

Effect of sowing rate on the establishment of dryland lucerne

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Hunter River lucerne because of its susceptibility to damage by both the spotted alfalfa aphid (SAA) and blue-green aphid (BGA) is not a recommended variety for sowing in N.S.W. Although commercial varieties of lucerne resistant to SAA and BGA are being imported from the USA many dryland lucerne producers have not yet sown these because of the comparatively high cost of the seed.

On the North-West Slopes of New South Wales lucerne is normally sown in autumn with a cover crop of wheat. Lucerne seed costs could be reduced if acceptable stand densities could be achieved with lower rates of sowing than those normally used. A dryland experiment was conducted at Tamworth N.S.W. to assess the effect of sowing rate on the plant density of the SAA resistant variety, Condura 73. Plots 2 x 12m were sown with a cone seeder in 18 cm rows on 18 May 1979; lucerne was sown through a small seeds box.it a 1/2, 1, 2 and 4 kg ha with a cover crop of wheat (cv. Kite) at 40 kg ha . Numbers of lucerne plants per metre of row were counted at regular intervals and the plant densities are shown in the table.

TABLE 1. Number of surviving lucerne plants, from emergence to establishment for various sowing rates.

Sowing rate kg ha ⁻¹	Plant number/m ²							
	4 July	20 July	9 Aug.	24 Aug.	14 Sep.	27 Sep.	8 Oct.	
½	5.6	8.9	8.9	8.9	8.9	8.9	8.9	
1	41.1	46.7	35.6	30.0	20.0	20.0	20.0	
2	66.7	66.7	47.8	25.6	25.6	24.4	24.4	
4	83.3	85.6	75.6	58.9	46.7	44.0	44.4	

The lucerne plant densities in the 1, 2 and 4 kg ha⁻¹ sowing rates decreased by a mean of 54%. probably as a result-if intraspecific competition between seedlings. In the plots sown at 2 kg ha⁻¹ 1.6 times more plants emerged than in plots sown at 1 kg ha⁻¹ but only 18% more plants established. The eventual stand density of the plots will depend on the frequency of grazing, seasonal conditions and disease incidence. However, as plant numbers could decline by a further 50% (Brownlee 1973; Thompson et a. 1976; Leach 1979) to get an acceptable stand density of 10-15 plants per m² (Leach 1979) sowing rates below 4 kg ha⁻¹ should not be used.

Brownlee, H. (1973). Aust. J. exp. Agric. An. Hus. 13: 259.

Leach, G.J. (1979). Aust. J. exp. Agric. An. Hus. 19: 208.

Thompson, J.A., Sheridan, K.P., and Hamilton, B.A. (1976). Aust. J. exp. An. Hus. 16: 845.