

Forage legumes / Légumineuses fourragères

Crop/Culture: Alfalfa

Location/Emplacement: Southern Alberta

Title/Titre: SURVEY FOR VERTICILLIUM WILT OF ALFALFA

**Name and Agency /
Nom et Organisation:**
R.J. Howard and E.R. Moskaluk
Alberta Special Crops and Horticultural
Research Center
Bag 200
BRCKS, Alberta
T0J 0J0

METHODS: From August 23-31, 1988, 29 alfalfa fields in the Vauxhall area of Southern Alberta (Fig. 1) were surveyed for Verticillium wilt (*Verticillium albo-atrum*). The majority were contracted for production of dehydrated alfalfa products. The disease was identified by visual symptoms of wilt and V-shaped yellow sectors on leaves. Each field was surveyed by entering at one corner, walking 200 paces toward the center, then exiting at 90° to the closest edge of the field. Suspect plants were collected on the entry and exit transects and taken to the laboratory to confirm field diagnosis. *V. albo-atrum* was isolated from 1-cm pieces from the lower stems of suspect plants. The isolation procedure consisted of dipping stem pieces in 70% ethanol, placing them in 1% sodium hypochlorite for 3 minutes, rinsing in sterile water, and plating onto Czapek's agar amended with 200 ppm of streptomycin. The plates were incubated at 20°C for 5-7 days before observation.

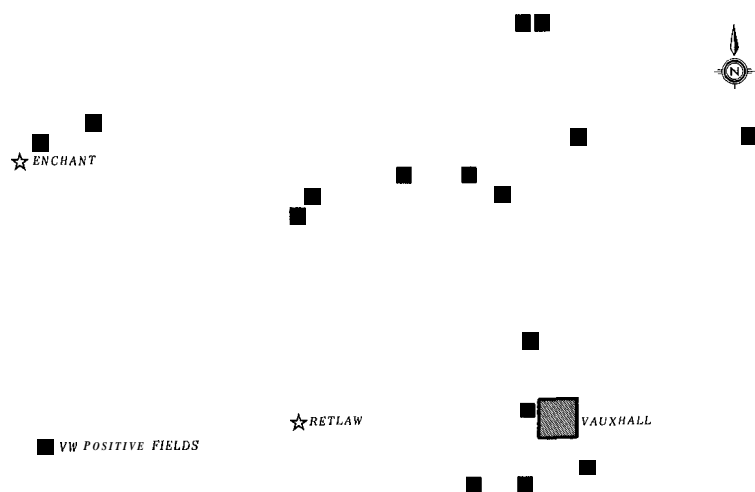
RESULTS AND COMMENTS: Verticillium wilt was found in 16 of the fields surveyed (55%) (Table 1). All but one of the fields were irrigated. Disease incidence ranged from trace (1%) to severe (>50%). The high concentration of wilt in fields contracted for dehydration suggests that custom harvesting machinery may have spread *V. albo-atrum* from field to field.

Table 1. Survey data for Verticillium wilt of alfalfa in Southern Alberta in 1988.

Field designation	No. fields surveyed	No. fields with VW
Dehydration	23	14
Hay ¹	6	2
	29	16

¹ One positive field was dryland.

Figure 1. Alfalfa fields surveyed for Verticillium wilt in 1988.



Crop/Culture: Alfalfa

Location/Emplacement: Saskatchewan

Title/Titre: FOLIAR DISEASES OF ALFALFA IN N.E.
SASKATCHEWAN, 1988

**Name and Agency /
Name and Organisation:**

B. Berkenkamp and C. Kirkham
Agriculture Canada Research Station
MELFORT, Saskatchewan
SOE 1A0

METHODS: Five fields of alfalfa in crop districts 8a, 8b and 9a were surveyed between August 10 and 29, 1988. Ten plants collected at ten pace intervals were rated for percentage of leaf or stem area affected (Disease Index) and losses estimated by a factor of 0.25.

RESULTS AND COMMENTS: Table 1 shows the extremely low levels of diseases, probably reduced by the serious drought in 1988. A single Red Clover field showed disease indices of 6.5 for Northern Anthracnose, 6.5 for Target Spot and 18.8 for Powdery Mildew.

