CEREAL DISEASES IN CENTRAL ALBERTA IN 1965

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General remarks

The spring and early summer of 1965 in central Alberta was cool and wet, which probably facilitated the infection of cereal plants by fungal and bacterial plant pathogens. The weather was warmer in mid-July and encouraged the development of abundant vegetative growth providing ample infection courts and favorable microclimates for considerable disease development.

Disease surveys were conducted the last week of July and the first week of August. Barley, oats, wheat, and rye were examined in fields west of Lacombe to Rocky Mountain House, from Lacombe east to Coronation and north to Hardisty and west to Camrose and Lacombe. A third survey included fields from Edmonton east to Lavoy and north to Ashmont and back to Edmonton via Srnokey Lake. A fourth survey covered the area between Alix, about 30 miles east of Lacombe, and Drumheller. The incidence of the major leaf diseases of barley is presented in Tables 1 and 2.

Barley diseases

The data in Table 1 show that there was less scald, Rhynchosporium secalis (Oud.) Davis, in barley fields northeast of Edmonton than in the other regions. All fields examined west of Lacombe showed scald whereas 23% of all barley fields east and north of Lacombe and 14% of fields south and east of Lacombe were free of scald. There was a higher incidence of fields with severe infection northeast of Lacombe than in other areas.

Table 1. Percentage of barley fields showing scald.

Rating	west of Lacombe	ne. of Lacombe	ne. of Edmonton	se. of Lacombe
Severe	17	20	--	29
Moderate	50	15	7	14
Slight	33	20	8	29
Trace	--	22	40	14
No disease	--	23	45	14

Table 2. Percentage of barley fields showing net blotch.

Bating	west of Lacombe	ne. of Lacombe	ne. of Edmonton	se. of Lacombe
Severe	--	16	--	29
Moderate	16	26	46	14
Slight	50	18	18	57
Trace	34	33	36	--
No disease	--	7	--	--

Net blotch (Pyrenophora teres (Died.) Drechsl.) was more severe in barley southeast of Lacombe than in the other regions. Less than 1/10 of the barley fields east and north of Lacombe were free of net blotch. The data in Table 2 indicate a more general or widespread distribution of net blotch than of scald though there were fewer fields in the entire region that showed severe net blotch infection than severe scald. The reason that net blotch was not as severe as scald might be explained by the late occurrence of warm weather in July and August. The cooler spring and early summer undoubtedly favored scald, hence the greater number of fields showing severe infection by this disease. Factors other than climate influence disease incidence. It was noticed that barley showing severe net blotch infection was frequently grown following a crop of barley as evidenced by the remains of the straw from the previous crop.

Loose smut (Ustilago nuda (Jens.) Rostr.) was in evidence in about 50% of the barley fields in the areas southeast of Lacombe and west of Lacombe. Sixty percent of the fields were infected east and north of Lacombe whereas only 25% of the fields had loose smut northeast of Edmonton. Infection ranged from trace to moderate. In two fields at least 10% of all heads were smutted, one being covered smut (Ustilago hordei (Pers.) Lagerh.). Septoria leaf blotch (Septoria passerinii Sacc.) was in evidence particularly in the areas close to Lacombe. The disease, however, did not appear to be harmful. Root rot of barley caused by Bipolaris sorokiniana (Sacc. in Sorok.) Shoem. and Fusarium spp. was noticed

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more frequently in fields west and north of Lacombe than in the other regions, About 75% of the fields in these areas were affected. Stem rust (Puccinia graminis Pers.) was recordedon barley in the Lacombe experimental plots in the following varieties: 'Olli', 'Wolfe', 'Gateway', 'Gateway 63', 'Cornpana', 'Parkland', 'Palliser'. Several fields of barley in the Ashmont area were severely infected with stem rust. This was in the same area where severe wheat stem rust was found. Bacterial stripe (Xanthomonas translucens Jones, Johnson & Rcddy) was abundant on 'Olli' and 'Gateway' barley at the Lacombe Experimental Farm, though it was not recorded from any other place.

Wheat diseases

The major disease problem in wheat in this region of Alberta was leaf rust (Puccinia recondita Rob. ex Desm.). At the time the surveys were conducted, leaf rust was moderate to severe in the eastern area of the survey whereas it was virtually absent at Lacombe or west of there. Within several weeks, by mid-August, the wheat in these western areas was found to be heavily infected with leaf rust. Stem rust (Puccinia graminis Pers.) was observed on 'Garnet', 'Cypress', 'Chinook', 'Thatcher' and 'Red Bobs' at the Lacombe Experimental Farm. Considerable stem rust was observed in the Ashmont area where several fields of wheat appeared red-brown from the roadside. Approximately 2/3 of the fields of wheat examined north and east of Edmonton had stem rust with 1/2 of the affected fields scoring severe. Leaf rust was found in about 90% of the fields surveyed in this area, Other wheat diseases recorded in trace amounts were septoria leaf blotch (Septoria avenae Frank f. sp. triticea T. Johnson) ergot (Claviceps purpurea (Fr.) Tul.) and powdery mildew, (Erysiphe graminis DC.). In the latter part of August, considerable black chaff (Xanthomonas translucens) was noticed on wheat in the Lacombe and Ponoka areas. There was evidence of take-all (Ophiobolus graminis Sacc.) in a few wheat fields east and north of Lacombe.

Oat diseases

Oats were relatively free from disease. There was some halo blight (Pseudomonas coronofaciens (Elliott) F.L. Stevens) on the oats in the experimental plots at Lacombe but very little was found in oats in the areas surveyed. Blast was found ranging from trace to severe amounts in about 1/2 of the fields examined. A trace to slight amount of leaf blotch (Drochslera avcnacea (Curt. ex Cke.) Shoem.) was also found on oats in the Lacombe area.

Rye diseases

Rye was rare in the areas surveyed. The six fields examined were found to have a trace amount of leaf rust (Puccinia recondita) and scald (Rhynchosporium secalis). Later in the season, considerable ergot was found on rye at Lacombe, though no more than is usually encountered.