

## DISEASES OF CRUCIFERS IN SASKATCHEWAN IN 1967

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In 1967 the total rapeseed production in Saskatchewan decreased to 11.5 million bushels from the 12.7 million in 1966. The decrease was mainly due to a reduction in acreage. Despite one of the driest growing seasons on record (1), the yield per acre in 1967 has been estimated at 17.0 bushels, compared with 17.4 bushels in 1966.

Twenty-eight fields of rape (*Brassica napus* L.) and mustard (*Brassica hirta* Moench) were rated for disease in late August and early September (Table 1).

Table 1. Ratings of disease in 28 fields of rape and mustard in Saskatchewan, 1967

Disease organism	Disease rating"					% of total fields infected
	0	1	2	3	4	
<u>Albugo cruciferarum</u>	28.5**	53.6	14.3	3.6	0.0	71.5
<u>Sclerotinia sclerotiorum</u>	67.9	17.9	7.2	7.2	0.0	32.1
<u>Alternaria brassicae</u>	57.1	25.0	14.3	3.6	0.0	42.9
<u>Mycosphaerella brassicicola</u>	28.5	67.9	3.6	0.0	0.0	71.5
Aster yellows virus (callistephus virus 1)	96.4	3.6	0.0	0.0	0.0	3.6
<u>Plenodomus lingam</u> (brassica strain)	85.6	7.2	3.6	3.6	0.0	14.4

\* Where 0 = no symptoms observed and 4 = severe disease.

\*\* Figures are % of total fields sampled.

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Most of the principal diseases of crucifers were less severe in 1967 than they were in 1966, although the percentage of fields infected by certain pathogens was higher than in 1965 (2, 3). A comparison of average disease severity ratings of rape fields for the last three years is given in Table 2.

The generally dry atmospheric conditions in 1967 restricted the development of leaf and stem pathogens, and in many northern rape fields the straw was unusually clean. *Peronospora parasitica* (Pers. ex Fr.) Fr. was not observed during this year's survey, and aster yellows virus infections were seen extremely rarely. *Mycosphaerella brassicicola* (Duby) Lind. was much less severe than in previous years. Although *alternaria* leaf, stem, and pod spots, caused mainly by *Alternaria brassicae* (Berk.) Sacc., were generally less severe than in 1966, some very severe large stem lesions were found on rape in the Rresaylor area.

Table 2. Average severity ratings\* of diseases in rape fields in Saskatchewan, 1965-1967

Disease organism	1965	1966	1967
<u>Albugo cruciferarum</u>	1.3	2.0	1.2
<u>Peronospora parasitica</u>	0.3	0.5	0.0
<u>Sclerotinia sclerotiorum</u>	0.6	1.4	1.2
<u>Alternaria brassicae</u>	0.4	1.8	1.2
<u>Mycosphaerella brassicicola</u>	1.7	1.6	1.0
Aster yellows virus (callistephus virus 1)	0.4	1.2	0.1
Total rating			
0 = 24 scale	4.7	8.5	4.7
0 = 100 scale	20	35	20

\* Where 0 = no symptoms and 4 = severe disease.

Of the chief diseases, only blackleg, caused by Leptosphaeria maculans (Desm.) Ces. & de Not., imperfect state: Plenodomus lingam (Tode ex Fr.) Hohn., was much more severe in 1967 than it had been in previous years. The brassica strain of the fungus (2) extended its range from the Saskatoon-Humboldt-Naicam region north to the Melfort area. It was also found for the first time on Brassica kaber (DC.) L. C. Wheeler var. pinnatifida (Stokes) L. C. Wheeler near Lake Lenore and Melfort. A summary of the results of special surveys conducted apart from the main survey over the past 5 years in east-central Saskatchewan is given in Table 3.

Table 3. Occurrence of Leptosphaeria maculans (Plenodomus lingam) on rape and mustard in east-central Saskatchewan, 1963-1967

Year	% of fields infected	Av. severity rating*
1967	83	1.3
1966	71	0.5
1965	60	<0.5
1963-64	25	<0.5

\* Where 0 = no symptoms and 4 = severe disease.

