

chemical analysis, and other tests, such as tissue tests, are made on the pasture whenever convenient by officers of the Soil Fertility Research Station.

An increasingly important section of this work deals with investigations into possible "minor" element deficiencies, and in several cases simple pasture-production figures have been secured from trials of this nature. A total of 106 observational top-dressing trials is now in progress, 85 of these including serpentine-superphosphate plots, and 4 are essentially "minor element" trials.

(c) *Pasture Species and Strains*.—The Grasslands Division, Department of Scientific and Industrial Research, collaborates in the carrying-out of trials of this nature by supplying the seed. Strains newly bred or introduced by that Division are tried out on farmers' properties throughout the country. The series of trials now in progress includes investigations into seeding rates and mixtures, as well as the above. Paddock-scale trials are carried out whenever sufficient seed is available, and stock-grazing data are thereby secured in addition to the usual observations on pasture establishment and growth—this has been the case, for example, with most trials with short-rotation ryegrass. Surface-sowing trials with subterranean clover and other legumes are an important investigation in connection with the improvement of hill-country pastures. A total of 129 trials with pasture species and strains is now in progress; 40 of these are the standard types of plot trials, 6 deal essentially with methods of pasture establishment, 30 are trials of short-rotation ryegrass, and the remainder (53) are essentially surface-sowing trials with various species, mainly clovers.

(d) *Trials on Depleted Land: Soil Erosion Control*.—Most of the work in connection with the depleted country of the South Island centres round the Pisa Flat Experimental Area, where a considerable amount of information concerning the possibility of introducing various native and introduced species has been secured. It is hoped to expand this work in the near future on to a more extensive block of depleted land and to demonstrate means by which such land may be brought back into production.

Soil-conservation problems are not new to the Fields Division, and a large amount of experimental work that has been carried out in the past, by its emphasis on the production and maintenance of high-quality pasture on hill country, has done much to assist in the saving of our soil. The experimental work of the Fields Division will be therefore closely co-ordinated with that of the Soil Conservation and Rivers Control Council to enable this to be carried out with the maximum of efficiency and despatch.

## (2) *Annual Crops*

(a) *Wheat-manuring Trials*.—Five complex experiments of modern design and layout were sown this year as the commencement of a thorough investigation into the fertilizer needs of the wheat crop in relation to soil type and district. Four of these trials promise to yield most interesting and informative data.

(b) *Wheat Variety Trials*.—These trials are carried out in co-operation with the Wheat Research Institute, and are designed to test out in the field the crosses they produce or the varieties they introduce. Twenty-one such trials are in progress.

(c) *Oats*.—Five trials of milling-oat varieties are in progress in Canterbury and Otago-Southland. In these trials new introductions and new crosses from the Agronomy Division, Department of Scientific and Industrial Research, are tried out in the field with the varieties commonly grown in the district. Such co-operation with the Agronomy Division is a feature of the work with all crops other than wheat.