

Irrigation frequency for perennial pastures in the Murrumbidgee Valley

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Efficient water use is a key aim for irrigation farmers. Earlier research (1) examined irrigated pasture production on a grey cracking clay, where pastures were not stressed until more than 100 mm ET_p (accumulated potential evapotranspiration) less rainfall (R). This study investigates the influence of irrigation frequency (IF) on perennial pasture production on a red-brown earth, which has a lower water holding capacity than the grey cracking clay.

Methods

A field experiment was established as a randomised block, with each plot a separate irrigation bay. Pastures included: a) white clover, *Trifolium repens*; b) a mixture of white clover, ryegrass, *Lolium perenne*, and paspalum, *Paspalum dilatatum*; and c) lucerne, *Medicago sativa*. Flood irrigation was applied from spring to autumn at high, medium and low IF (60, 90 and 120 mm (ET_p-R) for clover; 60, 120 and 180 mm for lucerne).

Results and discussion

In year 1 DM yields declined by about 30% at low IF for all species but only for clover in year 2 (Table 1). Clover responded to IF in spring and autumn, but high summer temperatures slowed growth, regardless of IF. Lucerne produced well during summer and responded to IF in season 1 but showed little response in season 2.

Table 1. Summer pasture production (t DM/ha) for Year 1 (4 harvests) and Year 2 (6 harvests) at 3 irrigation frequencies.

Irrigation Frequency	Clover		Clover/Grass		Lucerne	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
High	7.5	10.6	10.6	14.0	13.5	19.6
Medium	6.6	9.5	7.6	11.7	12.5	20.4
Low	5.0	9.1	6.9	9.1	9.6	20.3

This research confirms that frequent irrigation of white clover is recommended for soils with low water holding capacities and that high temperatures are detrimental to white clover production, as discussed by (2). It also forms a basis for developing schedules for improving irrigation management and efficiency.

References

1. Lattimore, M.E. and Thompson, J.A. 1987. Proc. 4th Aust. Agron. Conf., p. 312.
2. Mason, W. et al. 1987. Proc. 4th Aust. Agron. Conf.. pp. 100-117.