

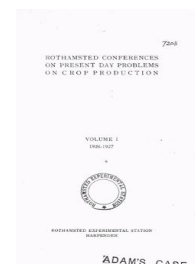
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The Growing of Lucerne

[Full Table of Content](#)



Account of the Discussion

Rothamsted Research

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THE DISCUSSION

LORD BLEDISLOE, Parliamentary Secretary to the Ministry of Agriculture, speaking in discussion, said that he wished to record his very hearty approval of the conferences as a most useful part of the work of Rothamsted. Also he was delighted to observe the partnership between the Royal Agricultural Society and Rothamsted which was found in the work on lucerne inoculation.

He considered that lucerne is one of the most valuable crops in the world on stock farms. It is found as an outstanding crop not only in Canada and America but in most great agricultural countries.

The conditions of high cost of labour and need for intensive cultivation predicated by Sir John Russell are present with us to-day.

In the immediate future an intensification of cultivation on the existing arable area is more probable than any extension of it, and no crop is more suited to assist this development than is lucerne, which is a potent fertilising agent.

On his own land, in Gloucestershire, he had failed for fifteen years to grow lucerne, but since inoculating his seed he has been able to produce excellent crops of it, sown in the Scandinavian manner under a mixed cover crop of barley and oats.

In confirmation of Mr Thornton's allusion Mr GARDENER of the Herts Agricultural Institute said that the good effects of inoculation on lucerne sown under a cover crop of barley at Oaklands were very remarkable, and far greater than those seen on the same field where the lucerne was sown without a cover crop. This being so, he was encouraged to question the policy of sowing the seed without cover, which involves the missing of a crop in the year of seeding.

The experience of three farmers in Somersetshire was adduced by Mr HAY, Principal of the Cannington Farm Institute. One man who had grown the crop for twenty years regarded it, when properly managed, as the most valuable food on the farm. He said that it can follow any crop in the rotation provided the land is clean. All three growers were emphatic in maintaining that broadcasting is the best method of sowing.

In the matter of pre-treatment, one farmer insisted that a very good tilth and firm seed bed should be obtained, and another that 3 to 4 cwt. per acre of superphosphate should be used. The grower with the longest experience recommended the use of a seed rate of 20 lb. per acre, and that the cover crop, if used, should be a very thin seeding of barley to be cut green before flowering. All three farmers used English-grown seed of unstated origin.

LUCERNE

25

When the crop is well established all count on cutting it twice in the season and on using the last growth to feed green to cows. Lucerne hay is found to be difficult to make and to heat easily in the stack. Difficulties arising from this characteristic are accentuated by the fact that the crop must not be moved much in the field for fear of loss of valuable leafage. With adequate care the crop is expected to last from six to ten years, but the growers consider that a very wet autumn will kill it out.

Mr G. P. MILN of Messrs Gartons Ltd. mentioned that trials with sundry varieties of lucerne had been carried out by his firm during the past few years at three different centres. Two strains of English-grown seed were used with Provence and Grimm.

The English seed had produced the best results, followed by the Provence, with the Grimm a good fourth. English lucerne seed is to be saved this year from the main crops and not from the later cuts.

Mr DAMPIER WHETHAM expressed the gratification of the Research Committee of the R.A.S.E. on the success of the inoculation experiments carried out by Rothamsted. He considered that new research work is required in matters of cultivation and in the production and testing of varieties. The extension of the area of lucerne presents yet another facet of the great liming problem, for over many districts where lucerne has not commonly been grown chalk-getting and lime-burning have died out. He hoped that with the spread of the crop would come the extension of such schemes for chalk-grinding as that promoted by Lord Leicester in Norfolk.

Mr STEWART of the Ministry of Agriculture said that several years ago he had noticed lucerne plants growing wild on a railway embankment near Elgin, and that he wished to call the attention of plant breeders to what might prove to be an unusually hardy variety. In more recent years he had seen the beneficial effects of inoculation, and at Kilmarnock had observed good results from the use of nitrate of soda to help the plant to a quick establishment. As an eyewitness he was able to confirm the striking results obtained on the lucerne plots at the Hertfordshire Institute at Oaklands last year. He considered that a good content of organic matter in the soil was often an important factor in the successful establishment of the plant.

