A SURVEY OF DISEASES OF VEGETABLE CROPS IN SOUTHERN ONTARIO IN 1967

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There has been no recent comprehensive survey of the common diseases of vegetables in southern Ontario, although observations of diseases reported by scientists or extension specialists in the province have been compilrd annually (3-9). A systematic survey of vegetable crops was conducted in this region in 1967 to determine the identity and prevalence of diseases. The survey did not include diseases caused by viruses and nrmatodes.

The counties surveyed were Brant, Elgin, Essex, Haldimand, Kent, Lambton, Lincoln, Middlesex, Norfolk, Oxford, Welland, and Wentworth. Each county was visited on a weekly rotational basis from early May to early October Disease identification was based primarily on symptomatology (1), but whenever possible the diagnosis was confirmed by microscopic examination and by isolation of the causal organism from diseasrd sprcimens. The prevalence of each disease in greenhouse or field was determined by the method used by Simard rt al. (10, 11) in Quebec

The majority of the diseases observed were on tomato, onion, cauliflower, pepper, and cucumber (Table 1) The least number of diseases were on asparagus and eggplant Most diseases were caused by fungi. Diseases caused by environmental or physiological disorders, such as air pollution damage to lima beans and frost and hail damage to tomatoes, were noted occasionally.

A review of the literature (2-9) indicates that most of the diseases that occurred most frequently in 1967 also have been at relatively high levels in previous years. Similarly, those diseases that occured at the trace level in 1967 also occurred at this level in other years.

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Table 1. Incidence of diseases of vegetable crops in southern Ontario in 1967

Crop	Disease and cause	Prevalence* and county
Asparagus	Root rot or wilt (~~Fusarium~~ spp.)	Tr. 1/1** field (Kent), sl. 1/1 field (Norfolk)
Bean, lima	Bronzing (ozone damage)	Tr.-mod. 2/3 fields (Kent)
Bean, snap	Cottony soft-rot (Sclerotinia sclerotiorum)	Sl. 2/3 fields (Kent), sev. 1/4 fields (Brant)
	Root rot (Fusarium spp.)	Tr. 1/1 field (Norfolk), tr.-sl. 2/4 fields (Brant)
	Stem canker (Rhizoctonia solani)	Tr. 1/1 field (Norfolk)
Beet	Damping-off (Pythium spp., Fusarium spp.)	Tr. 2/3 fields (Kent)
	Leaf spot (Cercospora beticola, Alternaria tenuis)	Sl. 3/3 fields (Kent)
	Root rot (Botrytis cinerea, Fusarium spp.)	Tr. 1/3 fields (Kent)
Cabbage	Clubroot (Plasmodiophora brassicae)	Tr. 1/1 field (Lambton), sl. 1/1 field (Essex)
	Drop (Sclerotinia sclerotiorum)	Tr. 2/4 fields (Welland)
	Yellows (Fusarium oxysporum f. conglutinans)	Tr. 1/2 fields (Norfolk)
Cauliflower	Black rot (Xanthomonas campestris)	Tr.-mod. 3/7 fields (Oxford), mod. 1/1 field (Welland), mod. 3/3 fields (Essex)
	Clubroot (Plasmodiophora brassicae)	Tr. 1/3 fields (Lincoln), sl. 1/3 fields (Essex), mod. 1/1 field (Welland)
	Damping-off (Pythium spp., Fusarium spp.)	Tr. 1/3 fields (Lincoln), tr. 1/1 field (Norfolk)
	Drop (Sclerotinia sclerotiorum)	Tr. 1/7 fields (Oxford), tr. 1/1 field (Welland)
	Leaf spot (Alternaria brassicae)	Tr. 1/1 field (Brant), sev. 1/1 field (Norfolk)

* Tr. (trace) = 1-10% of plants affected in the greenhouse or field, sl. (slight) = 10-30% 30%, mod. (moderate) = 30-60%, sev. (severe) = 60-100%.

