## Annual clover production using saline irrigation water

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In the Shepparton Region of northern Victoria the pumping of moderately saline groundwater is a primary strategy for salinity mitigation. The re-use of pumped groundwater for irrigation can provide a valuable supplement to traditional channel water supplies. The groundwater can be used to convert dryland pasture to irrigate annual pasture, and to provide water for the early commencement of annual pastures. The volume and salinity of groundwater that can be productively used on annual pastures is largely dependent on the salt tolerance of the clover component of the pasture.

### Methods

Sixty plots (each 20m2) were established on a non-saline Lemnos Loam (Dr 2.33) in Feb. 1986. The experiment was a randomized block design with crimson (cv. Dixie), berseem, subterranean (ev. Clare) and persian (cv. Maral) clover, five irrigation water salinities (ECw = 0.1, 0.7, 2.3, 5.3 and 8.1 dS/m) and three replicates. Clovers were maintained as pure stands. Plots were sown and then irrigated with treatment waters on 19 Feb. 1986. A total of 10 irrigations were applied to the 30 Dec. 1986.

#### **Results and discussion**

Irrigation treatments ECw 5.3 and 8.1 dS/m reduced seedling numbers of crimson clover while only the highest treatment reduced the numbers for the other species. Berseem had a minor yield loss at 8.1 dS/m for the early harvests (8 April, 1 May) due mainly to reduce plant numbers. Berseem showed no yield loss for the remainder of the year except at 8.1 dS/m at the final harvest (30 Dec.). Persian had a similar response although the effect of 5.3 and 8.1 dS/m was larger than for berseem. Sub and crimson yields were reduced at 5.3 and 8.1 dS/m for harvests 8 April, 1 May, 26 May and 28 July. Winter rainfall leached the 0-30em soil interval and by 25 Sept. salinity did not affect sub yields while crimson was reduced only at 8.1 dS/m. Crimson ceased growth at this time but sub was harvested again on 26 Nov. and had a yield loss only at 8.1 dS/m. Final cumulative yields are shown in Table 1.

Considerable scope exists for irrigating annual clovers solely with moderately saline water. Berseem and persian clovers may be useful alternatives to sub clover at higher salinities.

Clover	Cumulative yield		(t/ha) at EC, (dS/m)		of :
	0.1	0.7	2.3	5.3	8.1
Berseem	11.74	11.28	11.04	12.73	9.87
Subterranean	12.39	11.44	11.76	9.99	7.70
Crimson	9.14	9.18	8.12	6.91	3.60
Persian	10.51	10.29	10.74	9.53	6.96

# Table 1. Cumulative yields (Feb.- Dec. 1986) of four annual clovers irrigated with saline water (EC<sub>w</sub>).