

## LUCERNE IN THE WELLINGTON, TARANAKI, AND EAST COAST DISTRICTS.

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IN two papers read by officers of the Department of Agriculture at the 1936 conference of the New Zealand Grassland Association, the growing of lucerne as a forage crop in districts of relatively high rainfall was dealt with. The area covered by the papers included the Manawatu and west coast from Paraparaumu to the Patea River(1) and Taranaki(2). During the subsequent discussion on these and other papers the present position and general trend in regard to lucerne-growing in the Wairarapa, Hawke's Bay, and Poverty Bay districts were also touched on. It is the intention here, to review briefly some of the more important points in regard to the cultivation of lucerne in the southern portion of the North Island as discussed at the conference.

In general, while none of the area can claim to have climatic and soil conditions comparable with those of the great lucerne-growing countries of the world, there are in many of these districts conditions under which lucerne thrives and where the crop is of considerable value in providing an abundance of green, nutritious food during dry summers, and excellent material for hay for use in the winter months. Evidence was forthcoming to show that lucerne has during the past twenty to thirty years been tried out under practically -all kinds of conditions of soil and climate in this portion of the Island, and that there has been a sorting of the localities in which lucerne can be established and maintained successfully, and where the crop fills a definite need in the farm.

Two outstanding features appear to be common to those areas where lucerne can be said to be an important feature of the farms, first, a freely draining subsoil, and second, dry summers, if not annually, then at least once in a while and frequently enough at any rate to bring out the value of lucerne as a green forage crop as compared with the pastures with which it has to compete for its place on the farm. Another feature which is common to lucerne-stands throughout the area under review, and which is a limiting factor in the life of the stands, is the favourable conditions during the autumn, winter, and spring for the growth of weeds and grasses which can seldom be dealt with at this period of the year by cultivation, owing to the moist soil conditions.

The general trend throughout the area is for lucerne to be concentrated in those localities where favourable conditions of soil and climate, as described already, occur together. Because sheep are less dependent on green fodder in dry summers than are the dairy cows, the largest area in the aggregate is to be found on the dairy-farms, though the stands are individually smaller than is the case on sheep-farms. There has been a definite and continued increase in the acreage of lucerne throughout the southern provinces, and there is still scope for extension. The problems in connection with the further utilization of lucerne can best be discussed by reviewing the position district by district.

*Taranaki*(1).—Of a total of some 4,800 acres in lucerne in Taranaki, practically the whole of the really successful stands 'are confined to the southern counties of Waimate West, Hawera, Eltham, and Patea, an area of comparatively low summer rainfall and occasional drought conditions.' Here, \*however, the stands are comparatively short-lived owing to winter weed-invasion, and special attention to weeds in establishment and the use of autumn-sown oats or barley to smother winter weed and grass growth are considered essential to satisfactory lucerne stands. A falling-off of the area in lucerne during recent years in South Taranaki may be accounted for by the invasion by weeds and grass of the older stands and by the difficulty in utilizing the crops during comparatively wet summers. In North Taranaki the soils of the dairying belt are generally suitable to lucerne, but the good summer rainfall experienced is not favourable to the satisfactory maintenance and utilization of lucerne.

Wellington(z).-The area in lucerne has more than doubled during the past five years. The position in the Manawatu and west-coast area of comparatively high rainfall, with, however, sufficiently dry summers, particularly along the coastal belt, to bring out the advantages of lucerne as a summer-feed producer, was dealt with in the conference papers(a). The best and most easily maintained lucerne stands are to be found on the freely draining sandy loams of the coastal belt, extending from Patea to Wanganui and beyond, with good stands also on the silts of the river-flats. A considerable extension of lucerne areas is possible on the more recently consolidated coastal sand-dune country which extends from Paraparaumu in the south up to Wanganui and Patea. This belt, which is but recently being developed, extends for several miles inland, and lucerne is destined to play an important part, as the summer-feed supply is a difficult problem owing to the rapid drying-out of the sandy soils. Lucerne can be successfully established and maintained, though the yield is not so high as is *the* case on the older consolidated sands farther inland. Green summer feed is invaluable, however, and lucerne has proved 'its ability to fill the need for it.

The extension of lucerne-growing on the richer, free-draining silts of the extensive river-flats throughout the Manawatu and Rangitikei districts is a matter well worthy of the consideration of farmers on these lands. The ease with which lucerne grows, the heavy yield of high feeding-value, and the certainty of good summer production irrespective of dry spells are points strongly in its favour. In the Wairarapa during the past five years a very marked increase in the area in lucerne, especially in the southern districts, has been recorded. There is still a considerable scope for lucerne on the extensive areas of free-draining shingly and silty soils subject to severe drying-out in the summer. In many districts where the subsoil is stiffer and lucerne does not last as a paying crop for more than five to six years, its value in dry seasons still is such as to warrant the establishment of a stand. A profitable stand under these conditions is one that produces three to four fair cuts a year for from four to six years. In the northern bush districts, with a higher rainfall, but suitable lucerne soils, occasional dry summers demonstrate the desirability of some lucerne on the smaller dairy-farms, and, in spite of difficulties with winter weeds and grass-invasion, the area in this crop is being extended.

