Tree fruits and nuts / Arbres fruitiers et noix

Crop / Culture: Hazelnut

Location / Emplacement: South coastal British Columbia

Title / Titre: 1989 Eastern Filbert Blight Survey in South Coastal British Columbia

Name and Agency / Nom et Organisation: A. J. Buonassisi
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METHODS: Hazelnut growers are concerned that Eastern filbert blight, caused by the fungus Anisograma anomala, could be introduced into British Columbia on hazelnut (Corylus) planting stock from Washington and Oregon. We surveyed hazelnut orchards in the upper Fraser Valley near Agassiz to determine if the disease had been introduced into British Columbia. Approximately 70 acres of hazelnuts were surveyed plus two nurseries producing hazelnut planting stock. The predominant hazelnut variety is Barcelona with Daviana as the pollenizer but there is some Royal, Duchilly, Ennis and Butler production. The hazelnut orchards were surveyed by walking along rows of trees and closely checking for branch dieback or flagging. Closer inspection of flagged branches was made for evidence of Eastern filbert blight perennial cankers and the distinctive large (3 x 6 mm), black, oval-shaped perithecia that protrude in rows along the canker surface.

RESULTS AND COMMENTS: No evidence of Eastern filbert blight was observed during both the 1988 and 1989 surveys. A ban against imported Corylus planting stock from the western United States was imposed in early 1989. The industry retains access to new hazelnut varieties through a two year post-entry quarantine program.

Bacterial blight, thought to be incited by Pseudomonas syringae, is another disease that occurred in two out of the eight hazelnut orchards surveyed in 1989. The most damage was from severe freezing temperatures in early February which caused almost complete crop loss.

Crop / Culture: Apple

Location/Emplacement: Ontario

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Title / Titre: DISEASE SURVEY OF COMMERCIAL APPLE ORCHARDS IN SOUTHERN ONTARIO

METHODS: Fruit harvest assessments were carried out in southern Ontario in 87 different commercial orchards. Fruit from four trees per orchard were sampled at or just prior to harvest maturity. From standard sized trees, 33 fruit from the top, skirt inside and skirt outside were checked. One extra apple was checked from each tree to bring the sample total to 100 apples per tree.

From dwarf sized trees, 33 fruit from each of the top, middle and bottom portions of the tree were checked. One extra apple was picked from each tree to bring the sample size to 100 apples per tree.

Exceptions to this sampling procedure included the St. Lawrence Valley, where 300 fruit per orchard were checked (25 fruit from the top, middle and bottom of 4 trees); in Norfolk county, where 200 apples were examined in 2 of the orchards; and in Middlesex, where 200 fruit were examined at one site.

At most sites, McIntosh and Delicious were checked, but occasionally Empire, Idared, and Spartan were assessed.

Observations from one abondoned orchard in Durham county, and from one certified organic (Organic Crop Improvement Association, Ontario chapter) orchard in Middlesex are included for comparison.

Fruit was checked for apple scab (*Venturia inaequalis* (Cke.) Wint.), fly speck (*Leptothyrium pomi* (Mont. and Fr.) Sacc.), sooty blotch (*Gloeodes pomigena* (Schw.) Colby), quince rust (*Gymnosporangium clavipes* Cke., and Pk.), cedar-apple rust (*G. juniperi-virginianae* Schw.), and insect injury. These were reported by area as to the presence or absence of disease or insect injury.

RESULTS AND COMMENTS: The incidence of sooty blotch, quince rust, and cedar-apple rust was low in 1989. Scab, however, was prevalent in orchards throughout Ontario, averaging 1.2% of infected fruit at harvest. In 1988, the average was 0.46%.

Fruit injury from insect pests was, in general, considerably higher than damage from diseases, with the exception of 6 commercial orchards; 1 from Norfolk-Brant, 2 from Halton-Peel, 1 from Durham, and 2 from Prince Edward Counties.

ACKNOWLEDGEMENTS: We thank the Horticultural Crop Advisors, Pest Management Advisors and others in the Plant Industry Branch who collected the data for the apple harvest assessments.