Ascocarps of Leptosphaeria maculans bearing mature ascospores were collected on Thlaspi arvense L. in May and June at two locations near Saskatoon. Single ascospores isolated from this material developed into cultures typical of the thlaspi strain (2) of Plenodomus lingam. A more detailed report dealing with L. maculans from Thlaspi will be published later.

Several miscellaneous collections were made during 1967. The oospore stage of Albugo cruciferarum S. F. Gray was collected on pods of Brassica kaber var. pinnatifida (Fig. 1). The symptoms differed from those typical of infections on rape in the absence of any conspicuous hypertrophy. Albugo was also found on Sisymbrium altissimum L. (conidial and oospore states), Capsella bursa-pastoris (L.) Medic. (conidial state) and Descurainia sp. (conidial state).

Mycosphaerella brassicicola was found for the first time as an epiparasite on albugo rape stem enlargements near Brooksby and Delmas.

A salmon-colored fungus with both verticillate and penicillate conidiophores was isolated from the stem bases of two rape plants at Saskatoon at harvest time. It proved to be slightly pathogenic on

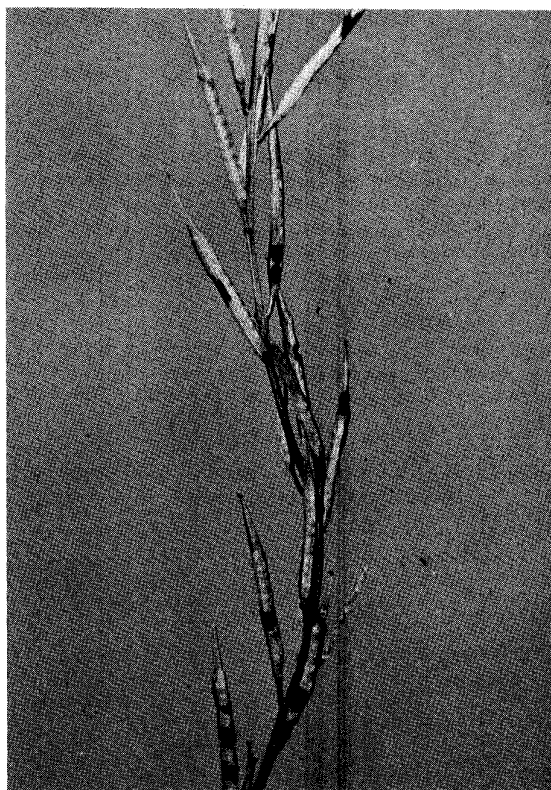


Figure 1. Pod lesions on Brassica kaber var. pinnatifida caused by Albugo cruciferarum.

rape seedlings. In the absence of the perfect state, it is provisionally identified as Gliocladium roseum (Link) Bainier. This is a first report for this fungus on rape in Saskatchewan.

A species of Septoria was obtained in culture from rape collected near Brooksby. It was only mildly pathogenic in a rape seedling test.

Rape plants showing traces of late root rot were collected at Saskatoon. Two species of Phytophthora were isolated from the roots and both showed slight to moderate pathogenicity to rape seedlings.

Powdery mildew (Erysiphe polygoni DC.) was observed in plots of late-maturing rape at Saskatoon.

Severe basal enlargements caused by accidental 2,4-D spraying in June occurred on rape collected at Rosthern.

The rape yield per acre in 1967 was only 1.7% less than that in 1966. Diseases in 1967 reduced rape yields appreciably in some areas. At Swan River, Manitoba, where Alternarin was extremely severe in 1966, the average yield was 8.8 bu/acre and

summer rainfall measured 10.2 inches. In 1967, however, with a summer rainfall of 4.1 inches and a very low incidence of disease, the average yield has been estimated to be 18 bu/acre. Because rape is not considered to be a drought-tolerant plant, a lower yield would have been expected this year, other things being equal. It would seem, therefore, that the reduced incidence of disease is one important factor that accounts for the unexpectedly high yields of rape in 1967.

### Acknowledgments

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