** Number of fields or greenhouses in which the disease was found/number of fields or greenhouses inspected.

Table 1 (Continued)

	Leaf spot (cause undetermined, bacteria isolated)	Mod. 1/1 field (Wentworth)
	Root rot (Fusarium spp.)	Tr. 1/1 field (Brant)
	Wire stem (Rhizoctonia solani)	Tr. 1/7 fields (Oxford), tr. 1/1 field (Norfolk)
Corn, sweet	Root rot (Fusarium spp.)	Tr. 1/1 field (Norfolk)
	Smut (Ustilago maydis)	Tr. 1/1 field (Oxford), tr. 2/3 fields (Essex), mod. 1/1 field (Norfolk)
Cucumber	Angular leaf spot (Pseudomonas lachrymans)	Sl. 1/7 fields (Norfolk), sl.-sev. 2/4 fields (Kent), mod. 6/6 fields (Essex), mod.-sev. 2/2 fields (Oxford)
	Bacterial wilt (Erwinia tracheiphila)	Tr.-sl. 4/4 fields (Kent), tr.-sl. 2/2 fields (Oxford), tr.-sl. 2/4 fields (Welland), tr.-sl. 5/7 fields (Norfolk)
	Damping-off (Pythium spp., Rhizoctonia solani, Fusarium spp.)	Tr. 1/7 fields (Norfolk), tr. 1/4 fields (Welland), sev. 3/6 fields (Essex)
	Leaf blight (Alternaria cucumerina)	Sl.-mod. 2/2 fields (Oxford)
	Powdery mildew (Erysiphe cichoracearum)	Mod. 1/1 greenhouse (Essex), sev. 1/2 fields (Oxford), sev. 2/7 fields (Norfolk)
	Scab (Cladosporium cucumerinum)	Mod. 2/6 fields (Essex)
Eggplant	Wilt (Verticillium dahliae)	Tr. 1/1 field (Norfolk), sl. 1/1 field (Essex), sev. 1/2 fields (in each of Lincoln, Oxford)
Lettuce	Drop (Sclerotinia sclerotiorum)	Tr. 1/1 field (Lambton)
	Gray mold (Botrytis cinerea)	Tr. 3/3 fields (Essex)
Muskmelon	Bacterial wilt (Erwinia tracheiphila)	Tr. 1/2 fields (Oxford)
	Leaf blight (Alternaria cucumerina)	Sl. 1/1 field (Norfolk)
	Powdery mildew (Erysiphe cichoracearum)	Sev. 2/4 fields (Essex)
	Scab (Cladosporium cucumerinum)	Sev. 1/1 field (Norfolk)
Onion	Basal rot (Fusarium spp.)	Sl. 1/6 fields (Essex)
	Bulb rot (Penicillium spp.)	Tr. 1/6 fields (Essex)

Table 1 (Continued)