Mr S. F. ARMSTRONG of the National Institute of Agricultural Botany said that the Institute is carrying out trials with lucerne seed of different nationalities. At Cambridge, plots of Provence, English, Grimm, Peruvian, Kansas and Dakota strains were put down in May 1922 and are still in being. They yielded four cuts

in 1923 and three in each subsequent year. Another trial carried out on the drill-strip method is being carried out in Hampshire, the strains involved being English (2), Grimm, Hungarian and Cape Provence.

The habit of lucerne is strictly perennial and the plant spends its first year in developing its root system, so that it can hardly be expected to produce a heavy crop in the first season.

In the normal way the plant continues to develop up to the third year before it comes to its point of maximum yield.

He found that there are two great essentials to be observed in lucerne growing: (a) weeds must be kept down in the first year; (b) the manuring must be correct.

The first of these requirements can be assisted by an early cutting of the first crop when it is about 8 in. high and before the weeds have time to seed. This will serve to check most of the annual weeds decisively.

On heavy land in Suffolk, some fifteen years ago, farmyard manure was found to be necessary in preparing for the crop. Nitrate of soda is useful only before the nodules are formed on the roots. Superphosphate and lime have been found beneficial over a wide range of soils and conditions, and on light lands sulphate of potash has been found to give excellent returns. He thought that in the east of England, where the rainfall is low and where some competition for moisture is likely to appear among plants in the field, cover crops for lucerne are less desirable than elsewhere.

Mr SHIPWAY of Messrs Suttons Seeds said that from the commercial aspect the production of special strains of seed is discouraged by the small area of lucerne grown in this country. He had no wish to disparage any of the work in progress or to comment unfavourably on any of the papers brought before the meeting, but he thought that they could have but small appeal to the practical growers. A good deal had been said about the failure of lucerne in its first year, and he was able from past experience to adduce a reason for many of these failures. Farmers in general tend to cut the crop too early in its first year and while there is only one terminal shoot to each root crown. Where this happens the plant generally dies out; but if cutting is delayed until a second shoot is formed to augment and relieve the first one, no such dying out is found. This had been tested carefully by Messrs Suttons in their own trials and had been found to be true. In the matter of inoculation he suggested that some considerable caution is necessary before any such step is accepted as standard practice.

Dr VOELCKER spoke of a considerable experience with lucerne at Woburn, where he succeeded in growing it for thirteen years without added lime. In the later years of the plots the need for

LUCERNE

27

additional potash became very clear, and the plots which did not receive it died out before the conclusion of the thirteen-year period. He thought that the crop should be drilled and not broadcast, and that it should be thoroughly cleaned from time to time. At Woburn the advantage or otherwise of a cover crop has been found to be mainly a matter of season, and on the whole the results show little difference between the two methods of growing.

From 1887 onwards a very large number of varieties were tried at Woburn, but the differences among the best were found to be small, and he has now returned to the use of Provence seed. He had followed closely the various attempts at inoculation since 1896, when the original soil inoculant, Nitragin, was produced. In 1905 he had seen something of new inoculation methods produced by Hiltner, and in America. Again in 1908 he had been deeply interested in Professor Bottomley's work at King's College. All these earlier attempts had come to some degree of failure, although the central idea seemed to be good and sound. The crucial question as far as inoculation is concerned is this: Has Rothamsted been able to develop a new technique which is capable of overcoming the difficulties which brought about the earlier failures?

LORD CLINTON, the chairman of the Lawes Agricultural Trust Committee, who presided at the Conference, said that the lucerne crop is particularly important from a national point of view in that it is one which can be used profitably in such systems of intensive farming as tend to support an adequate population on the land. In his view any possible extension of the area of the crop is a matter of the greatest importance at the present time.

When closing the proceedings he said that he was very glad that the subject had evoked such candid and sometimes contrary expressions of opinion. Some people advocated the use of drills while others believed in broadcasting. There are those who think that farmyard manure or additional nitrogen is required, and those who will have none of either of them. Lime had been advanced as the most important factor in producing a good crop, whilst experience from another quarter suggested that adequate drainage is even more vital. No doubt the great variation of our agriculture and the diversity of individual experience will suffice to reconcile all these differences. It is the traditional policy of Rothamsted to push forward each inquiry with an open mind and all due caution. No crop or process is "boosted," but each is considered in the light of well-certified facts and wide experience.

The variety of opinion appearing at such conferences as the present one is particularly valuable in helping everyone concerned to keep the problem under discussion in its proper focus.