

Verticillium wilt, a potentially dangerous disease of alfalfa in Canada¹

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Verticillium wilt of alfalfa, caused by *Verticillium albo-atrum* has been identified from fields in British Columbia. This is the first report of a large acreage of the disease in Canada. All cultivars grown in Canada are likely susceptible to Verticillium wilt.

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La presence du Fletrissement verticillien de la luzerne, cause par *Verticillium albo-atrum* R & B, a ete constatee dans des champs en Colombie-Britannique. C'est la premiere fois au Canada qu'on signale la maladie sur de grandes etendues. Tous les cultivars actuellement utilisés au Canada sont apparemment sensibles a la maladie.

Verticillium wilt, caused by *Verticillium* spp. has become one of the most important diseases of alfalfa in Great Britain and Europe. The disease was first reported in Germany in 1938 (Richter & Klinkowski, 1938). Other countries including USSR, Hungary, New Zealand and Canada have also reported the disease (Szoko 1966). *V. albo-atrum* R & B is the principal pathogen, but *V. dahliae* Kleb. has also been reported to cause similar symptoms (Isaac 1957). The disease may be introduced into previously unaffected areas with the seed from infected crops. However, unlike most seed-borne disease, Verticillium wilt is rarely found in or on the seed but in the inert matter, usually in pieces of pods and pedicels which have passed through the threshing and cleaning equipment with the seed.

In Canada the disease was first reported by Aube & Sackston (1964) who found a number of infected plants in an alfalfa plot at Normandin, Quebec. The disease was also found about the same time in a breeder's plot at the Agricultural Research Station in Vancouver, B. C. (Dr. H. S. Pepin personal communication). The infected plots were ploughed down and the disease was not found the following season. In 1976 an outbreak of the disease occurred in the Columbia River Basin of western United States (Graham, Peaden & Evans 1977). The disease was so severe that only two harvests were taken before the stand was diminished. Most of the alfalfa seed imported into Canada originates in this area.

In British Columbia, near Okanagan Falls, approximately 600 acres of alfalfa have been found to be infected with the disease. The disease is believed to have entered this area on alfalfa hay or seed imported from neighbouring Washington State. (M. Soder, personal communication.)

A *Verticillium* sp. has also been isolated from the vascular tissues of the crowns of alfalfa plants submitted from the Kootenay Flats area near Creston, B. C.

Complete identifications and pathogenicity tests on these isolates are now being conducted. Over 2,000 acres of alfalfa are involved in this region.

To isolate the causal organism, samples of plant material from B. C. alfalfa fields submitted to the Seed-Borne Disease Unit were surface disinfected with 2% sodium hypochlorite sectioned and plated on V-8 juice agar. *V. albo-atrum* was isolated from roots, stems and leaf tissue of infected alfalfa plants. The isolates obtained from this material were hyaline in nature and did not readily form dark, resting mycelium typical of *V. albo-atrum*. The hyaline nature of this isolate is similar to that observed on an isolate obtained from Ivor Isaac, Swansea, Wales through Dr. H. S. Pepin and observed by W. E. Sackston in isolates from alfalfa in Quebec. Isolates from the Okanagan Falls area have been shown to be pathogenic to DuPuits alfalfa.

This is the first report of a large area of established Verticillium wilt on alfalfa in Canada. The appearance of this disease demonstrates the need for greater control over the movements of diseased plant material from infected areas into non-infected regions. At the present time most commercially grown alfalfa cultivars are likely to be susceptible to the disease. Work is already in progress to incorporate some of the resistance of European cultivars into cultivars suitable for Canadian growing conditions.

Literature cited

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