

## QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

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# EFFECT OF GRAZING MANAGEMENT ON PERSISTENCE OF PRIEBE PRAIRIE GRASS IN AN IRRIGATED PASTURE

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### SUMMARY

Lengthening of the regrowth interval from 4 to 6 weeks, with and without extra deferment of grazing in autumn and spring, did not significantly improve the persistence of the grass component of an irrigated prairie grass (*Bromus unioloides* cv. Priebe)/white clover (*Trifolium repens* cv. Ladino) pasture at Biloela.

### I. INTRODUCTION

Priebe prairie grass (*Bromus unioloides* H.B.K.) showed considerable promise in initial trials in irrigated pastures at Biloela Research Station in sub-coastal Central Queensland. It proved easy to establish and had maximum production in autumn and spring. In mixtures with Ladino white clover (*Trifolium repens* L.), however, it did not persist satisfactorily under 4 weeks' recovery periods between grazings. There are indications according to Grof and Courtice (1962) that a longer recovery interval at certain times of the year may favour the prairie grass. They recommended spelling in late spring to let the prairie grass seed more heavily and again in early autumn to permit more vigorous seedling establishment.

The present experiment was undertaken to investigate the effects of some management measures on the persistence of prairie grass in a mixed pasture. The measures studied consisted of differing intervals between grazing periods with and without autumn and spring spelling. Yield of prairie grass over a 3-year period was taken as the principal parameter indicative of persistence.

### II. EXPERIMENTAL

The experimental area was sown in April 1960 to a mixture of 2 lb Ladino white clover and 6 lb Priebe prairie grass per acre. Pasture establishment was satisfactory. After a hay cut in October 1960, grazing after 4 and 6 weeks' recovery was commenced, with and without deferment of grazing in autumn and spring. The design was a 4 x 4 randomized block with plots 180 ft x 21 ft (0.086 ac). Yield sampling was carried out immediately prior to each grazing. Initially five quadrats per plot were cut, each 2.4 sq ft.

To increase the sampling area, an Autocytthe was used from October 1961 to cut a 3 ft x 16 ft (48 sq ft) strip from each plot. One subsample from each plot was hand-sorted into prairie grass, clover and other species and dried at 90°C. Following each sampling, plots were heavily and quickly grazed by dairy cattle, and then closely slashed; the recovery interval was reckoned from this date. It was intended to maintain adequate irrigation throughout the trial period with intervals between waterings ranging from 7-10 days in midsummer to monthly intervals in midwinter irrespective of rainfall. On a few occasions, however, moisture stress was noted.

### III. RESULTS

The design did not allow treatments to be simultaneously sampled. The final harvest for the 4 weeks' recovery interval/no spelling in April 1963 was considered the termination of the trial. Other treatments were carried beyond this point and yields for the third year adjusted back to this date.

TABLE 1  
YIELDS OF PRAIRIE GRASS AND CLOVER, 1960-1963  
lb/ac oven-dry

Treatment	Year 1		Year 2		Years 1 + 2		Year 3		Total 3 Years			
	Grass	Clover	Grass	Clover	Grass	Clover	Grass	Clover	Grass	Clover		
1. 4 weeks' recovery	6,359	9,816	2,595	16,217	8,954	26,033	227	6,531	9,181	32,564		
2. 6 weeks' recovery	6,328	7,627	3,147	15,097	9,476	22,723	885	4,623	10,360	27,346		
3. No spelling ..	6,566	9,894	2,142	17,741	8,708	27,635	364	5,886	9,072	33,521		
4. Spelling ..	6,121	7,549	3,600	13,572	9,722	21,121	747	5,268	10,469	26,389		
L.S.D. ..	{	5%	1,004	1,097	692	1,796	1,170	2,744	431	1,088	1,365	3,526
		1%	1,443	1,576	995	2,580	1,680	3,942	620	1,564	1,875	5,066
Significance ..	n.s.	1 $\geq$ 2 3 $\geq$ 4	4 > 3	3 $\geq$ 4	n.s.	1 > 2 3 $\geq$ 4	2 > 1	1 $\geq$ 2	4 > 3	1 $\geq$ 2 3 $\geq$ 4		

TABLE 2  
TOTAL PRAIRIE GRASS AND LADINO CLOVER YIELDS—THIRD YEAR  
lb/ac oven-dry

	4 Weeks' Recovery		6 Weeks' Recovery	
	Prairie Grass	Clover	Prairie Grass	Clover
No spelling .. .. .	157	6,369	572	5,403
Spelling autumn and spring .. ..	297	6,692	1,198	3,843

1st order interactions not significant.