Table 1. Prevalence, intensity and losses by foliar disease in Northeastern Saskatchewan.

Disease	% Fields Affected	Disease Index	% Loss
Common Leaf Spot	80	5.3	1.32
Black Stem	60	5.1	1.29
Yellow Leaf Blotch	20	10.0	0.24
Pepper Spot	40	9.6	0.16

Crop/Culture: Irrigated Alfalfa	Name and Agency/ Nomet Organisation:
Location/Emplacement: Saskatchewan	B.D. Gossen and G. Jespersen Agriculture Canada Research Station SASKATOON, Saskatchewan S7M 0X2; and, Saskatchewan Agriculture REGINA, Saskatchewan S4S 0B1
Title/Titre: VERTICILLIUM WILT AND FOLIAR DISEASES OF IRRIGATED ALFALFA IN SASKATCHEWAN IN 1988	

METHODS: Thirty irrigated alfalfa fields in the southwestern and central portions of the grainbelt in Saskatchewan (crop districts 3, 4 and 6) were examined for the presence of Verticillium wilt (Verticillium atro-atrum) between July 20 and August 5, 1988. All fields in the survey were used for forage production. Second growth was examined and suspect plants were taken to the laboratory for pathogen identification. Leaf disease identification was based primarily on field characteristics, and occasionally by collecting samples and isolating cultures.

RESULTS AND COMMENTS: Samples were taken from eight fields. Verticillium infection was confirmed in only two fields, both adjacent to the South Saskatchewan River near the Alberta border in crop district 4. Verticillium had not been found previously in either of these fields. This indicates that the disease may be spreading, albeit slowly.

Spring black stem (Phoma medicaginis var. medicaginis) was the most prevalent leaf pathogen in southern areas, but common leaf spot (Pseudopezizamedicaginis) was predominant in central areas. Downy mildew (Peronospora trifoliorum) infection was noted in several fields in the southern area. A Colletotrichum sp. was isolated from stems of wilted plants from several fields in the south. Leaf spot severity was very low throughout the survey area until late in the summer when some regions received precipitation after prolonged drought. However, severity never exceeded moderate levels.

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Crop/Culture: Alfalfa	Name and Agency/ Name and Organisation: R.A. Martin and P. Boswall Agriculture Canada Research Station CHARLOTTETOWN, Prince Edward Island CIA 7M8; and, P.E.I. Dept. of Agriculture CHARLOTTETOWN, Prince Edward Island
Location/Emplacement: Prince Edward Island	
Title/Titre: FIRST OCCURRENCE REPORT OF VERTICILLIUM WILT OF ALFALFA ON PRINCE EDWARD ISLAND	

INTRODUCTION: Verticillium wilt of alfalfa (*Medicago sativa*), incited by *Verticillium albo-atrum*, has, since its reintroduction into Canada in 1977, become widespread. In 1981 surveys, infected plants were found in fields in British Columbia, Alberta, Saskatchewan, Ontario, and Nova Scotia (1). A survey in 1986 identified the presence of Verticillium wilt in the southern agricultural areas of Quebec (3). Recent surveys of both Ontario and Quebec have indicated that in both provinces Verticillium wilt incidence is increasing (2,4). With the exception of one field in Nova Scotia (1), Verticillium wilt has not been reported from the Atlantic Provinces.

METHODS: *Verticillium albo-atrum* was recovered from stem sections of alfalfa which exhibited symptoms of Verticillium wilt. The stem sections were surface sterilized in 10% Javex, plated on water agar, and incubated at room temperature for 3 to 5 days.

RESULTS AND COMMENTS: In September of 1988, after regrowth had occurred, several fields of alfalfa on Prince Edward Island were identified which exhibited symptoms of Verticillium wilt. The most severely infected fields were located at the Charlottetown Research Station of Agriculture Canada. A commercial field was also identified as being positive for Verticillium wilt. The severely infected fields at the Research Station were 3-year old and had not exhibited any symptoms of Verticillium wilt prior to September of 1988. Distribution of diseased plants was fairly even throughout these fields. Several small plot experiments also exhibited symptoms but in general at lower severity level.

