Vegetables / Légumes

Crop / Culture: Potato

Location / Emplacement: Manitoba

Title / Titre: Disease survey of Russet Burbank potato fields in Manitoba in 1990 and results of submissions of potatoes to the Manitoba Agricnltnre Plant Pathology Laboratory

Name and Agency / Nom et Organisation:

PLATFORD, R. G.
Manitoba Agriculture
Plant Pathology Laboratory
Agricultural Services Complex
201-545 University Crescent
WINNIPEG, Manitoba
R3T 5S6 and
GEISEL, B.
Gaia Consulting
Portage la Prairie, Manitoba

Methods: The Manitoba potato growing area was divided into four districts; Winkler, Portage la Prairie/MacGregor, Garberry and other. Seventy-four processing Russet burbank fields were randomly selected to be sampled for early senescence. The number of fields selected from each district was determined by the proportion of the total potato growers in the province, that produced potatoes in that district. In early September, plant samples were submitted to the Manitoba Agriculture Plant Pathology Laboratory for disease analysis. Samples were examined for disease symptoms. Isolations, where required, to verify presence of disease organisms were done using Potato Dextrose Agar and Sorbose Agar.

In addition to the survey there were 52 samples of potatoes submitted to the Manitoba Agriculture Plant Pathology Laboratory in 1990 by agricultural representatives and potato growers. Samples were examined for symptoms of disease. Isolations, when necessary, were made on Potato Dextrose Agar and Sorbose Agar.

Results: Results of the potato survey are shown in Table 1. Location of fields sampled is shown in Figure 1. Verticillium wilt (Verticillium dahliae) was found in 30% of fields in the survey. The incidence of verticillium wilt was highest in the Winkler area 61% and was not present in any of the fields sampled in the Carberry area. Black dot (Colletotrichum coccodes) was found in 74% of fields sampled and found at high levels in all areas ranging from 81% of the fields in the Carberry area to 67% in the Winkler area. Fusarium (Fnsarium spp.) was found in 46% of the fields sampled, and ranged from 50% in fields classified in the survey as other (mainly located near Carman) to 40% in the Portage la Prairie/MacGregor area. Rhizoctonia (Rhizoctonia solani) was fonnd in 22% of fields surveyed and ranged in incidence from 40% in the Portage la Prairie/MacGregor area to 22% in the Winkler area. The incidence of fields infected with both verticillinm and one of the other causes of early senescence was also tahulated. Verticillium was found most commonly in association with black dot (22%) and least often in combination with rhizoctonia (4%). The survey indicated that verticillium and black dot are the major diseases associated with early senescence of potatoes in Manitoba in most regions except in the Carberry area where no verticillium was detected but black dot was present in 81% of fields snrveyed. Verticillium was also not detected in potato fields in the Carberry area in a survey conducted in 1989. The high incidence of verticillium (61%) in the Winkler area may be related to crop rotation as this area in past years was a major centre of sunflower production. Sunflowers are also susceptible to verticillium wilt caused by (Verticillium dahliae).

Diseases diagnosed on potato samples snbmitted to the laboratory in 1990 are presented in Tahle 2. The most commonly observed disease was early senescence caused by verticillium wilt (Verticillium dahliae) either alone or in combination with black dot (Colletotrichum coccodes) and fusarium wilt (Fusarium spp.). The majority of samples originated from Winkler and Portage la Prairie in south central Manitoba. Drought stress was also a problem in 1990 particularly in the Winkler area. One sample of potatoes was found to have ring rot (Corynebacterium sepedonicum). A subsequent field inspection revealed a level of tuber infection close to 4%. Leak (Pythium spp.), was a problem in 3 samples submitted from the Carberry area and serious losses occurred in storage.

Table 1: Results of Survey of Manitoba Potato Fields [1] For Early Dying Diseases in 1990.

