DISEASES OF RAPESEED IN CENTRAL AND NORTHERN ALBERTA IN 1971

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Abstract

A survey of the diseases of rapeseed in central and northern Alberta was conducted by sampling 84 fields between 8 July and 19 August 1971. The average intensities of the diseases were: white rust, 0.3% of leaf area affected; staghead, 1.2% heads affected; gray leaf spot, 0.2% leaf area affected; alternaria pod spot, 0.1 spots per pod; ringspot, 0.1% stem affected; and root rot, 11.7% roots and crowns showing symptoms. Intensity of the diseases varied throughout the season depending on the nature of the pathogens and the growth stage of the plant.

Introduction

Rapeseed has become a major crop in Alberta, increasing from 0.6 million acres in 1966 to 2.3 million acres in 1971. Rapeseed diseases have received careful attention in Saskatchewan (3, 4, 5) but have been essentially ignored in Alberta. This survey was undertaken to determine the incidence and severity of rapeseed diseases in central and northern Alberta, where about 80% of the rapeseed in the province is produced.

Materials and methods

Rapeseed fields in Census Divisions (C.D.) 8 to 15 were sampled between July 8 and August 19. The number of fields sampled in each C.D. was related to the intensity of rapeseed cultivation, i.e. approximately 1% of the number of farms growing rapeseed in 1971. Ten plants were selected at 2-pace intervals diagonally across each field, starting 10 paces from the edge. The plants sampled were read by estimating the leaf area affected by leaf pathogens, the stem area affected by ringspot caused by Mycosphaerella brassicicola, the average number of spots per pod with alternaria pod spot, the percentage of heads deformed by staghead, and the percentage affected with root rot. Average disease indices were based on all the fields sampled in the particular census division, including healthy fields.

Results and discussion

The intensity of diseases of rapeseed in Census Divisions 8 to 15 are shown in Table 1. There was insufficient acreage in C.D. 9 and C.D. 14 to warrant sampling. The foliar phase of white rust caused by Albugo cruciferarum S.F. Gray occurred in most fields (69%) but appeared to cause relatively minor loss. However staghead, the flowering shoot phase of white rust, was probably the most serious disease of rapeseed in Alberta in 1971, occurring in 24% of the fields examined. Harper (F. R. Harper, personal communication) has developed a method of determining the loss in yield from staghead. Using this method he found yield losses of up to 13% from this disease in southern Alberta. Average loss in central and northern Alberta was 1.2%.

Gray leaf spot caused by Alternaria brassicae (Berk.) Sacc. was the most prevalent disease found this year (93% of the fields sampled). Although gray leaf spot has caused serious losses in wet years (2), losses in 1971 were minor. Only 7% of the fields sampled were affected with the pod spot phase.

Ringspot caused by Mycosphaerella brassicicola (Fr.) Lindau, previously known only in moist coastal areas, was reported in Saskatchewan in 1960 (5). It appears late in the season and in moist years can be widespread; however, this year only 7% of the fields sampled were diseased. This disease apparently causes only limited losses due to its late season appearance when the crop is ripening.

Root rots of rapeseed have received very little attention; in this survey all plants with symptoms of diseases of the crown and root, however slight, were included in the root rot category. Stem blight caused by Sclerotinia sclerotiorum (Lib.) de Bary and fusarium foot rot (Fusarium spp.) have been reported but few estimates of intensity, distribution, or loss are available (1). Fly larvae were found consuming rapeseed roots in some of the fields, but they were not identified and the damage was not estimated.

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Table 1. Distribution and intensity of rapeseed diseases in Alberta Census Divisions 8 to 15, 1971

C.D.	Fields assessed No.	Fields assessed Date (approx.)	Disease index (avg) White rust	Staghead	Gray leaf spot	Alternaria pod spot	Ringspot	Root rot (%)
8	14	July 13	0.4	0	0.2	0	0	10.7
10	17	July 28	0.4	1.8	0.2	0.1	0	5.3
11	6	July 22	<0.1	0	0.1	0.4	0	3.3
12	7	Aug. 12	<0.1	1.4	0.6	0.9	0.1	37.1
13	15	July 20	0.1	0	0.2	0	0	3.3
15	25	July 27	0.4	2.3	0.3	0	<0.1	16.6
Total or avg	84		0.3	1.2	0.2	0.1	<0.1	11.7

The range in sampling dates was unavoidable because of the extensive travel involved. The dates of assessment had a definite effect on the intensity reported for some of the diseases. For example, in the earliest sampling (C.D. 8, July 13) very little staghead, alternaria pod spot, and ringspot were found compared with the last sampling (C.D. 12, August 12), in which high levels of the late appearing diseases and lower levels of early disease, such as white rust on foliage, were encountered. Therefore, the crop should be sampled several times through the season, or disease intensity - host growth stage relationships established. The leaf diseases must be assessed before leaves become senescent and drop, and the flowering head and pod diseases must be read after they develop later in the growth cycle.

Literature cited

1. Duczek, L. J., and R. A. A. Morrall. 1971. Sclerotinia in Saskatchewan in 1970. Can. Plant Dis. Surv. 51:116-121.

2. McDonald, W. C. 1959. Gray leaf spot of rape in Manitoba. Can. J. Plant Sci. 39:409-16.

3. Petrie, G. A., and T. C. Vanterpool. 1970. Diseases of rape and other crucifers in Saskatchewan in 1967. Can. Plant Dis. Surv. 50:106-7.

4. Petrie, G. A., and T. C. Vanterpool. 1968. Diseases of crucifers in Saskatchewan in 1967. Can. Plant Dis. Surv. 48:25-27.

5. Vanterpool. T. C. 1960. The ringspot disease of rape in an inland parkland region. Plant Dis. Rep. 44:362-3.