

Ear Blight of Wheat

(1) An investigation is in progress to provide some account of the condition in maturing wheat referred to as "scab." Certain fungi have been isolated from ears collected in the field. Spore suspension inoculations have been made in both glasshouse and field plots of six varieties. There appears to be at least six distinct types of *Fusarium* capable of causing ear blight under both glasshouse and field conditions, to the extent of complete sterility. How natural infection proceeds in the field is unknown. Artificial inoculations produce symptoms in the wheat ear comparable with those collected in the field.

(2) Comparisons are being made between the symptoms of ear blight collected from the field and those attributed to frost injury. Single plants in pots were transferred to a Frigidaire at anther extrusion and subjected to "frost" temperatures.

Plants held at 32° c. for seven hours revealed at maturity no abnormality. Those held at 30° c. for two hours showed 60 per cent. normal spikelets, the remainder having sterile or shrivelled grain. At 26° c. for two hours 80 per cent. of spikelets were affected with some form of "frost" injury, chiefly complete sterility. Symptoms identical with those found in frosted fields in Ashburton in December were noted in the artificially frosted ears. Frosts of five degree have been recorded in December, and if there is anything in the above observations such a frost at the time wheat is flowering might be expected to cause distinct "ear blight" of a physiological type. There seems to be little difficulty in distinguishing between ear blight due to frost and that supposedly due to fungus infection.

(3) The "whitehead" condition, very common this year, should be included as a phase of "ear blight." The "straggle" phase of *Cercospora* injury leading to "whiteheads" was observed in severity at Lincoln, moderately at Horrelville, slightly at Leeston. The organism was isolated from plants at Lincoln and Horrelville.

"Whitehead" associated with late attacks of *Ophiobolus graminis* affected several crops very severely and traces of this form of disease were widespread. Its prevalence in crops sown after grass is in accord with Garrett's work at Rothamsted.

In the field it seems possible to distinguish between the symptom pictures of *Cercospora* "straggle," *Ophiobolus* "whitehead," *Ophiobolus* "take-all," Hessian fly, and stem weevil straw break, all of which result in white empty ears.

Root Rots of Seedling Wheat

Work is in hand attempting to clarify the phases and causes of fungus root injury in wheat seedlings. Material has been collected from a wide area through North Canterbury. Washed roots have been examined and several hundreds of isolates grouped. Inoculations of pure culture types into sterile soil sown in wheat are now being carried out, but it is suggested that from the field evidence the following might be a better picture of seedling root rot:—

Type 1: Lesions on sub-crown inter-node—*Rhizoctonia solani* and *Fusarium* spp.

Type 2: Root tip decay—*Ophiobolus graminis*.

Type 3: Seedling blight—*Fusarium* spp. (secondary infections).

This year *Ophiobolus* and *Rhizoctonia* were isolated more frequently than any *Fusarium* species from the dwarfed seedlings selected in the field as being affected with some form of root rot.

WOOL METROLOGY LABORATORY

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Wool Survey.—Thirty thousand fleeces were weighed and graded during the last shearing season from thirty-two different locations. Five of these locations were in the Whangarei district, where wool-survey work is being correlated with soil, pasture, and management surveys. Analysis of this data is proceeding.

A special survey has been made of a number of properties carrying out the practice of shearing before lambing. In all, ten properties running twenty-four thousand sheep