

THE SEASONAL OCCURRENCE OF FUNGAL AND BACTERIAL DISEASES OF CRUCIFERS IN ONTARIO IN 1967 AND 1968¹

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This paper reports on the time of year at which fungal and bacterial diseases of crucifers were observed in Ontario in 1967 and 1968. It is intended as an aid for those wishing to schedule field trips to collect or observe diseases of crucifers.

The 1967 survey covered all of the main vegetable growing areas of the province. The over-all prevalence of diseases for that year has been reported (1, 2, 3). The 1968 survey covered only the southern Ontario counties listed by Reyes, et al. (2). The survey methods used in 1967 and 1968 were the same.

The results of the 1967 and 1968 surveys are presented in Table 1. Only seedling diseases were observed in May; most root diseases (yellows, club-root, etc.) were first observed in June; foliar diseases in July; and downy and powdery mildews in September. The total number of diseases observed was the same in 1967 and 1968. There were twice as many fungal diseases as bacterial diseases, a relationship that was previously reported (2). Generally, fungal diseases appeared earlier in the season (May or June) than bacterial diseases (July). The number of diseases progressed gradually until a peak was reached which coincided with the onset of host maturity in September. The greatest prevalence of diseases did not occur during the periods of maximum temperature (June, July, August) or precipitation (June).

There were variations in the time of occurrence of seedling diseases in the four regions but the number of observations was too limited to allow conclusive interpretation.

No attempt was made to establish a correlation between the types and severity of diseases during successive growth stages of a particular plant, since few fields were visited more than once during the year.

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Literature cited

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Table 1. Observations on the seasonal occurrence of crucifer diseases in Ontario during 1967 and 1968

Crop	Disease and pathogen	Occurrence					
		May	June	July	August	September	October
<u>1967 (whole province)</u>							
Brussels sprouts	Black rot (<i>Xanthomonas campestris</i>)					Sev. ^a 1/2 ^b (C) ^c	
Cabbage	Black rot (<i>X. campestris</i>) Clubroot (<i>Plasmiodiophora brassicae</i>) Damping-off (<i>Fusarium</i> spp.) Drop (<i>Sclerotinia sclerotiorum</i>) Leaf spot (<i>Alternaria brassicae</i>) Wirestem (<i>Rhizoctonia solani</i>) Yellows (<i>Fusarium oxysporum</i> f. <i>conglutinans</i>)	Tr. 1/8 (C)	Tr. 2/4 (S)	Tr. 1/2(C)		Sev. 4/8 (C) Tr. 1/2(S), tr. 1/8(C), sl. 1/2(S), mod. 1/7(W)	Sl. 1/7 (W)
Cauliflower	Bacterial leaf spot (<i>Xanthomonas</i> sp.) Black rot (<i>X. campestris</i>) Clubroot (<i>P. brassicae</i>) Damping-off (<i>Pythium</i> spp., <i>R. solani</i> , <i>Fusarium</i> spp.) Drop (<i>S. sclerotiorum</i>) Leaf spot (<i>Alternaria brassicae</i>) Leaf spot (cause unknown, bacteria isolated) Root rot (<i>Fusarium</i> spp.) Wirestem (<i>R. solani</i>) Yellows (<i>F. oxysporum</i> f. <i>conglutinans</i>)		Tr. 1/5(W), tr. 2/4(S) Tr. 1/1(S), sl. 1/5(W)	Tr. 2/7(S)	Mod. 1/7(S)	Mod. 3/4(C) Mod. 3/4(C) Tr. 1/7(S), sl. 1/7(S), mod. 1/7(S)	Mod. 1/1(S)
Turnip	Clubroot (<i>P. brassicae</i>)		Tr. 1/3 (S)	Tr. 1/7(S)	Tr. 1/1(S)	Sl. 1/5(W)	Mod. 1/4(C)
<u>1968 (southern Ontario)</u>							
Broccoli	Clubroot (<i>P. brassicae</i>)					Sev. 1/1	
Brussels sprouts	Black rot (<i>X. campestris</i>)						Mod. 1/1
Cabbage	Bacterial soft rot (<i>Erwinia carotovora</i>) Black rot (<i>X. campestris</i>) Clubroot (<i>P. brassicae</i>) Damping-off (<i>Fusarium</i> spp., <i>R. solani</i> , <i>Pythium</i> spp.) Downy mildew (<i>Peronospora parasitica</i>) Drop (<i>S. sclerotiorum</i>) Wirestem (<i>R. solani</i>) Yellows (<i>F. oxysporum</i> f. <i>conglutinans</i>)	Tr. 1/2	Tr. 1/2	Tr. 1/3 Tr. 1/3	Tr. 1/5, sl. 2/5, mod. 1/5	Mod. 1/4	Mod. 1/2 Tr. 1/2
Cauliflower	Bacterial soft rot (<i>E. carotovora</i>) Black rot (<i>X. campestris</i>) Leaf spot (<i>Alternaria brassicae</i>) Leaf spot (cause unknown, bacteria isolated) Wirestem (<i>R. solani</i>)	Tr. 1/1	Tr. 1/1			Tr. 3/9, sl. 1/9 Tr. 3/9, sl. 1/9, mod. 1/9, sev. 2/9 Tr. 2/9, sl. 1/9, sev. 2/9	Tr. 1/2 Tr. 1/2 Sl. 2/2
Pak-choi ^d	Clubroot (<i>P. brassicae</i>)			Mailed specimen			
Radish	Downy mildew (<i>P. parasitica</i>)					Sl. 1/2, mod. 1/2	
Turnip	Clubroot (<i>P. brassicae</i>) Powdery mildew (<i>Erysiphe polygoni</i>)		Tr. 1/2, sl. 1/2		Sev. 1/1		Tr. 1/1

^a Tr. (trace) = 1-10% of plants affected in the field; sl. (slight) = 11-30%; mod. (moderate) = 31-60%; sev. (severe) = 61-100%.

^b Number of fields in which the disease was found/number of fields inspected in the region during the month.

^c C = Central Ontario, E = Eastern, S = Southern, and W = Western.

^d *Brassica chinensis* L.