	Damping-off (Fusarium spp.)	Tr. 1/6 fields (Essex)
	Leaf blight (Botrytis spp.)	Mod.-sev. 2/4 fields
	Neck rot (Botrytis allii)	Mod. 1/6 fields (Essex)
	Pink root (only Fusarium spp. isolated)	Sl. 1/2 fields (Lincoln), mod. 1/6 fields (Kent), mod. 1/2 fields (Welland)
	Purple blotch (Alternaria porri)	Sev. 1/4 fields (Kent)
	Smut (Urocystis cepulae)	Tr. 1/6 fields (Essex), tr. 1/2 fields (Lincoln)
	Tip burn (physiological)	Sl. 1/4 fields (Lambton), mod. 3/6 fields (Kent)
Pea	Root rot (Fusarium spp.)	Tr.-sl. 3/4 fields (in each of Kent, Haldimand, Norfolk)
	Stem canker (Rhizoctonia solani)	Tr. 1/4 fields (in each of Kent, Norfolk)
Pepper	Blossom-end rot (physiological)	Tr. 1/6 fields (in each of Essex, Lincoln)
	Damping-off (Pythium spp., Rhizoctonia solani, Fusarium spp.)	Tr. 1/1 greenhouse (Essex), tr. 1/2 greenhouses (Norfolk), sl. 2/2 greenhouses (Elgin), tr. 1/6 fields (Lincoln)
	Early blight (Alternaria solani)	Tr. 1/6 fields (Lincoln), sl. 3/6 fields (Essex)
	Fruit rot (Phoma destructiva)	Tr. 1/6 fields (Essex)
	Soft rot (Pythium spp.)	Tr. 1/1 field (Brant)
	Wilt (Verticillium dahliae)	Tr. 1/6 fields (in each of coln), mod.-sev. 3/6 fields (Essex)
Potato	Blackleg (Erwinia atroseptica)	Tr. 1/3 fields (Lambton), tr. 1/2 fields (Oxford), sl. 2/3 fields (Kent)
	Scab (Streptomyces scabies)	Sl. 1/2 fields (Oxford)
	Stem canker (Rhizoctonia solani, Fusarium spp.)	Tr. 1/3 fields (in each of Elgin, Essex, Kent, Lambton, Welland)
Spinach	Bacterial soft rot (Erwinia spp.)	Mod. 1/1 field (Kent)
	Gray mold (Botrytis cinerea)	Tr. 1/1 field (Kent)
Squash, summer	Soft rot (Rhizopus sp.)	Tr. 1/1 field (Kent)

Table 1 (Concluded)

Tomato	Anthracnose (Colletotrichum sp.)	Tr. 1/1 truckload (400 hampers) (Kent), tr. 1/3 fields (Norfolk), tr. 3/6 fields (Essex)
	Bacterial canker (Corynebacterium michiganense)	Mod.-sev. 2/3 greenhouses (Essex), tr. 1/4 fields (Kent), tr. 3/6 fields (Essex)
	Bacterial speck (Pseudomonas tomato)	Tr. 2/6 fields (Essex), tr.-sl. 1/4 fields (Kent)
	Bacterial spot (Xanthomonas vesicatoria)	Mod. 1/3 fields (Norfolk)
	Bacterial wilt (Pseudomonas solanacearum)	Tr. 1/4 fields (Kent)
	Blotchy ripening (physiological)	Tr. 1/1 greenhouse (Lincoln), tr. 2/3 greenhouses (Essex), tr. 3/6 fields (Essex), sl. 3/4 fields (Kent)
	Damping-off (Pythium spp., Rhizoctonia solani, Fusarium spp.)	Tr. 1/5 greenhouses (Norfolk), tr. 1/3 greenhouses (Oxford)
	Early blight (Alternaria solani)	Tr. 1/1 greenhouse (in each of Elgin, Lincoln), tr. 1/4 greenhouses (Brant), tr.-sl. 3/3 fields (Norfolk), sl. 1/6 fields (in each of Essex, Lincoln), mod. 1/3 fields (Wentworth), mod. 3/4 fields (Kent)
	Frost damage	Tr. 2/4 fields (Kent)
	Gray mold (Botrytis cinerea)	Tr. 1/4 greenhouses (Brant), tr. 1/1 greenhouse (Elgin), tr. 1/5 greenhouses (Norfolk), sl. 1/1 greenhouse (Lincoln), mod.-sev. 2/3 greenhouses (Essex)
	Hail damage	Sl. 1/4 fields (Kent)
	Leaf spot (Septoria lycopersici)	Tr. 1/3 greenhouses (Essex), sl. 1/3 fields (in each of Wentworth, Norfolk)
	Root rot (Fusarium spp., Pythium spp.)	Tr. 1/4 fields (Kent), tr. 1/6 fields (in each of Lincoln, Welland), tr. 1/3 fields (Norfolk)
	Wilt (Fusarium oxysporum f. lycopersici)	Tr. 1/6 fields (Essex), tr. 2/6 fields (Lincoln), tr. 1/2 fields (Oxford)
	Wilt (Verticillium dahliae)	Tr. 1/6 fields (Essex), sl. 3/4 fields (Kent)