Comparison of Disease Incidence And Insect Damage in Commercial, Organic, and Abandoned Orchards, 1989

Area	Number of fruit	Percent fruit affected					
		Scab	Fly speck	Sooty blotch	Quince rust	Cedar-apple rust	Insect damage
Ontario (Commercial)	33,900	1.2	0.3	0.01	0.01	0	5.9
Abandoned (Durham)	50	68	28	20	0	0	87
Organic (Middlesex)	200	61	0	0	0	0	100

Apple Harvest Assessment, Southern Ontario, 1989

Area	Number of orchards	Number of apples	Number of fruit affected (range)					Percent damage	
			Scab	Fly speck	Sooty blotch	Quince rust	Cedar-apple rust	Insect	Disease
Essex-Kent	7	2,800	5 (1-4)	6 (1-5)	0	0	0	4.2	0.4
Elgin	5	2,000	3 (3)	18 (1-14)	0	0	0	6.0	1.0
Middlesex	3	1,000	1 (1)	2 (1-8)	0	0	0	2.3	0.3
Norfolk-Brant	33	121800	69 (1-26)	78 (1-41)	2 (1-2)	0	0	12.8	1.2
Halton-Peel	4	1,600	154 (45-109)	0	0	0	0	6.6	9.6
Niagara	6	2,400	24 (2-8)	0	0	0	0	3.4	1.0
Georgian Bay	7	2,800	15 (1-7)	0	0	0	0	9.4	0.5
Durham	8	3,200	34 (1-30)	14 (1-8)	0	0	0	5.2	1.5
Northumberland, Prince Edward, Hastings	11	4,400	81 (1-49)	0	0	3 (3)	0	4.9	1.9
St. Lawrence Valley	3	900	15 (4-6)	0	0	0	0	4.3	1.7

Apple Harvest Assessment, Southern Ontario, 1989

Area	Number of orchards	Number of apples	Number of orchards affected				
			Scab	Fly speck	Sooty blotch	Quince rust	Cedar-apple rust
Essex-Kent	7	2,800	2	2	0	0	0
Elgin	5	2,000	1	4	0	0	0
Middlesex	3	1,000	1	2	0	0	0
Norfolk-Brant	38	12,800	12	12	1	0	0
Halton-Peel	4	1,600	2	0	0	0	0
Niagara	6	2,400	5	0	0	0	0
Georgian Bay	7	2,800	6	0	0	0	0
Durham	8	3,200	4	4	0	0	0
Northumberland, Prince Edward, Hastings	11	4,400	8	0	0	1	0
St. Lawrence Valley	3	900	3	0	0	0	0

Crop / Culture: Pears and Junipers

Name and Agency/ Nom et Organisation: D. J. ORMROD, C. BORNO, M. ODERMATT, L. COURAGE, L. BANNISTER, and S. MITCHELL B.C. Ministry of Agriculture and Fisheries, 17720 - 57th Avenue, SURREY, B.C. V3S 4P9

Location / Emplacement: Lower Mainland and Vancouver Island, British Columbia

Title / Titre: PEAR TRELLIS RUST SURVEY IN SOUTH COASTAL BRITISH COLUMBIA

***METHODS*:** In order to ship junipers or pear trees to the Okanagan or Eastern Canada, nurseries in the B.C. Coastal area must be certified free of pear trellis rust (Gymnosporangium fuscum). Beginning in 1989, this requirement also applied to junipers and pears destined for the prairie provinces.

To facilitate this, a survey of pear trees within 1 km or more of each juniper producing nursery is carried out annually. If infections are found on pear, the junipers in the vicinity are checked for infections the following spring and, if found to be diseased, they are destroyed. In 1989, two students carried out the work on the Lower Mainland and two worked on Vancouver Island, particularly the Saanich Peninsula, where the disease is well established.

RESULTS AND COMMENTS: See table below. As a result of the 1989 work, approximately 55 nurseries out of 75 that applied, were certified to ship junipers and/or pears.

Area	Number of Junipers Examined	Removed	Pear Trees Examined	Pear Infections/Tree 5-50	>50
LOWER MAINLAND					
Abbotsford	721	0	125	20	10
Aldergrove	0	0	33	0	0
Bradner	237	0	65	2	2
Chilliwack	204	0	55	1	0
Delta	0	0	20	0	0
Hatzic	72	0	0	-	-
Langley	2513	0	467	66	6
Maple Ridge	0	0	26	0	0
Matsqui	0	0	13	0	0
Mission	369	0	76	13	6
Pitt Meadows	0	0	76	1	1
Richmond	1133	0	252	98	79
Surrey	816	59	494	163	82
Vancouver	2	2	2	0	2
VANCOUVER ISLAND					
Saanich Peninsula	**2255**	**361**	**1628**	**653**	**660**
Central Vancouver Is.	**46**	**46**	**174**	**9**	**7**
TOTAL FOR 1989	8368	468	2506	1026	255
TOTAL FOR 1988	5274	456	50476*	1719	490

*** Includes nursery trees.**

Crop / Culture: Sweet Cherry

Location / Emplacement: British Columia

Name and Agency/
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Title / Titre: STATUS OF LITTLE CHERRY ERADICATION EFFORTS