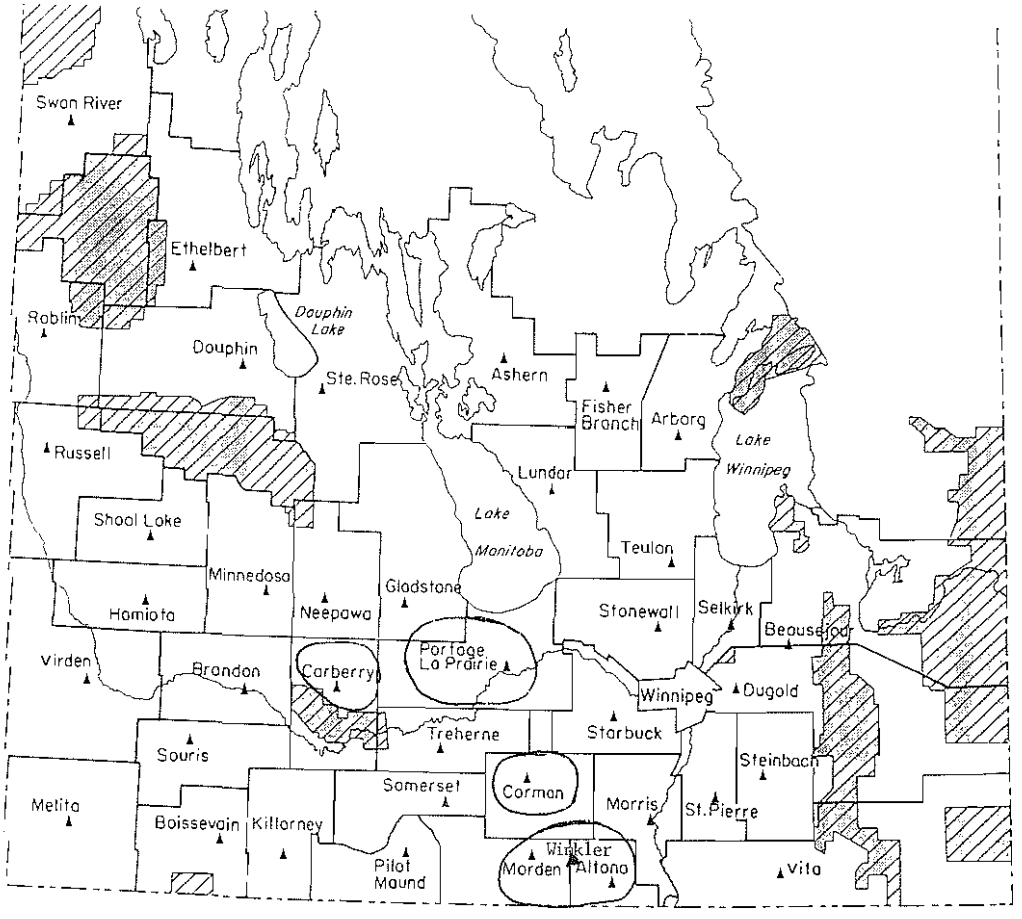
Disease	Percentage of Potato Fields Within 4 Districts Sampled				
	Winkler	Portage la Prairie MacGregor	Carberry	Other	Provincial Average
Verticillium	61	50	0	25	30
Black dot	67	70	81	75	74
Fusarium	44	40	47	50	46
Rhizoctonia	22	40	16	25	24
Verticillium & Black dot	39	40	0	25	22
Verticillium & Fusarium	17	10	0	25	8
Verticillium & Rhizoctonia	6	10	0	0	4
No disease	0	5	16	25	9

% totals do not equal 100% because many of the infected plants had more than one disease.
(1) 74 fields sampled.

