YELLOW DWARF OF BARLEY AND RED LEAF OF OATS IN MANITOBA IN 1960

H. A. H. Wallace[1]

Early in July the barley plots at Brandon showed yellowing and, in some plots, the plants were short, It was at first believed that the hot, dry weather might have been responsible. However, in an experiment with 1/125th-acre plots of 16 varieties, replicated four times, one plot in each replicate consistently showed very conspicuous yellowing. The affected variety in each replicate was Husky. Other varieties showed only slight yellowing. Later in the season more severe yellowing, but not dwarfing, was observed at Morden while the yellowing at Portage la Prairie and Winnipeg was less severe. Aphids, identified by P.H. Westdal and C. Robinson as Rophalosiphum maydis, the corn leaf aphid, were collected. This aphid, a poor vector of the barley yellow dwarf virus, was common and widely distributed. Robinson also reported that Rophalosiphum padi, the oat-bird cherry aphid, which is a very efficient vector of the virus was widely dispersed, though relatively scarce.

Very consistent differences in susceptibility were noted between varieties and hybrids. Since Husky was a standard in most experiments this variety was the susceptible check in all cases. In the Western Co-operative test grown at Brandon, Portage la Prairie, Morden and Winnipeg, **U.M.** 451 was the most resistant variety. The varieties Parkland, O.A.C. 21 and Olli had consistently below average infection. Montcalm was more susceptible. All the Br. hybrids were susceptible, although Br. 5502-11 showed consistently less infection than the other hybrids. The N. D. hybrids were susceptible, In the Joint Project test grown at Morden, Husky was again the susceptible check. However nearly all hybrids in the test were equally susceptible. The exceptions were 5748-9, -11, -15. All other lines of 5748 were very susceptible. 58-606-4 was the most resistant hybrid in the test. In the Eastern Co-operative test grown at Brandon the 5049- lines and the O.B. hybrids were susceptible. Q.B. 4-13 was the only hybrid showing no infection. The Brandon Hybrid test yielded excellent results. Husky and 13 of 15 lines of 5756 were susceptible. Vantmore, and all lines of 5755 and 5758 were resistant. As in the Joint Project the lines of 5748 varied from resistant to susceptible. There were **4** lines of V X H^6 of which two were resistant, one very susceptible, and one somewhere between these extremes.

A disease believed to be red leaf of oats was found in plots adjacent to diseased barley plots at Morden and Brandon. Disease ratings were made for each plot and the results statistically analysed. In the western Co-operative Test at Morden, Garry, Ajax and Several LAC lines had significantly less disease than the O.T. 4832 and R.L. 2123 lines. In the Joint Barley Test'at Morden, R.L. 2388 showed no infection. While the 2300 series generally had little disease the 2400 series appeared to be more susceptible. The I.H. series was susceptible. Garry and Ajax again showed good resistance.

While making a survey of the Prairie provinces for barley diseases notes were made on any oat fields infected with red leaf. Only 10 infected fields

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were seen, all in Manitoba and extending from Sprague in the southeast corner westwards to Brandon. Infections were listed as trace (3), and 2, 10, 30, 40, (3), and 95% respectively. Few aphids were observed. Each infected field was an isolated case.

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A SURVEY OF BARLEY LEAF DISEASES IN THE PRAIRIE PROVINCES, 1960

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A field survey of barley leaf diseases was carried out during the period 10-18 August, 1960. The survey was made along the route Winnipeg to Regina, Calgary, Three Hills, Red Deer, Edmonton, Lloydminister, St. Walberg, Price Albert, Swan River, Winnipeg. A total of 247 fields were examined, 89 in Manitoba, 93 in Saskatchewan, and 65 in Alberta, The percentage of fields showing light to severe infection by one or more leaf diseases in 1960, as compared with 1956, (in brackets) was as follows: Manitoba 58 (94), Saskatchewan 84 (74), and Alberta 68 (81). Generally, leaf diseases were more severe in the northern areas. They were much lighter than usual in southern Manitoba.

Spot blotch (Bipolaris sorokiniana) was confined mostly to Manitoba and was present only in trace amounts. Net blotch (Drechslera teres) occurred as light infections in about two-thirds of the fields examined in the southern parts of each of the three provinces. In northern Saskatchewan and Manitoba more than half the fields had moderate to severe infections, while in northern Alberta infection was quite variable, ranging from a trace to severe.

A trace infection of powdery mildew (Erysiphe graminis) was found in one field in Manitoba. Rusts were relatively scarce. Stem rust (Puccinia graminis) was encountered as light to moderate infections in seven fields in Manitoba and leaf rust (Puccinia hordei) was seen in trace to slight amounts in five Manitoba fields,

Scald (Rhynchosporium secalis) was extremely scarce in Manitoba and was found in trace amounts in only two fields in the north part of the province. It was much more prevalent in northern Saskatchewan where 20 of 24 fields examined between St. Walberg and Spiritwood were infected. Some severe infection was seen but most of the infections were light to moderate. Scald was commonly observed in Alberta but usually in trace amounts.

Speckled leaf blotch (Septoria passerinii) was scarce, except for local, light infections in the Swan River, Manitoba district and at scattered points in southern Manitoba. It was also found as light infections in 7 fields in the Fairholme to Cater area of northern Saskatchewan. No speckled leaf blotch was found in Alberta. Barley yellow dwarf was observed at Carman, and Treesbank, Pigeon Lake, Manitoba in trace amounts and a light infection occurred at Stead,

Some observations were also made on the occurrence of smuts on barley during the survey. The following amounts were recorded: Loose smut (Ustilago

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