Bacterial Black Chaff of Wheat

W.A.F. Hagborg

An outbreak of bacterial black chaff caused by Xanthomonas translucens, occurred in demonstration plots of wheat grown by the Plant Science Department, University of Manitoba, for the First International Wheat Genetics Symposium. These plots contained commercially important varieties from all the major wheat producing countries. In an examination of the plots on 2 August, infection which was chiefly on the leaves and less prevalent on the peduncles and glumes ranged from severe to light. Some plots were without infection. Infection was recorded in 110 varieties from 25 countries and absent in the wheats from 15 countries. As disease escape probably occurred among the uninfected plots, the data are of value only to indicate varieties that should be avoided because of high susceptibility. Among the most severely attacked were the following varieties from the countries indicated in parenthesis: Insignia B (Australia), Alfy I (Belgium), 7 G6 x Me k (Bolivia), S2 (Cyprus), Runkers Ehrli (Germany), Koga II (Great Britain) and Restauracao (Portugal).

Agropyron Streak Mosaic on Wheat in Ontario

J.T. Slykhuis and R. J. Baylis

During the summer of 1958, Agropyron streak mosaic (ASM) was common on Agropyron repens in the Ottawa valley, and was also observed near Brighton, Port Hope, Whitby, Guelph, Stratford, and Listowel, Ontario. The same disease was found on a few winter wheat plants in fields near Ottawa, Brighton, and Port Hope.

Natural spread of the virus to wheat was demonstrated. Pots of healthy wheat seedlings were placed in patches of diseased A. repens, or beside naturally diseased wheat for 1 or 2 weeks, then the plants were returned to the greenhouse. Symptoms of the disease developed on the wheat, and the presence of the virus was proved by artificial sap transmission to healthy plants. Although the results of transmission experiments have indicated that the vector is an eriophyid mite, it is still not known which of several species is involved.

In a replicated ro d-row field experiment, Selkirk and Acadia spring wheats were manually inoculated with ASMV. The yield of Selkirk was reduced 25%, and of Acadia 75%. The height of both varieties was reduced about 30%. It therefore appears that ASMV could cause serious damage in wheat if the virus became prevalent.

In many characteristics, including method of spread, the Agropyron streak mosaic virus resembles the wheat streak mosaic virus (WSMV). The spread and continuity of WSMV in Alberta occurs primarily by the migration of infective eriophyid mites from diseased spring wheat stubble to fall-sown

wheat, when wheat fields are planted sufficiently close together. It is, therefore, possible that the ASM disease could become serious in wheat if similar conditions were to occur in Ontario.

In Ontario, the low acreage of spring wheat precludes it as an important source of infective mites. However, an indication of what might happen was found in a field at the Central Experimental Farm, Ottawa. Winter wheat was sown in May 1958 to provide a ground cover in some experimental plots. Many of the plants survived when the plots were cultivated in September. In October, all the surviving plants were found diseased with ASM. If winter wheat had been sown early in the fall adjacent to, or within these plots, it is likely that the disease would have been spread much as WSM spreads under similar conditions in Alberta.

The spread of ASM from Agropyron to fall wheat does occur in Ontario but further study is needed to assess the seriousness of Agropyron streak mosaic in wheat.

Barley Yellow Dwarf and Oat Red Leaf in the Ottawa Area

J.T. Slykhuis, F.J. Zillinsky and A.E. Hannah

Barley yellow dwarf and oat red leaf occurred generally in the Ottawa area in 1958, and affected up to 15% of the plants in some fields. Late-sown crops were usually more heavily infected than earlier crops. In a date of seeding experiment, at least 50% of the oats sown in late June showed symptoms by heading time.

A highly virulent isolate of the virus obtained from timothy was included in an experiment in which Rhopalosiphum padi was used as the vector to infect Clintland and Garry oats, and Montcalm and York barley in field plots The yields of both varieties of oats were reduced by about 75% when infected in the one-leaf stage, 50% when infected in the 4-to 5-leaf stage, and 25% when infected in the shot-blade stage. Similar results were obtained with Montcalm barley, but York was affected less by the isolate of virus used. No reduction in yield resulted from the feeding of non-viruliferous aphids in these experiments.

Ascospore Discharge by Leptosphaeria avenaria f. sp. avenaria in Prince Edward Island in 1958

Carl Willis

Studies on the discharge of ascospores by the speckled leaf blotch pathogen were begun on 28 May 1958, and continued for a 90-day period. Oat stubble from a heavily infected 1957 crop was chosen for the project. Careful observations of the asci were made at frequent intervals to determine the maturity of the ascospores and to detect ascospore discharges. Mature ascospores were first observed on 18 June and discharge took place over the