

Effects of irrigation management on the productivity of subterranean clover pastures

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Irrigation can be used to extend the growing season of annual pastures. This can be done by commencing irrigating earlier in autumn and/or ceasing irrigating later in spring. Two experiments were done at Kyabram to examine the effects of time of initial and final irrigations on the productivity of irrigated annual pastures based on subterranean clover (Trifolium subterraneum).

Methods

Experiment 1 studied the effects of an initial irrigation in mid-February, early March and late March on the productivity of an established annual pasture comprising subterranean clover, annual ryegrass (Lolium rigidum) and Bromus spp. Experiment 2 considered the effects of first irrigating pure subterranean clover swards on February 1, March 1 and April 1; these plots were irrigated last in either mid-October or mid-November. All plots were irrigated at an evaporative interval of 50-60 mm except for the period, May 15 to August 15, when no water is released for irrigation in northern Victoria. All plots were regularly grazed by dairy cows to a postgrazing height of approx. 5 cm.

Results and Discussion

Early irrigation increased the autumn productivity of pasture in both experiments, although a decline in spring growth has in some cases masked the significance of this advantage in total yield (Table 1).

Table 1. Effects of time of initial and final irrigations on herbage production (t DM/ha).

Initial irrigation Final irrigation	February		March		April	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
December 1982						
Seed density no./dm ²	35	68	38	87	32	75
Germination %	24	18	28	23	24	21
Prior to irrigation 1983						
Seeds density no./dm ²	36	66	32	85	11	14
Germination %	46	36	59	61	74+	72+
Establishment no./dm ²	3.9	4.2	6.1	12.1	17.1	30.8
Residual seed no./dm ²	5	12	5	15	5	9
% seed recovered	25	24	29	31	69	53

+ Estimate - April treatment established by rain in mid March.

Of the three years, 1982 was extremely dry during winter. It was this year in both experiments that the greatest benefits were obtained from irrigating an annual pasture early. Irrigating later in spring provided an additional 0.8 t DM/ha in year 1 and 1.2 t DM/ha in year 2, and this was not influenced by time of initial irrigation. While irrigating early can be a benefit to dairy farmers who wish to feed their cows better during autumn/winter, the main benefit of irrigating an annual pasture later into spring is to improve its regenerating ability(1).

1. Gelly, G.B. and Mason, W.K. (1985). Proc. 3rd. Aust. Agron. Conf., Hobart.