*Hawke's Bay District.*-Of some 5,000-odd acres of lucerne in the Hawke's Bay District, by far the greater proportion is grown on the richer loamy silt soils of the Heretaunga Plains, where the stands are exceptionally prolific and remain productive for a long period. In more recent years the successful growing of lucerne by farmers in many other parts of central Hawke's Bay, and more particularly on the Takapau Plains and the lighter soils of the Tikokino and Norsewood districts, has been followed by a marked increase in the area in lucerne in these localities. A large proportion of the soils of Hawke's Bay are suited to lucerne, and though the invasion of stands by weeds and grass is a serious problem in the \*areas of higher rainfall, the summers are generally such that the value of lucerne is sufficient to warrant the establishment of stands on a much larger number of farms than it is on at present.

*Poverty Bay.*-In this district very favourable conditions are found for lucerne on the silts of the extensive river-flats round Wairoa, Gisborne, and the various rivers up and down the coast. A considerable portion of this country is devoted to dairy-farming, and it is on the dairy-farms that lucerne stands are found most useful, particularly in dry seasons. The area in lucerne in Poverty Bay has shown a steady increase in recent years, and there is scope for a much greater use of this crop, particularly on the lighter soils of the district.

#### SUMMARY

Of a total of some 40,000 acres in lucerne in New Zealand, about 15,000 acres are grown in the area dealt with in this review. A steady extension of the lucerne area during the past fifteen years to twenty years, with a more rapid yearly increase in the past five years, is recorded. Good lucerne-growing areas are those with deep free-draining soils, the productivity of the stands varying with the natural fertility, and the satisfactory utilization of the crops and therefore the need for lucerne varying with the severity or otherwise of the dry conditions experienced on the average in the summer. The drier the summers the more need for lucerne and the better the conditions for harvest and utilization.

The useful life of stands is dependent on subsoil conditions, and, in this area, also on the possibilities of weed-control according to the amount and distribution of the rainfall.

Though the value of lucerne in the main recognized lucerne-growing belts has been taken advantage of to a fairly satisfactory extent, much more land could probably be devoted to lucerne with advantage on dairy-farms in suitable localities where the summers are particularly dry. Further, on extensive areas such as the Manawatu and west-coast sand-dune country, the Wairarapa Plains, Takapau Plains, and elsewhere, lucerne, because of its special value under dry-summer conditions could with profit be much more extensively used. Finally, experience has shown that lucerne is not really profitable on those extensive areas of country with stiff subsoils and generally high and fairly evenly distributed rainfall.

#### REFERENCES.

- (1) ELLIOTT, A. G. : Paper read at 1936 Conference of the New Zealand Grassland Association.
- (2) LONSDALE, T. W.: Paper read at 1936 Conference of the New Zealand Grassland Association.

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## DISCUSSION.

*Mr. Reid* : The Fields Division and the Plant Research Bureau have introduced a service to the farmers in the inoculation of lucerne. The present position is that last year we supplied culture for 132,000 lb. of seed-it has grown to that figure from 4,500 lb. seven years ago. I wish to hear of instances of lucerne crops which, having died, and an attempt having been made to resow on the same ground, had failed, whether inoculation had been applied or not. Following up the work we have been doing in lucerne we have placed on the market cultures for the inoculation of clover.

*Mr. Smith* : I would like information about varieties or strains of lucerne, and especially about that known as Subtergrim.

*Mr. Palmer* : In one instance on light pumice country in Hawke's Bay I estimate there was an increase, following the application of 1 cwt. of superphosphate, of at least 25 cwt. of hay an acre. I advocated spring sowing, but I have somewhat changed my views, and favour autumn sowing on the heavier type of country. Weed-invasion is most strong in the spring and summer months.

*Mr. Calder* : In a trial of lucernes from many countries under New Zealand conditions the Marlborough variety proved to be the best. It gave better production and was of better quality. There are variations within the Marlborough type, and it is from these variations that we are attempting to produce an improved strain of lucerne. In high-rainfall areas the chief thing seems to be the invasion of weeds. Hunter River lucerne is not quite as productive as Marlborough lucerne, but during the winter it gives more growth than Marlborough does at Palmerston North. The winter growth of Hunter River lucerne may help in controlling weed-growth. Subtergrim cannot be recommended in preference to Marlborough.