

## The productivity of three annual clovers (*T. balansae*, *T. resurinatum* and *T. subterraneum*) under irrigation in Northern Victoria

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Farmers require a high level of pasture growth for the production of milk during autumn/early winter, the time when perennial pasture growth has declined to a low level (1). Annual pastures are responsive to early irrigation (2), however subterranean clover may not be the most productive clover species. This paper reports the productivity of three annual clovers sown at Kyabram with a range of initial irrigation treatments.

### Methods

Pure swards of balansa clover (*T. balansae*) CPI 45856, persian clover (*T. resupinatum*) cv. Maral at 10 kg/ha, and a mixture of early-mid season subterranean clover cultivars typically used under irrigation (Clare, Woogenellup and Trikkala) at 50 kg/ha because of larger seed size, were sown at five times in 1983. The first four times were established by irrigation on February 7, February 28, March 21 and April 14, the fifth was sown June 20. All plots were irrigated on an evaporative interval of 60-70 mm until late December. Establishment density at 14 days and herbage yield (autoscythe harvested, leaving 40 mm residual pasture) were measured.

### Results and Discussion

Establishment as a proportion of seed sown was 36% at the first two irrigation treatments when average daily maximum temperatures of 33.2°C and daily evaporation of 9.2 mm were recorded. Establishment increased to 69% in late March and mid April treatments. The poor establishment at early irrigation may reduce the potential productivity of all species.

**Table 1.** The effect of irrigation treatment on cumulative pasture production (t DM/ha) of individual species at stages throughout the year.

Irrigation treatment	to June 27			to September 21			Total		
	Bal.	Per.	Sub	Bal.	Per.	Sub	Bal.	Per.	Sub
February 7	4.1	4.9	5.0	6.3	7.5	7.4	7.4	14.4	8.8
February 28	3.5	3.7	4.1	6.9	7.0	7.3	7.7	15.7	8.6
March 21	3.2	2.3	2.7	5.2	5.0	5.7	6.3	13.3	6.9
April 14				3.7	3.7	3.4	5.4	13.1	5.4
June 20							3.0	8.6	2.8

An average of 1.8 t DM/ha remained after harvesting but is not included in Table 1. Early irrigation increased the productivity of all species, by increasing autumn/winter production with only a slight indication of a decline in spring growth. Balansa did not establish well, nor have comparative growth with the other species at the February irrigation treatments. The autumn/winter production of subterranean was comparable with persian clover. Persian clover made rapid growth (max 110 kg DM/ha/day) from September onwards when the other species of early and mid season maturity were setting seed and senescing. This resulted in the significantly higher total yield recorded for this species, however increased use of irrigation is required in spring to obtain this yield, at a time when fodder supply is not limiting animal production under irrigation.

Each species has potential for use under irrigation, but none were better than subterranean in autumn/winter. The use of these species under irrigation will depend on animal production requirements for fodder and the availability of increased irrigation water required to exploit their growth potential.

1. Stockdale, C.R. (1983). Aust. J. Exp. Agric. Anim. Husb. 23:131.
2. Myers, L.F. and Squires, V.R. (1970). Aust. J. Exp. Agric. Anim. Husb. 10:279.