METHODS: As part of an on-going survey for the little cherry disease, 2596 sweet and sour cherry trees in the town of Creston, B.C. were checked for fruit symptoms. A pre-survey by a recently trained fieldman was followed by a more detailed inspection of those trees that had been identified as suspicious. The final survey was carried out by experienced personnel from the Summerland Research Station. Commercial orchards, semi-abondoned plantings and gardens were checked during the second and third week of July 1989. Infected trees were identified on the basis of fruit symptoms. Sweet cherry cultivars react to infection with reduced fruit size, lack of colour development during the last ten days before harvest, triangular shape and wrinkled fruit skin on two of three sides of the fruit. Symptoms are especially severe in the first year after infection. Among the major cultivars in the area, Lambert and Bing are especially severely affected while Van shows milder symptoms.

During each of the previous surveys, trees were encountered which could not be definitely classified as either healthy or little cherry diseased. Testing of these suspicious trees for little cherry was carried out routinely by budding a triplet of one- or two-year-old 'Sam', 'Decon' and 'Canindex 1' cherry trees with buds from the suspected field trees. In some cases, fruiting, 'Lambert' trees were also included. Unfavourable environmental conditions, such as lack of irrigation, zinc deficiency inducted by high pH and general neglect can also cause small fruit size but do not induce the other specific symptoms. Symptoms induced by other cherry viruses, such as necrotic ringspot, prune dwarf, twisted leaf and mottle leaf do not generally interfere with the symptom reading.

RESULTS AND COMMENTS: Of the 2596 trees inspected, 84 were found to be definitely infected with the little cherry agent while 237 were considered to be suspicious or highly suspicious. Budwood from these latter trees were taken for testing at Summerland.

Seven trees which had been identified in 1988 as being suspicious or highly suspicious had given positive little cherry indexing results on the indicators in 1989. Most of the original field trees had been removed in 1988 and all remaining trees showed highly suspicious or definite little cherry symptoms in 1989.

The present work was carried out as part of a long-term study of little cherry epidemiology and of the effect of eradication measures. After seven years of surveys and increasingly complete eradication of infected backlog trees, the incidence of newly infected trees has been reduced from approximately 45 per year to around 2 per year. Increased awareness by growers, improved control methods for the vector, increasingly better eradication of the infected trees and an expansion of the surveyed area have contributed to the success of the program. If the present efforts continue at the same level, the disease can be essentially eliminated from the Creston district by 1992.

A separate testing program has been carried out for seedlings of sweet cherry and of Prumus emarginata which is indigenous in the area. These two species do not display identifiable symptoms of little cherry in the field. Bulked samples from 10 to 25 seedling trees were indexed on a pair of indicators. The indexing results indicate that little cherry has become established only in one patch of seedling cherries and in one patch of Prunus emarginata. Both are located directly adjacent to severely infected commercial orchards. Twenty-six tests conducted with similar bulked samples from groups of cherry seedlings and Prunus emarginata which were more than 50 meters away from orchards did not yield any little cherry. The possible escape of little cherry into the native vegetation was of major concern since Prunus emarginata could provide a permanent reservoir from which the disease could re-invade newly planted orchards. Small patches of seedling cherries and Prunus emarginata near the orchard area have now been included in the surveying, indexing and eradication program.

Crop / Culture: SWEET CHERRY

Location/ Emplacement: OKANAGAN VALLEY
BRITISH COLUMBIA

Title/ Titre: LITTLE CHERRY DISEASE SURVEY IN THE OKANAGAN VALLEY, BRITISH COLUMBIA

Name and Agency / Nom et Organisation:

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METHODS: The annual survey of sweet cherry trees in the Okanagan Valley of British Columbia was conducted during harvest in July 1989 for symptoms of little cherry disease. Two employees of the B.C. Ministry of Agriculture and Fisheries examined orchards in districts with a history of disease. Over a three week period most orchards in Penticton and Naramata were visited plus parts of Summerland, Westbank, Kelowna and Oyama. Approximatly 250 properties were visited Fruit on diseased trees is small and maturity delayed. Some varieties have pointed and angular fruit. Following field identification, tree owners are issued removal notices. Trees with questionable symptoms are indexed at the Summerland Research Station. Buds from the suspect tree are placed in indicator trees which are usually of the Sam variety. Sam leaves turn red in late summer of the following year if the disease is present. The infectious agent is assumed to be a virus-like organism.