Table 2: 1990 Diagnosis of Potato Samples Submitted to the Manitoba Agriculture Plant Pathology Laboratory.[1]

Disease	Scientific Name	Number of Samples
Verticillium wilt	Verticillium dahliae	15
Fusarium root rot	Fusarium spp.	8
Black dot	Colletotrichum coccodes	7
Fusarium wilt	Fusarium spp.	5
Fusarium dry rot	Fusarium spp.	3
Leak	Pythium spp.	3
Common scab	Streptomyces scabies	2
Rhizoctonia	Rhizoctonia solani	2
Bacterial ring rot	Corynebacterium sepedonicum	1
Blackleg	Erwinia carotovora pv. atroseptica	1
Environmental stress	drought	5
Miscellaneous		2

FIGURE 1: Distribution of the fields for the potato survey in Manitoba in 1990.



= areas surveyed

Crop / Culture: POTATO

Location / Emplacement: Southwestern British Columbia

Name and Agency / Nom et Organisation:
Vippen K. Joshi & H. S. Pepin
Agriculture Canada, Research Station
6660 N. W. Marine Drive
Vancouver, B.C. V6T 1X2

Title / Titre: A SURVEY OF SILVER SCURF DISEASE (*Helminthosporium solani*) OF POTATOES IN LOWER FRASER VALLEY & PEMBERTON AREA OF B. C.

METHODS: Potato samples were taken at random from storages covering a wide rauge of cultivars and locations. Each sample consisted of 20-25 tubers. These were examined after washing for visible sigus of silver scurf lesions. A few tubers with lesions were selected from each sample and were iucubated in humid conditious to enhance conidia formation. Conidia were picked and plated onto a specific antibiotic media. After about 3 weeks incubation, cultures were identified microscopically aud the one with **Helminthosporium solani** were considered positive for silver scurf infections. Tubers were rated, based on the level of the surface area covered and the varieties were ranked into very high, high, medium, low, very low and lowest degrees of infection.

RESULTS: The crop harvested in 1989 had high levels of silver scurf infections. There were some cases where disease was observed even at harvest. A total of 90 samples were collected in early 1990 from 21 different cultivars and 27 different storages. Out of 90 samples, 88 had visible signs of infections. Eighty four percent of visible lesions were confirmed to be **Helminthosporium solani** in plate culture tests. Level of iufection differed from one cultivar to another and from one storage to auother. Some highly infested cultivars were: Chieftain, Red Pontiac, Norchip, Red Gold, Red La Soda and Warba. Cultivars with low levels of infectious were: Yukon, Shepody, Norking and White Rose. Among all the cultivars sampled, Redsen had the lowest level of infection.

