

# The Impact of Grazing Interval on Production and Persistence of a Ryegrass/White Clover Pasture in the Subtropics

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In subtropical dairy regions of Australia, temperate pasture provides a vital, high quality feed in winter and spring. Whilst ample solar radiation, relatively fertile soils and irrigation lead to very high DM yields (20,000 kg DM/ha - Lowe and Bowdler, 1984; >17,000 kg DM/ha - Fulkerson and Slack, unpub. data), perennial ryegrasses lack persistency. Commonly, farmers need to 'thicken up' a third year ryegrass/clover pasture by drilling in annual ryegrass and then completely replant after the third year. The decline in plant population is probably partly due to ingress of summer grasses.

## MATERIAL AND METHODS

A study commenced in March 1991, to determine the relative importance of several management factors - including defoliation interval - on production and persistence of ryegrass/white clover swards.

The defoliation interval aspect of the study is reported here for plots sown to 8 or 35 kg Ellett ryegrass and 4 kg Haifa white clover, irrigated and harvested with a rotary mower.

Defoliation treatments were: 2 or 4 weeks or 'flexible' harvest.

The criteria for 'flexible' harvest was based on 'when the plant was ready' as:

1. Commencement of lodging
2. Significant infestation of rust
3. 3 leaves in ryegrass,

whichever happened first. In fact the 'flexible' interval varied from 21 to 51 days.

## RESULTS

The seasonal DM yield for 2 and 4 weeks or 'flexible'

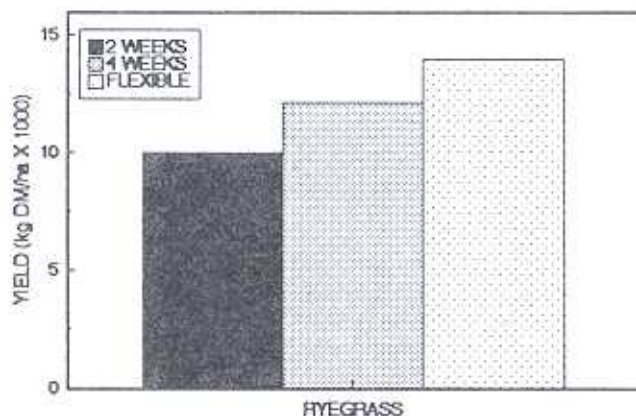


Figure 1: Kg DM/ha (May to November) for plots (n=48) defoliated at 2 or 4 weeks or 'flexible' (see text).

defoliation was significantly different ( $P < 0.001$ ) at  $9,260 \pm 269$ ;  $10,918 \pm 265$ ;  $12,223 \pm 280$  (mean  $\pm$  se) kg DM/ha, respectively (Figure 1).

There was a significant interaction of defoliation with time ( $P < 0.001$ ) with the differences between 2 and 4 weeks being greatest in winter (55%) and least in spring (11%) as shown in Figure 2.

Although plant densities were not significantly different up to November, significantly more ( $P = 0.022$ ) ryegrass plants had survived the summer in April 1992 and there was significantly less ( $P < 0.001$ ) summer grass ingress for 4 weeks and 'flexible', as compared to 2 weeks, defoliation.

## CONCLUSION

Relating time of defoliation to a relevant plant factor will, in most cases, increase pasture growth and also substantially enhance persistency of ryegrass. However, increase pasture growth will be counter-productive unless it is effectively utilised.

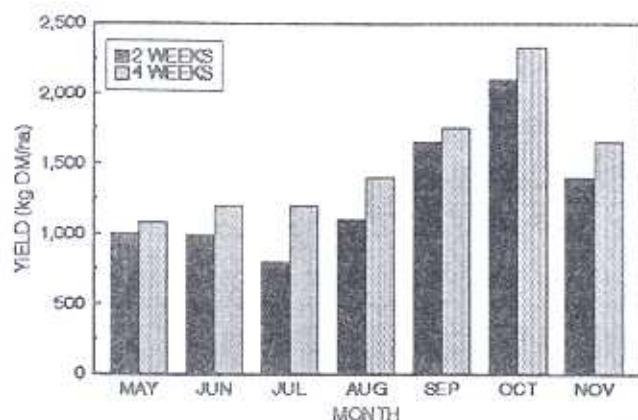


Figure 2: Kg DM/ha for each month from May to November for plots defoliated at 2 or 4 week interval.

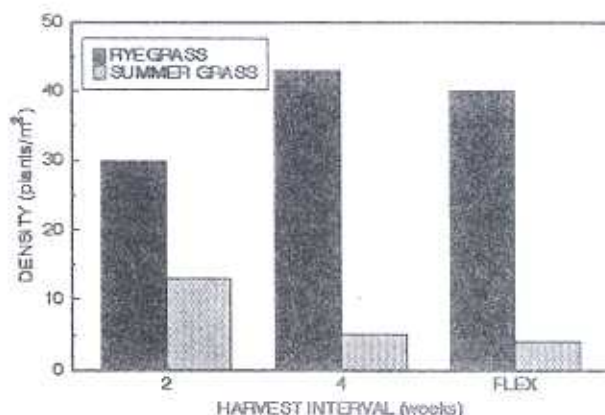


Figure 3: Ryegrass and summer grass (plant/m<sup>2</sup>) in April 1992, for plots defoliated at 2 or 4 weeks or 'flexible'.

## REFERENCE

Lowe, K.F. and T.M. Bowdler (1988). The effect of height and frequency of defoliation on productivity of irrigated oats (*Avena*

*strigosa* cv. *Saia*) and perennial ryegrass (*Lolium perenne* cv. *Kangaroo Valley*) grown above or with barrel medic (*Medicago truncatula* cv. *Jemalong*). *Australian Journal of Experimental Agriculture*, 28: 57-67.