

DISEASES OF CEREALS IN THE MARITIME PROVINCES IN 1969¹

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Many cereal diseases occur in the Maritime Provinces in endemic proportions and periodically become epidemic causing severe yield decreases as occurred in 1967 (4). In the summer of 1969 a survey was carried out to identify and assess the occurrence and severity of cereal diseases in order to establish priorities as to their economic importance. This report contains the results of a thorough survey of Prince Edward Island, and a partial survey of north-eastern Nova Scotia and southern New Brunswick. Fungal diseases were identified on the basis of both symptoms and characterization on the causal organism. The only virus disease reported herein is barley yellow dwarf on oats and barley; no attempt was made to locate or identify other virus diseases.

Several diseases were found to be widespread in all cereal growing areas while others occurred less frequently (Table 1). Some diseases were found in isolated instances and caused unknown but probably insignificant yield decrease. Resistance to specific diseases was present in some cultivars and produced variations in disease intensity and distribution.

Barley

The most widespread barley diseases found were the leaf blotch and root rot incited by Cochliobolus sativus (Ito and Kurib.) Drechs. ex Dastur. These diseases were found in all areas examined. Barley yellow dwarf virus infections were severe in localized areas, notably eastern Nova Scotia. Severe losses were usually restricted to a particular grower and it is believed that cultural practices, especially late seeding and lack of insecticide applications, may be the cause of the excessive yield loss. In Nova Scotia, where barley was severely damaged, yields as low as 12 bushels per acre were recorded while a few miles distant, yields were more than four times this level. Ergot incited by Claviceps purpurea (Fr.) Tul. was more prevalent in New Brunswick and Nova Scotia than in Prince Edward Island.

Oats

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Oats

The most prevalent oat disease was leaf blotch incited by Septoria avenae Frank. This disease was present in all surveyed areas as reported earlier by Hamilton (1). Leaf blotch incited by Helminthosporium avenae Eidam also occurred. In most instances concurrent with Septoria leaf blotch, and the influence of H. avenae on the overall yield reductions is unknown. Red leaf, caused by the barley yellow dwarf virus, was found to be severe on oats in localized areas of Prince Edward Island.

Rye

Rye is not extensively cultivated in the Atlantic area. Ergot incited by Claviceps purpurea and leaf spotting by Cochliobolus sativus were the most commonly occurring diseases recorded.

Wheat

Powdery mildew of wheat incited by Erysiphe graminis DC. f. sp. tritici Em. Marchal was very prevalent in Prince Edward Island and in areas where wheat was observed in Nova Scotia and New Brunswick. 'Opal' wheat, a newly introduced high yielding variety, was observed to be quite susceptible to head blights incited by Fusarium spp. Such head blights were more severe in New Brunswick than in the other two provinces. Loose smut incited by Ustilago tritici (Pers.) Rostr. occurred in all 'Opal' fields examined; incidence was approximately 0.1%. This is considered to be a low incidence of smut, but it should be noted that all other wheat varieties grown in the Maritimes are resistant to loose smut. Leaf rust incited by Puccinia recondita Rob. usually does not occur in the Maritimes until after flowering, as was observed on 'Opal', and it is not known how serious a disease this is under these conditions.

Several diseases not mentioned in this report but reported earlier (2,3) were probably localized in distribution and were not observed. Although this report does not present any definite quantitative evidence as to yield decreases caused by the various diseases, Septoria avenae, Cochliobolus sativus and Erysiphe graminis are considered to be the most important pathogens, based on prevalence alone, and they may cause the greatest yield losses.

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Table 1. Distribution of cereal diseases in the Maritime Provinces in 1969

Crop	Disease	Pathogen	Distribution*		
			P.E.I.	N. S.	N. B.
Barley	Spot blotch	<u>Cothliobolus sativus</u> (Ito and Kurib.) Drechs. ex Dastur.	1	1	1
	Net blotch	<u>Pyrenophora teres</u> (Died.) Drechs.	2	2	
	Speckled leaf blotch	<u>Septoria passerinii</u> Sacc.	3	3	
	Scald	<u>Rhynchosporium secalis</u> (Oud.) J. J. Davis	3	3	3
	Stripe	<u>Helminthosporium gramineum</u> Rabh.	3		
	Leaf rust	<u>Puccinia hordei</u> Oth.	2	2	
	Stem rust	<u>Puccinia graminis</u> Pers.	3		
	Loose smut	<u>Ustilago nuda</u> (Jens.) Rostr.	3	3	3
	Covered smut	<u>Ustilago hordei</u> (Pers.) Lagerh.	3	3	
	Ergot	<u>Claviceps purpurea</u> (Fr.) Tul.	3	2	2
	Common root rot	<u>C. sativus</u> <u>Fusarium</u> spp.	1	1	1
	Yellow dwarf	Barley yellow dwarf virus	2	2	2
	Nutritional disorders	Unbalanced fertilization	3	3	3
	Non-parasitic	Non-parasitic brown spot**	3		
Oats	Speckled leaf blotch	<u>Septoria avenae</u> Frank.	1	1	1
	Leaf blotch	<u>Helminthosporium avenae</u> Eidam	1	1	1
	Crown rust	<u>Puccinia coronata</u> Cda. f. sp. <u>avenae</u> Eriks. & E. Henn.	3	3	

Table 1 (Cont'd.)

Crop	Disease	Pathogen	Distribution*		
			P, E, I.	N.S.	N.B.
	Stem rust	<u>Puccinia graminis</u> Pers. f. sp. <u>avenae</u> Eriks. & Henn.	2	3	
	Covered smut	<u>Ustilago kolleri</u> Wille	2	2	2
	Root rot	<u>Fusarium</u> spp.	1	1	1
	Yellow dwarf	Barley yellow dwarf virus	2	2	2
	Greyspeck	Manganese deficiency	2		
	Blast	Unknown	1	1	1
Wheat	Spot blotch	<u>C. sativus</u>	1	1	1
	Speckled leaf blotch	<u>Septoria avenae</u> Frank F. sp. <u>triticea</u> Th. Johnson	3	3	3
	Mildew	<u>Erysiphe graminis</u> DC. f. sp. <u>tritici</u> Em. Marchal	1	1	1
	Glume blotch	<u>Septoria nodorum</u> ** Berk.	3	3	
	Leaf rust	<u>Puccinia recondita</u> Rob.	1	1	1
	Stem rust	<u>Puccinia graminis</u> Pers. f. sp. <u>tritici</u> Eriks & E. Henn.	3	3	3
	Loose smut	<u>Ustilago tritici</u> (Pers.) Rostr.	1	1	1
	Scab	<u>Fusarium</u> spp.	1	1	1
	Root rot	<u>Fusarium</u> spp. <u>C. sativus</u>	1	1	1
	Head discoloration	<u>Alternaria</u> spp. <u>C. sativus</u> <u>E. graminis</u>	1	1	1
	Nutritional disorders	Unbalanced fertilization	3	3	3
Rye	Spot blotch	<u>C. sativus</u>	1	1	1
	Ergot	<u>C. purpurea</u>	1	1	1
	Scab	<u>Fusarium</u> spp.	1	2	

* 1 - Found in all areas examined.

2 - Found in the majority of areas but not necessarily in all fields.

3 - Traces found in some areas.

** tentative identification.

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Literature cited

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