The progression of Verticillium wilt in the worst fields was rapid. In mid-September, approximately 10% of the plants were displaying symptoms. By late October to early November, approximately 80 to 90% of the plants were displaying advanced symptoms.

The exact origin of contamination of the primary infected fields is unknown. However from the even distribution pattern in the severely infected fields, it would appear that the source of introduction may have been the seed. Infection of the plot experiments was probably as a result of contaminated harvest equipment used in the main infected fields.

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- Crop/Culture:** Forage Legumes
- Location/Emplacement:** Saskatchewan
- Title/Titre:** SNOW MOLD AND WINTER INJURY ON ALFALFA AND OTHER FORAGE LEGUMES IN SASKATCHEWAN IN 1988
- Name and Agency/
Nomet Organisation:**
B.D. Gossen
Agriculture Canada Research Station
107 Science Crescent
SASKATOON, Saskatchewan
- METHODS:** In May of 1988, 67 fields of dryland alfalfa, 7 of red clover and 3 fields of sweetclover were examined in the central and northern grainbelt areas of Saskatchewan to determine the extent and severity of snow mold diseases and winter injury. The sampling was stratified in that protected areas where snow would accumulate, and exposed areas where snow accumulation would be minimal, were examined in each field. Disease severity was rated on a five point scale; None, Trace <1% of plants killed, Slight = 1-10%, Moderate = 11-25%, Severe >25%. Identification of injury was based primarily on field symptoms, and occasionally by collecting specimens and isolating cultures.
- RESULTS AND COMMENTS:** Cottony snow mold (*Coprinus psychromorbidus*) of alfalfa was found at low levels throughout the survey area. Affected plants occurred most frequently around foci in areas where snow accumulated in the winter. Disease levels were very low (None - 26, Trace - 8) throughout the central grainbelt area (Saskatoon, Canora, Tisdale). Damage was somewhat higher (None - 7, Trace - 4, Slight - 2, Moderate - 1, Severe - 1) in the northwest (Meadow Lake, Glaslyn). In the northeast (Nipawin, Hudson Bay), disease severity levels were generally low (None - 6, Trace - 5, Slight - 5, Moderate - 3), except in and adjacent to patches where the disease had been severe in 1986-87. Damage was very severe in these areas, presumably because inoculum levels were high. *C. psychromorbidus* was the only snow mold pathogen observed on alfalfa. There was little or no low-temperature or desiccation injury on alfalfa in the survey area, and 65% of the fields examined were rated as good to excellent.
- Seven fields of red clover were examined in the northeastern region. Snow mold injury caused by *Phoma sclerotoides* was higher than normal (None - 2, Slight - 1, Moderate - 2, Severe - 1), especially in the Nipawin area.
- The three fields of sweetclover examined were all in the central grainbelt. They were in very good condition, with no visible snow mold or winter injury.
- This work was supported in part by a grant from the Agriculture Development Fund, Saskatchewan Agriculture.

- Crop/Culture:** Forage Legumes
- Location/Emplacement:** Manitoba
- Title/Titre:** INCIDENCE OF PLANT DISEASES IN ALFALFA IN MANITOBA IN 1988
- Name and Agency/
Nomet Organisation:**
R.G. Platford
Manitoba Agriculture
Plant Pathology Laboratory
Agricultural Services Complex
201-545 University Crescent
WINNIPEG, Manitoba
R3T 5S6
- METHODS:** Results are based on alfalfa samples submitted to the Plant Pathology Laboratory and field examinations.
- RESULTS:** Winter injury to alfalfa was not a major problem in 1988. A few fields of alfalfa in the Central region were found to be infected with brown root rot (*Plenodomus sclerotoides*) but this problem was not widespread and losses were less than 10%. Verticillium wilt was not detected in alfalfa in Manitoba in 1988. Leaf and stem diseases were generally very low. Moisture and heat stress were the major causes of poor alfalfa yields in Manitoba in 1988.