

*Blind-seed of Rye-grass.*—Because of climatic conditions during flowering, the disease did not develop in plots in a quantity sufficient to allow of conclusive results being secured.

*Pea Diseases.*—A comprehensive survey was made to ascertain those pea diseases present in commercial areas of Auckland and Canterbury. Of 76 crops inspected, 51 were grown in Canterbury and 25 in Auckland. The most widespread and serious disease noted was collar-rot, caused by the three fungi, *Ascochyta pisi*, *A. pinodella*, and *Mycosphaerella pinodes*, 11 crops being attacked severely, 6 moderately, and 46 slightly. Downy-mildew (*Peronospora viciae*), though widespread, caused little injury: of 42 crops found infected, 1 was severely infected, 3 moderately infected, and 38 slightly infected. Wilt (*Fusarium* sp.) was not widespread: of 16 crops found infected, 6 were severely attacked, 1 moderately so, and 9 slightly. *Fusarium* foot-rot (*F. solani* var. *martii*) was found in 5 crops, 1 being severely attacked. Other diseases noted, but causing little injury, were septoria-blotch, sclerotinia-rot, grey-mould, powdery-mildew, and pea-mosaic.

*Linum-rust (Melampsora lini).*—Sixteen varieties of linseed and 7 of linen flax were tested for resistance to this rust with material collected from Canterbury and Southland. Of the linseed varieties, Sheyenne and B5128 (ex North Dakota Experiment Station) were highly resistant, Golden Viking moderately so, and the others moderately to highly susceptible. The linen flax variety, Liral Crown, was susceptible, but others tested—Wada, Cascade, Argentine II, and three Russian selections (Strakhanovetz, D. 83, and 806/3)—were highly resistant.

During this work single plant selections were made of rust-immune plants appearing among several susceptible varieties grown to maturity, and seed harvested for future investigations.

*Linum-rust Races.*—Investigations are proceeding in identification of races of the rust present in New Zealand. Two have so far been isolated.

*Linseed Crop Diseases Survey.*—Some 95 crops in Canterbury, Otago, and Southland were examined. Browning (*Polyspora lini*) was found in 14 crops, 5 being severely infected, the disease appearing mainly in Southland crops. Pasmo (*Sphaerella linorum*) was found in 21 crops, 3 being severely infected, mainly of the variety Golden Viking. Wilt (*Fusarium lini*) was found in one crop of the variety Punjab, in North Canterbury.

*Fireblight (Bacillus amylovorus).*—The organism has been found to remain viable in apple-fruit spurs, following blossom infection, until bud-movement of the following season, suggesting that control by use of copper sprays may prove effectual. Work on this phase is in progress.

*Stem-blight of Pea.*—Though uncommon, this disease is becoming more prevalent in the districts of Blenheim and Nelson. Tests for resistance under glasshouse and field conditions have been made with 11 varieties of field and garden varieties, the least susceptible (Greencrop) showing 53 per cent. infection.

*Crown-gall (Bacterium tumefaciens).*—Control measures have been attempted by modifications of soil pH and chemical treatment of plants in field and glasshouse. Artificially injured plants produced galls, irrespective of soil reaction. Uninjured transplants formed very few galls in any soil reaction.

Treatment of plants by painting, injection, and application in paste of certain antibiotics, chemicals such as colchicine, acenaphthene, and dioxane, and such bactericides as elegtol, iodine, clove-oil, and mercuric chloride were carried out (*a*) when the organism was injected and (*b*) after galls had formed. Antibiotics (penicillin, streptothricin, and actinomycin) did not prevent gall-formation or retard formed galls. The chromosome-splitting chemical, colchicine, both prevented gall-formation and induced breakdown of formed galls. It has not, so far, killed organisms injected. Dioxane alone was effective in preventing galls, but did not significantly reduce size of formed galls.