Yields of prairie grass and white clover obtained are shown in Table 1, while the third-year yields for the individual treatments are shown in Table 2. Percentages of prairie grass dry matter at various harvests are shown in Figure 1.

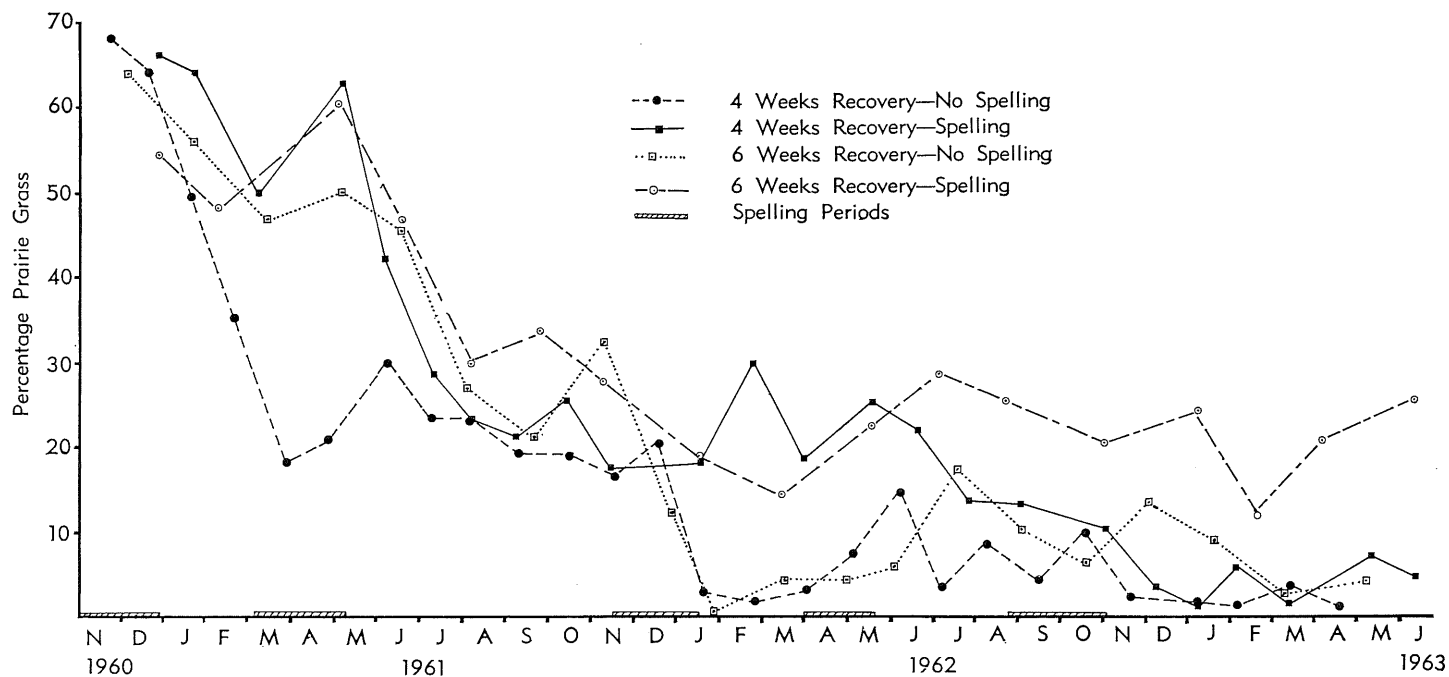


Fig. 1.—Percentage prairie grass (oven-dry basis) recorded at individual harvests over the three years.

#### IV. DISCUSSION

An adequate proportion of prairie grass was not maintained by any treatment. At the first sampling, prairie grass made up 65-70% of the total dry-matter yield. By the termination date only 20% of the total yield was prairie grass under 6 weeks' recovery/spelled treatment and less than 5% under 4 weeks' recovery/no spelling treatment. This was far below the desired level.

A useful relationship of grass to clover in a pasture such as this is considered to be 60% grass, 40% clover. This experiment commenced with slightly more grass than this 6 months after planting but rapidly fell to a much lower level. The longer recovery interval and spelling treatments, however, tended to maintain a slightly but not always significantly higher proportion of grass. These were the two treatments, however, that gave the lowest total yield from the pasture.

It is concluded that some factor other than deferment and recovery period is influencing the persistence of Priebe prairie grass in this pasture.

#### REFERENCE

- GROF, B., and COURTICE, J. (1962).—Studies in the growth rate of temperate pastures in a subtropical environment. *Proc. N. Qd Agrost. Conf.* Paper 14/1.

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