Tillering pattern of perennial ryegrass subject to two spring grazing pressures

P. Michell[1] and W.J. Fulkerson[2].

[1]Tasnianian Department of Agriculture, P.O. Box 46, South Launceston, 7249.
[2]Tasmanian Department of Agriculture, Private Bag, Elliott, 7325.

Hard versus lax grazing in spring can increase subsequent pasture growth rate, particularly in early summer (1) and in dry summers (2,3). These hard grazed swards have been described as more leafy and have been shown to have higher ryegrass tiller densities in summer (1).

Methods

Measurements of tillering and flowering patterns of perennial ryegrass tillers were made in a grazing trial at Elliott Research Station in North-West Tasmania. The trial compared the effect of two grazing pressures by dairy cows over mid October to late November leading to post grazing residues in late November of 2.6 and 1.6 t DM ha'. Pastures were old established swards of Tasmanian No. 1 perennial ryegrass and white clover, grazed on a 20 by 1 day rotation.

Results and Discussion

Table 1 shows the flowering and tillering patterns found on the two grazing treatments over spring and early summer.

Table 1. Number of tillers per 100 main tillers present in early spring.

	Low grazing pressure					High grazing pressure				
	Main tillers		Daughter tillers			Main tillers		Daughter tillers		
	Live	Vegetative	Early	Mid	Late	Live	Vegetative	Early	Mid	Late
Date			Spring					Spring		
Aug.	100	100	27			100	100	17		
Oct.	98	98	68			96	96	49		
Nov.	86	48	39	29		92	46	37	98	
Dec.	36	28	20	20	8	42	33	35	83	7
SE (Dec)	7	7	8	7	6	8	7	11	15	4

On both treatments, only about one third of the main tillers that were present in late winter survived as vegetative tillers through the spring. The remaining main tillers would have died by summer and would contribute nothing towards summer growth. Few daughter tillers were produced in late winter before the onset of flowering activity.

Grazing pastures harder in mid to late spring increased production of daughter tillers at that time and increased survival of earlier produced tillers. Overall, there was a net decline in tiller numbers on the lax spring grazed treatment (76 vegetative tillers per 100 original main tillers) and an increase in tiller numbers on the hard spring grazed treatment (158 vegetative tillers per 100 original main tillers).

Under ideal conditions, ryegrass swards show a second period of tillering post flowering (4), but under the dry summer conditions normally found in Tasmania, these summer tillers would be unlikely to develop. Daughter tillers produced in October and November would therefore be important in determining pasture growth in summer as they would be formed at a time when soil moisture and temperature conditions should be suitable for their full development.

These results show that grazing pastures harder in spring can modify the pattern of ryegrass daughter tiller production leading to swards containing more vegetative tillers at the start of summer. This appears to be a probable mechanism for the higher pasture growth rates found in dry summers in *New* Zealand on pastures that were harder grazed in spring.

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