

There are certain plants which indicate the suitability of soils for lucerne-growing. Among the commonest of these in New Zealand are English trefoil or black medick (*Medicago lupulina*), burr clover (*Medicago denticulata*), spotted burr clover (*Medicago maculata*), King Island melilot (*Melilotus officinalis*), and American sweet clover (*Melilotus alba*). Where these plants are growing naturally it is practically certain that the 7-in.-drill system of lucerne-growing can be followed with safety.

An early contention was that lucerne-growing should be confined to hay-production, but experience has shown that much of the hill country in suitable districts, such as the lime-bearing areas of north Otago and the Omihi Valley, could be sown with advantage and used for grazing purposes.

On certain light lands in Canterbury lucerne has been quite successful for grazing purposes under the narrow-drilled system, but in all cases the land has been near moving water, and in most cases near streams which either find their origin in or pass through limestone country. Two of the most successful of these stands have been near lime-bearing streams at Hawarden and on the banks of the Waipara River.

The economy of sowing lucerne on the light lands of Canterbury has frequently been discussed, and it seems conclusively proved that on light land, with water at a great depth from the surface, although lucerne can be made to grow, the yields are light, and the costs of preparation and maintenance are not commensurate with the returns therefrom. If, however, a farmer requires lucerne for any special purpose on such land, the wide-rowed system of 14 in. drills should be resorted to, experiments having shown that such drills are wide enough for all necessary cultural operations. It is quite practicable to intercultivate 14 in. rows, using three tines between the rows. This is regularly done by spacing two tines to run on either side and close up to the lucerne, and the third in the centre of the row at the front; banking or ridging is thereby avoided.

Lucerne undoubtedly is a deep-rooted plant, and records of roots reaching to a depth of from 20 ft. to 30 ft. are not uncommon, but as the plant feeds almost entirely near the surface the absence of surface moisture reflects itself in light growth of the crop. It is very marked that under Canterbury conditions lucerne on light land fails to make satisfactory growth during dry weather, but should there be rainfall wetting the surface to a depth of only the first 3 in. or 4 in. there is an immediate response in the growth of the plants. This shows very clearly the need for moisture comparatively near the surface if lucerne is to be successful on our light plains soil. On certain areas such as the Prison Farm, Papanua, light lands have been turned to good account, but not without a large expenditure in lime and labour. The Department's efforts to grow lucerne on the light plains land is represented by the Bankside railway area, the result of which has not induced surrounding farmers to do likewise.

The sowing in wide drills necessitates frequent cultivation to keep grasses in check, whereas the luxuriant growth and shade produced by the narrow-rowed system is sufficient in itself to keep down grasses and weeds. A certain effort was made in Canterbury several years