number of tillers produced with reproductive development was 10 times higher than from vegetative tillers in the first month after the opening rains. This suggests that a rest from defoliation in late spring to allow seed head development may improve perennial ryegrass persistence. Notwithstanding, it is important to graze off seed heads by the opening rains to optimise tiller density.

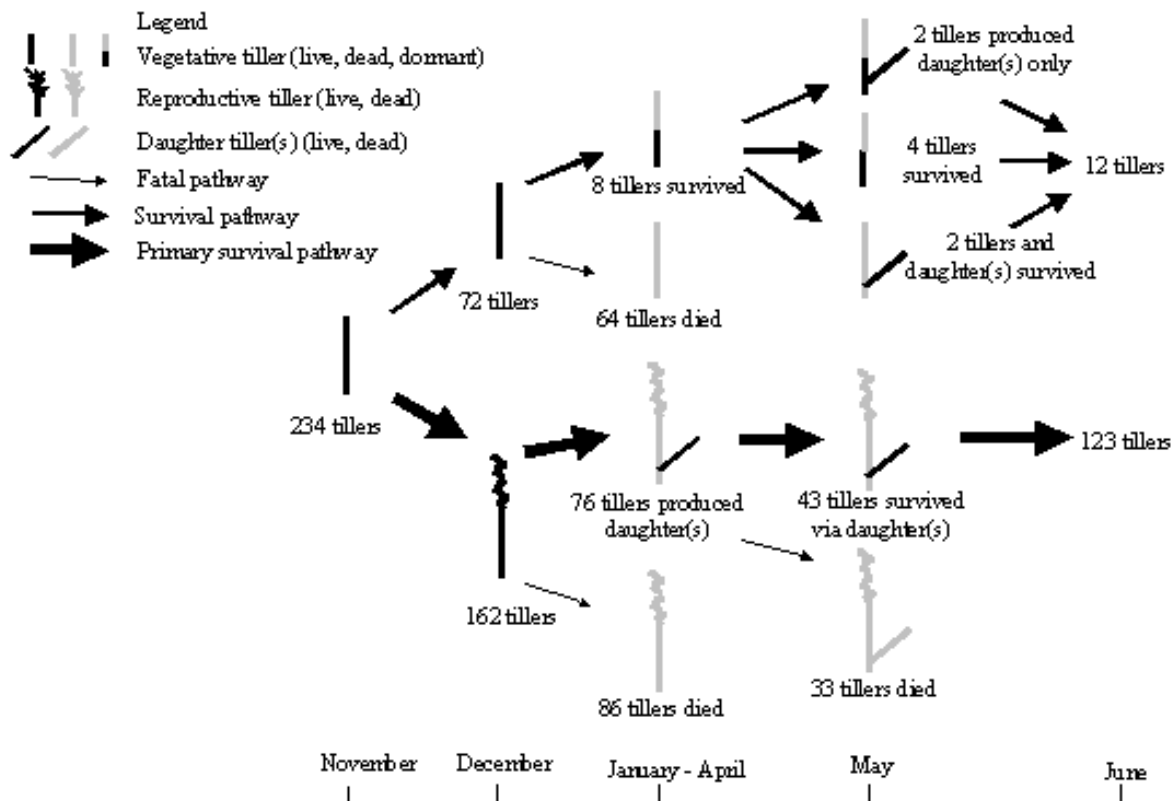


Figure 1. Pathways of tiller survival over the summer of 1996/97.

Recommendations for ryegrass management

The challenge is to optimise animal performance during spring and summer, while allowing ryegrass seed head development. To minimise losses in herbage quality and seed set of weeds we recommend to delay flowering of ryegrass by maintaining herbage mass at 1500-2000 kg DM/ha until mid-November when most annual weeds have died. A rapid rotation resulting in a rest of 2-3 weeks in late-November-early December should allow sufficient time for perennial ryegrass seed-head development (4).

Seedling recruitment can be used to increase the density of ryegrass in the pasture (5). The procedure is to close-up a paddock from about mid-November until mid-January to let seed heads develop and seeds to shed. Then graze to 800-1000 kg DM/ha by the opening rains to assist seedling establishment.

A long summer-autumn rotation is essential for well-fertilised pasture to avoid soil erosion and to ration herbage so that stock will have some paddock feed throughout the dry period. The goal is to graze to 800-1000 kg DM/ha by the opening rains, which will promote clover germination and help to avoid erosion and overgrazing of ryegrass crowns. Start the rotation in January after the stock has grazed remaining green and high quality feed. Graze each paddock 1-2 times only before the autumn break to avoid repeated defoliation of tillers.

References

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