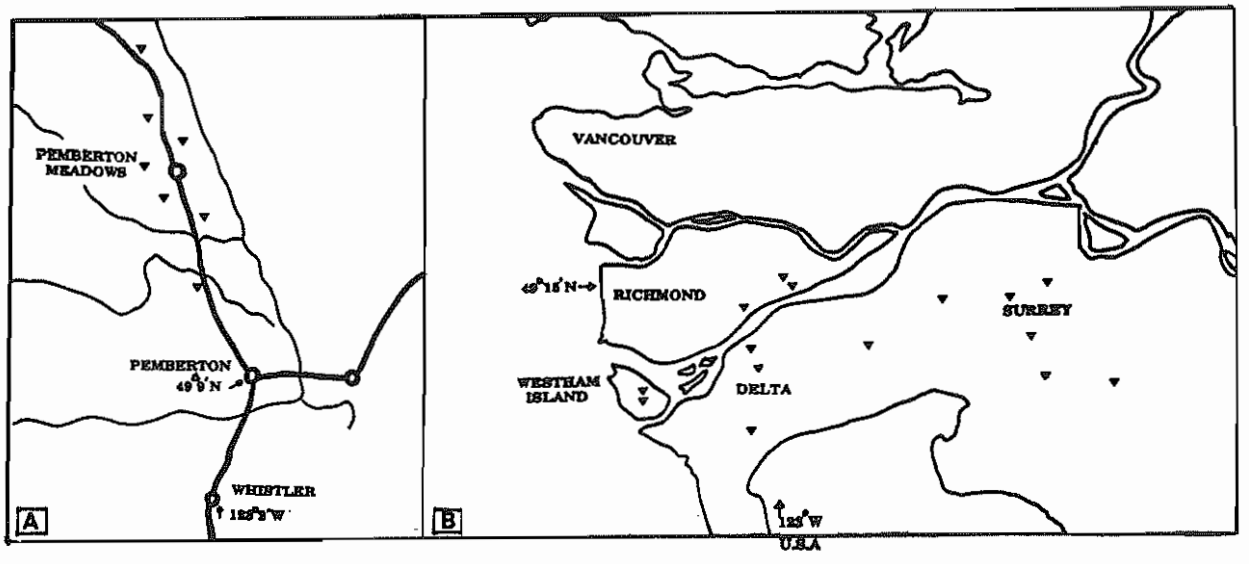


Fig. 1. Maps of locations of potatoes sampled. A. Pemberton Area, B. Lower Fraser Valley.

Crop / Culture: Tomato

Location / Emplacement: British Columbia

Name and Agency / Nom et Organisation: J.G. Menzies
Agriculture Canada
Research Station
P.O. Box 1000
Agassiz, B.C. V0M 1A0

Title / Titre: Infestation of tomato seed by Fusarium oxysporum f. sp. radicis-lycopersici.

Materials and Methods: Seed samples of tomato varieties grown in greenhouses in British Columbia (1989 and 1990) and Alberta (1990) were obtained from commercial seed houses or growers after the seeding of their spring crop. A maximum of 100 seeds per sample were placed on Fusarium selective medium (Komada 1975) and incubated in the dark at 20°C. Colonies that grew from the seeds on the selective medium were transferred to water agar and identified as F. oxysporum f. sp. radicis-lycopersici Jarvis and Shoemaker using the seedling test of Sanchez et al. (1975).

Results and Comments: The results of the seed survey are presented in Table 1. Two of the seed lots were found to be infested with F. oxysporum f. sp. radicis-lycopersici, and only one of the seed lots had a high level of infestation (19%). None of the seed lots from the commercial seed houses were infested with the pathogen. Nevertheless, the finding that tomato seed may be infested with this pathogen suggests that this may be one manner in which the pathogen spreads over short or long distances.

References: Komada, H. 1975. Development of a selective medium for quantitative isolation of Fusarium oxysporum from natural soil. Rev. Plant Prot. Res. (Tokoyo) 8:114-125.

Sanchez, L.E., Endo, R.M., and Leary, J.V. 1975. A rapid technique for identifying the clones of Fusarium oxysporum f. sp. lycopersici causing crown-and root-rot of tomato. Phytopathology 65:726-727.

Table 1. The percentage of tomato seed infested with Fusarium oxysporum f. sp. radicis-lycopersici.

Seed lot	Grower number	Sample year	n	Percent infested	Cultivar
1	1	1989	100	19	Dombito
2	2	1989	100	0	Dombito
3	3	1989	100	0	Dombito
4	4	1989	100	0	Dombito
5	5	1989	100	0	Dombito
6	6	1989	100	0	Caruso
7	6	1989	100	1	Dombito
8	7	1989	100	0	Dombito
9	7	1989	100	0	Caruso
10	8	1989	100	0	Marone
11	8	1989	100	0	82W186
12	8	1989	100	0	Larma *
13	8	1989	100	0	79W175
14	8	1989	100	0	Perfecto
15	8	1989	100	0	Carmelo
16	8	1989	100	0	Dombito
17	9	1990	100	0	Trend *
18	9	1990	100	0	882-864 *
19	9	1990	43	0	1602 *
20	9	1990	100	0	Dombito
21	3	1990	100	0	Dombito
22	10	1990	100	0	Dombito
23	11	1990	100	0	Larma *
24	12	1990	100	0	Perfecto
25	13	1990	100	0	Vendor
27	14	1990	100	0	Belmondo *
28	14	1990	100	0	Dombito

* F. oxysporum f. sp. radicis-lycopersici resistant cultivar