

herd-test during the 1929-30 season. The average production for all cows certificated under the C.O.R. system in 1929 was 469.95 lb. butterfat.

Table 2 provides a production classification according to age and breed.

Although last year Official Herd-testing showed a slight falling-off in number of cows tested as compared with 1928-29, present prospects indicate a considerable increase for the current year, 1930-31.

ESTABLISHMENT OF LUCERNE ROOT-NODULES.

FURTHER EXPERIMENTS WITH THE INOCULUM.

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IN an article which appeared in this *Journal* for February, 1929, on the result of mixing various fertilizers with inoculated lucerne-seed it was shown that superphosphate kills the nodule organism and that rock phosphates and basic slag do not. Since then field experiments have proved this first conclusion, and in the present account these trials and related experiments are discussed.

In the field trials sown in January last a closer approximation to normal farming procedure was obtained than in the previous laboratory experiments, the only variation from farmers' methods being that the sowing was done in 14-in. drills to facilitate later observations. Commercial lines of manures and seed were used, and the cultures for inoculating the seed were drawn from stocks prepared at the Mycological Laboratory and intended for distribution to farmers. In the inoculation of the seed the method followed our usual recommendations, which at that time suggested the use of one 6-oz. bottle of culture for 80 lb. of seed. Owing to the small quantity of seed required for the whole experiment, drying was rapid, taking not more than ten minutes from the time of application of the milk-culture. Apart from the application of inoculum the seed was not treated in any way prior to mixing with the manure. The seed and manure mixtures were drilled, in 14-in. drills, the seed at the rate of 14 lb. per acre, and the manure at 3 cwt. per acre, except sulphate of ammonia, which was sown at 1 cwt. per acre. Sowing was done half an hour after mixing the inoculated seed and manure, a delay which is more or less comparable with that which would occur on a farm.

After allowing three months for the development of the plants and nodules, portions of the plots were dug and the roots washed and examined. Table 1 indicates the lay-out of the plots (which were in duplicate) and the results obtained by the various treatments.

A general view of the areas showed outstanding growth differences, and the examination, as indicated, demonstrated extreme variations in the production of nodules. The examination showed that in those areas sown with super and sulphate of ammonia the nodule formation was negligible, or where, as in super D, a few were present they were limited to one or two on each of the positive plants. Further, in super D the plants with nodules were present in groups in which the