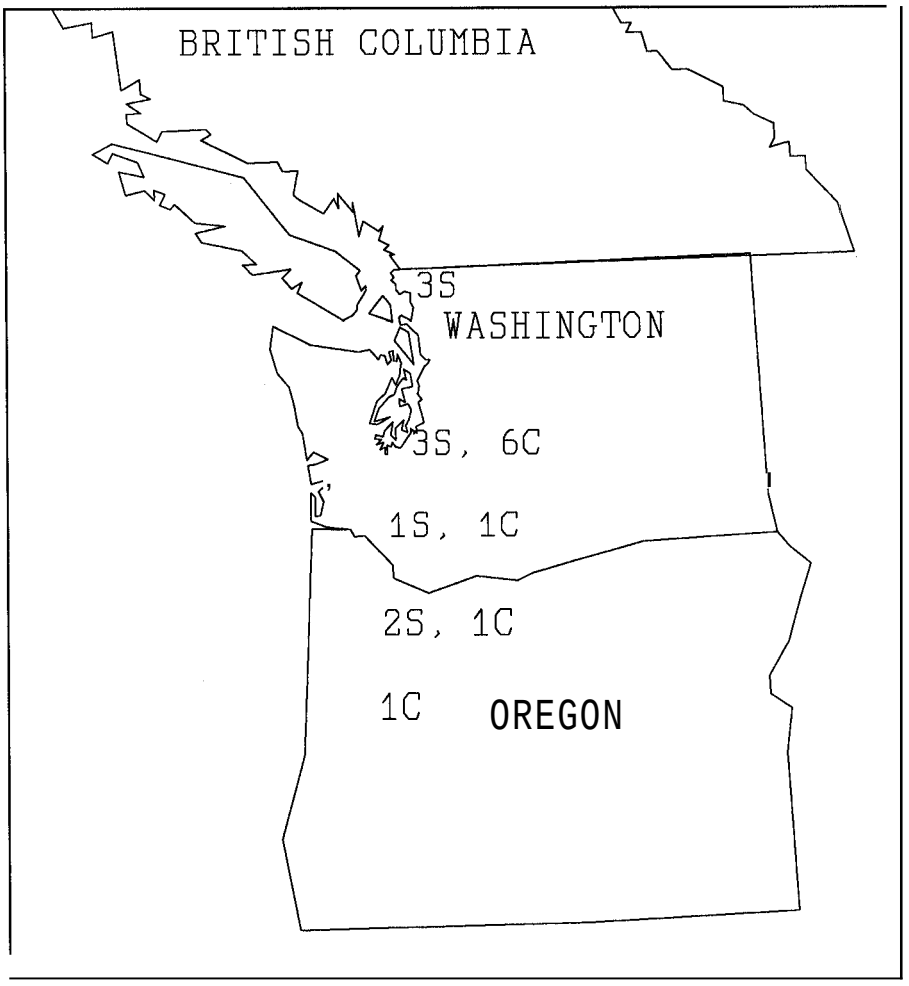
RESULTS AND COMMENTS: Forty-three diseased trees were found in 1989. The table below gives a comparison of numbers found in the various districts in recent years:

SUMMARY OF NUMBER OF TREES WITH LITTLE CHERRY DISEASE

	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976
Oliver	0	0	0	0	0	0	0	0	0	5	0	0	2	1
Keremeos	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Penticton	32	49	57	21	19	26	39	104	53	49	46	64	184	303
Naramata	0	3	0	2	1	6	17	39	20	18	28	84	121	0
Summerland	2	2	3	1	4	2	5	4	5	8	4	0	7	0
Kelowna	6	8	3	0	0	10	1	0	6	25	22	41	0	0
Westbank	1	25	27	0	0	0	0	0	0	0	0	0	0	0
Winfield	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Oyama	2	14	7	3	7	3	2	5	2	11	7	0	0	0
Total	43	101	97	27	31	47	64	152	86	116	109	193	314	304

The number of diseased trees identified in 1989 was down substantially from the previous two years indicating a return to the relatively slow spread pattern observed in the mid-1980's. The drop in numbers in Westbank is due to the complete removal of a badly infected orchard.

The combination of the tree removal program and the natural predation of apple mealy bug, the insect vector of the disease, plus spray programs targeted to control the vector may explain the gradual decline in disease incidence since its peak in 1977. The complete removal of several orchards with a high disease incidence has also checked the spread. Compared to the Kootenay region of B.C. in the 1940's when the disease spread like wild fire, little cherry is being contained in the Okanagan.



Distribution of blueberry scorch viruses found in the Pacific Northwest in the summer of 1989. S = the newly identified spherical virus, C = the carlavirus, numbers indicate the number of farms in an area that had fields testing positive for each virus.