

on those mixed farms where the yield is high and where its production is essential in keeping the farm team fully employed. This definitely lessens the cost of special fodder production, apart from any great profit being derived from the wheat crop. That is, wheat as a regular farm crop as profitable in itself as other major farm products will disappear, and whether a farmer grows wheat or not will depend, quite apart from the rise and fall of prices, on whether he is forced to maintain a full team for his fodder-crop production or not. So far as oats are concerned, the replacement of the horse by mechanical traction and the consequent lessened demand for horse-feed, will reduce the area sown as the years go on, but it is likely to remain sufficient for all local requirements, except in years of crop failure. Last season represented one of our failure years with regard to oats, and heavy importations of white oats from Canada and chaff from Australia took place.

The wet, early summer of 1924-25 throughout the cereal-growing belt of the South Island was marked by an alarming development of rust and mildew, but the harvesting returns show that their effect on the wheat crop was not serious. In the case of oats, many crops were badly damaged with rust, and the amount of undergrade chaff is far above that of normal years.

Probably the most striking feature of the year was the great increase in the top-dressing of grassland with phosphatic fertilizers. Auckland and Taranaki have for many years past shown that top-dressing is the farmers' most profitable investment, but outside these districts its immediate money-earning value was not sufficiently recognized. The movement has now become Dominion-wide, and its extension on to every farm of the country is now only a matter of time. The work of the Instructors in Agriculture has been a potent factor in this development.

#### INSTRUCTORS IN AGRICULTURE.

During the year one assistant Instructor in Agriculture has been appointed, but as he is attached to the teaching staff of Ruakura Farm of Instruction no strengthening of the field staff has taken place. With the limited number of Instructors—six senior and eight junior officers—it is impossible to organize their work on a basis satisfactory both to the Department and to the farmer. The individual instructorates are so large that many districts can only be visited for brief periods at very long intervals. The essential pre-requisite for successful extension—frequent personal contact between Instructor and farmer—cannot thus be maintained. Experience has shown that advice by correspondence is satisfactory only with a very limited percentage of farmers, and is comparatively ineffective in comparison with actual oral information given on the farm, or in farming-centres to individuals or groups of farmers having similar interests in common. Thus the personal farm visit, field days on farms or on demonstration areas, and day and evening addresses in farming-centres constitute the only rational methods of really successful farm-extension work. In order to in any way cater for the growing demand on the part of the farmer for these methods of direct instruction an increase in the number of Instructors is imperative. A difficulty, however, at once arises. A capable Instructor must not only be well trained in modern agricultural thought and practice, but he must also be extremely well versed in local conditions and local requirements. Such men are few and far between. Advice of a general character, or that based mainly on theoretical considerations, is frequently valueless. The farmer wants to know exactly what to do, and how best to do it, under the particular conditions of soil, climate, and finance with which he is faced. Agricultural extension work is thus fundamentally different from ordinary agricultural teaching, where a solid grounding in the principles alone, both scientific and practical, is the main objective. It is far easier to secure men capable of carrying out general agricultural teaching and agricultural investigation than it is to secure really efficient farming advisers. In consequence of this it would appear to be a wise plan to increase the number engaged in agricultural investigation and gradually draft them into the instruction service when they have gained sufficient localized experience. This scheme would have the advantage of being able to make use of the best of those agricultural graduates whose youth generally precludes them from possessing that wide experience necessary to warrant the farmers' confidence.

In general it may be said that an Instructor in Agriculture cannot deal efficiently with a district containing more than two thousand holdings. Even then, if called upon to do any great amount of original investigation, he will not be able to cover the area sufficiently intensively to do full justice either to himself or the farmer. At the present time each Instructor has to try and deal with an average of six thousand holdings, and it is impossible under such conditions to expect a maximum of efficiency. The building-up of a full and highly capable staff, with consequent delimitation of individual districts, is the only solution of the difficulties with which Instructors in Agriculture are at present faced.

#### EXPERIMENTAL AREAS.

*Puwerā.*—The work at Puwerā has continued along similar lines as formerly. The main object of this area is to determine the best and at the same time most economic method of converting gum-land into permanently productive grass-land suitable for milk-production. The investigations to date show that excellent grass-land estimated to carry, with only a moderate extra winter-feed provision, one milking-cow to about  $2\frac{1}{2}$  acres can be produced at a cost of £15 per acre, including full payment for all labour involved, provided £1 per acre is spent on annual top-dressing with phosphatic manure. The only point that now requires careful study is the actual butterfat-producing capacity of the pastures established, as up to the present they have been on a dry-stock basis. In order to ascertain this point it is proposed to equip the area for dairying at an early date. As there are fully half a million acres of gum-land at present entirely unproductive, it can be seen that the work at Puwerā, which was looked upon as amongst the most difficult of gum-soil types, has an extremely important aspect. The results obtained at least indicate that there are great economic possibilities in gum-land soils, and it is confidently expected that finally they will add a not inconsiderable amount to New Zealand's