

WHEAT RESEARCH INSTITUTE

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WHEATGROWING

Threshing Returns.—In the harvest of 1945, Cross 7 increased further by 5.83 per cent. and Fife Tuscan by 1.24 per cent. of the wheat area at the expense of Tuscan and Hunters. The percentages of the main varieties were as follows: Cross 7, 65.3 per cent.; Tuscan, 14.1 per cent.; Fife Tuscan, 8.6 per cent.; Dreadnought, 6.4 per cent.; Hunters, 2.7 per cent.; Tainui, 1.5 per cent.

New data collected by the Government Statistician have enabled the Institute to analyse the harvesting methods used in the harvest of 1945. Of the wheat area, 81.57 per cent. was harvested with header-harvesters (direct-headed and wind-rowed), 11.71 per cent. with threshing-mills, and 6.72 per cent. with tin mills. The proportion of header-harvesting in any one district was mainly determined by the varieties used, the climate, and the soil type. Header-harvesting was most prevalent in Fife Tuscan (94.4 per cent.), least in Dreadnought (22.6 per cent.); of the main wheat districts, Mid-Canterbury, with 96.5 per cent., had the highest proportion of heading.

WHEAT-BREEDING

New Varieties.—Two of the advanced lines now show distinct promise. 78, 01 (Tuscan × Tainui) has consistently given higher yields than Cross 7. 140, 014 (Cross 7 × Tainui) has again excelled in baking-quality. Its protein content of 14.0 per cent. against Cross 7 with 11.0 per cent. and Marquis with 11.5 per cent. is indeed remarkable. Both these new wheats will receive extensive tests in widely distributed trials laid down by the Department of Agriculture. Seed-supplies are being built up. A number of other promising wheats are also at an advanced stage.

Genetic Research.—In the course of the last few years a number of research projects were started with the object of shedding light on the inheritance of economically valuable characteristics of the wheat plant, and on the processes which occur in plant populations under the influence of selection. Such information would prove of direct value in the breeding-work undertaken by the Institute. The following is a list of projects being undertaken at present, some of which are approaching completion: a series of studies on methods of selection and their effects, biometric and genetic population studies on different generations from the same cross, inheritance of weight of grain and its relation to other yield characters in tetraploid and hexaploid species, inheritance of shattering of grain, cytogenetic studies of fertile and partially sterile A-type speltoids, and spontaneous chromosome fragmentation as a regular, high frequency phenomenon.

CEREAL CHEMISTRY, MILLING, AND BAKING

Moisture Testing.—The usual testing facilities were made available for farmers. Stations were established in Palmerston North, Blenheim, Christchurch, Ashburton, Temuka, Timaru, and Dunedin. The Seed Testing Station and the New Zealand Wool Manufacturers' Research Association again made their facilities available at Palmerston North and Dunedin respectively.

The weather during the 1946 harvest was very favourable in most districts, with the result that a relatively small number of wheat samples was submitted for test.

The only district where trouble with damp wheat was experienced was Invercargill.

Sprouted Wheat.—The unfavourable harvest of 1945 caused a large proportion of wheat lines to sprout. The effect of sprouted wheat on the baking performance of the flour is a very high activity of starch-splitting enzymes. The dough behaves almost normally, but during the initial part of the baking process starch is broken down into sugars and gummy products, and these cause the crumb of the bread to be doughy and, in severe cases, sticky.