THE ESTABLISHMENT AND YIELD OF LUCERNE AND THE INFLUENCE OF COVER CROPS, WEEDS, IRRIGATION AND LUCRNE SEEDING RATE

(M.Agr.Sc. thesis)

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THE AIM of this study was to examine ways of reducing the cost of establishing lucerne, and of increasing production in the first year.

Two field trials conducted on a Paparua sandy loam at Crop Research Division, DSIR, Lincoln, showed the following:

(1) Cover crops of winter wheat or spring barley reduced spring-sown lucerne production in the season of sowing and sometimes into the second season, but lucerne establishment was unaltered by cover crops. The use of spring-sown cereal cover crops -for lucerne establishment could be justified on the basis of providing a more profitable return when the establishment year production of clear-see&d lucerne was low but could not be justified on the basis of weed suppression.

(2) Irrigation reduced competition between the cover crop and the undersown lucerne. Lucerne production at the harvest cut was reduced by barley sown at 56 kg/ha to 2 1 and **49%** of clear-seeded lucerne non-irrigated and irrigated, respectively. Yields remained depressed for two further cuts when non-irrigated but were restored by the following cut when irrigated. Clear-seeded lucerne under irrigation yielded 13 930 kg/ha in the season of sowing.

(3) Lucerne densities of 30 to 350 plants/m^2 showed that, although production from low density stands may be reduced for some time in the first season, subsequently they produced to a maximum. In spite of the fact that the trials differed markedly in percenatge establishment, seediag rates of 2.9 and 2.25 kg viable seed/ha were. capable of producing stands of adequate density and therefore on the basis of yield aloae current lucerne seeding rate recommendations of 12 to 16 kg/ha can be consdered high, even when the percentage establishment is likely to be low.