Common Root Rot (Helminthosporium sorokinianum and and Fusarium spp.)

B.J. Sallans

The mean disease rating for 238 fields in Saskatchewan was 9.7 in 1958 compared with 10.7 in 1957. Disease ratings by crop districts 1 to 9 were respectively 8.8, 8.6, 11.3, 10.7, 8.8, 10.3, 11.4, 6.8 and 9.4. In general, the disease was most severe in the brown and dark brown soil zones and less severe in the black soils, particularly those of the eastern and northeastern crop districts.

A survey of the three Prairie Provinces was made on the occurrence of common root rot in wheat. The data were taken in the way described in C.P.D.S. Ann. Rept. 32:1-3. 1952 (1953). Table 1 contains the data classified as to province and as to soil type. The average disease rating (9.2) is 28% higher than the 7.2 rating of 1952, when crop conditions were excellent in virtually all parts of the Prairie Provinces. Manitoba with an excellent wheat crop had a much lower incidence of common root rot (6.4) than did Saskatchewan (9.8) or Alberta (10.4). The difference is partly the result of higher ratings on the brown and dark brown soils of the latter two provinces, but within the black soil zone the Manitoba disease rating is still low in comparison.

Table 1. Disease ratings and percentages of plants with crown lesions compiled according to province and soil zone.

		Soil Zones			Provincial totals or means
		Brown	Dark brown	Black	
Alberta	No. of fields	8	18	38	64
	Disease rating	16.1	9.9	9.4	10.4
	Crown lesions	39	29	28	29
Saskatchewan	No. of fields	15	61	49	125
	Disease rating	11.2	9.9	9.4	9.8
	Crown lesions	34	33	32	33
Manitoba	No. of fields	--	--	53	53
	Disease rating	--	--	6.4	6.4
	Crown lesions	--	--	31	31
All Provinces	No. of fields	23	79	140	242
	Disease rating	12.9	9.9	8.2	9.2
	Crown lesions	37	32	31	32

As in 1952, wheat in the brown soil zone of Saskatchewan and Alberta was more severely infected than in the other zones. Table 2 bears out the finding of 1952 that disease ratings tend to be higher in wheat in stubble land than in wheat after summerfallow. The data on crown lesions, i.e., lesions at or near the surface of the soil, are similar to those of 1952. This suggests that infections in leaf sheaths and other tissues at the surface level of the soil were about equal in the two years. There is some tendency evident in Tables 1 and 2 for crown lesions and disease ratings to be correlated. Table 3 shows significant correlations between the two sets of data within certain groupings of the fields of wheat surveyed in 1958.

Table 2. Disease ratings and percentages of plants with crown lesions compiled according to crop sequence and soil zone.

		Soil Zones			Total or Means
		Brown	Dark brown	Black	
Fallow	No. of fields	13	55	122	190
	Disease rating	11.6	10.3	8.1	9.0
	Crown lesions	25	32	31	31
Stubble	No. of fields	10	24	18	52
	Disease rating	14.6	9.0	8.9	10.1
	Crown lesions	43	31	29	33

The correlations of Table 3 are significant at the 1% level. Similar correlations were obtained for barley in another survey. These correlations are consistent with the hypothesis that infections at the soil surface (crown lesions) are primary and serve as sources of inoculum for part of the infections which occur on the subcrown internodes.

Table 3. Correlation coefficients between crown lesions and disease ratings in wheat by provinces and by place in the rotation.

		Place in rotation		
		On fallow	On stubble	Fallow and stubble
Alberta	No. of fields	45	16	61
	Correlation coefficient	0.39	0.70	0.51
Saskatchewan	No. of fields	81	26	107
	Correlation coefficient	0.45	0.64	0.50
Manitoba	No. of fields	49	4	53
	Correlation coefficient	0.59	--	0.53
All Provinces	No. of fields	175	46	221
	Correlation coefficient	0.44	0.51	0.46

Manitoba Barley Disease Survey in 1958

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Forty-six fields in s. Man. were examined. Spot blotch (Helminthosporium sorokinianum) was very light and seen only occasionally. Net blotch (H. teres) was very prevalent in southwest Man. It caused severe leaf damage to the barley plots at Melita. Herta was highly resistant and Garton's partially resistant. Leth. 4362 - 3 and Br. 5746 - 45 appeared to have partial resistance. The prevalence of net blotch in farmers' fields was severe (2), moderate (6), slight (11), trace (10), none (17). In contrast to net blotch, speckled leaf blotch (Septoria passerinii) was mostly confined to southeast Man. Its prevalence in farmers' fields was severe (2), moderate (7), slight (13), trace (7), none (17). Several hybrids in experimental plots appear to have fairly good resistance. Scald (Rhynchosporium secalis) was not seen. Loose smut (Ustilago nuda) infected 10-20% of the heads in 5 fields, 1-9% in 9 fields and was present in trace amounts in 14 fields. Stem rust (Puccinia graminis) and powdery mildew (Erysiphe graminis) were not seen in farmers' fields but were present in slight amounts in the plots at Winnipeg.