

[Back](#)

The American
Phytopathological Society
(APS) is a non-profit,
professional, scientific
organization dedicated to
the study and control of
plant diseases.

Copyright 1994-2005
The American
Phytopathological Society

First Report of Canola Blackleg Caused by Pathogenicity Group 4 of *Leptosphaeria maculans* in Manitoba. Y. Chen and W. G. D. Fernando, Department of Plant Science, University of Manitoba, Winnipeg, MB R3T 2N2, Canada. *Plant Dis.* 89:339, 2005; published on-line as DOI: 10.1094/PD-89-0339B. Accepted for publication 13 December 2004.

Leptosphaeria maculans (Desmaz.) Ces. & de Not., causal agent of blackleg of canola (*Brassica napus* L.), was initially placed in several pathogenicity groups (PG) on the basis of the interaction phenotypes (IP) of *L. maculans* isolates on the differential canola cvs. Westar (W), Glacier (G), and Quinta (Q) (4). PG1 isolates are weakly virulent and PG2, PG3, and PG4 isolates are highly virulent. In Manitoba, the *L. maculans* population consists mainly of PG2 isolates (virulent on W and avirulent on G and Q), a few PG1 isolates (avirulent on W, G, and Q), and PGT (virulent on W and Q, but avirulent on G) (3). Since the blackleg fungus is known to have a high level of evolutionary potential, the Oilseed Pathology Laboratory at the University of Manitoba, Winnipeg, Canada, examines the pathogenic variability of *L. maculans* isolates from the Canadian Prairies and North Dakota each year. During 2002, the presence of PG3 (virulent on W and G and avirulent on Q) was reported in Manitoba (1). During 2003, a canola field located at La Riviere, Manitoba, 200 km southwest of Winnipeg, was found to be severely affected by blackleg. Stubble from this field was arbitrarily collected in mid-April 2004, and 98 single-pycnidia pure cultures were obtained by isolating fungi from surface-sterilized (2% sodium hypochlorite), infested residue, cultured on V8 agar at room temperature under cool-white florescent light for 24 h. Pycnidiospores were harvested after 14 days of incubation using the Mira cloth filtering method (1). PG testing was performed using the three differential cultivars in the greenhouse. Known PG2, 3, and 4 isolates, 86-12, Liffole-6, and PL30.2, respectively, were included as positive controls. For each of the 98 isolates, 12 7-day-old cotyledons of each differential cultivar grown in Metro Mix were wound-inoculated with 10 µl of a pycnidiospore suspension (1×10^7 per ml) (1). Inoculated plants were maintained in the greenhouse (16/21°C night/day and a 16-h photoperiod with cool-white florescent light). The experiment was repeated three times. Disease severity on cotyledons was assessed 12 days after inoculation with a 0 to 9 scale (0 to 2 = resistant; 3 to 6 = intermediate; and 7 to 9 = susceptible). Of the 98 isolates tested, five were PG1, 51 were PG2, 24 were PG3, 13 were PGT, and five were PG4. The isolates classified as PG4 gave IP reactions of 7 to 9, 7 to 9, and 6.6 to 8.2, on W, G, and Q, respectively. PG3 was reported one year ago, but highly virulent isolates belonging to PG4 have not been previously detected

in Manitoba. To our knowledge, this is the first report of the occurrence of PG4 isolates of *L. maculans*, and the first report of PG4 causing canola blackleg in Manitoba. The appearance of PG4 may be evidence of pathogen population changes occurring under high-selection-pressure exerted by resistance genes in commercial cultivars (2), or through importation of PG4 isolates with canola seed.

References: (1) W. G. D. Fernando and Y. Chen. *Plant Dis.* 87:1268, 2003. (2) B. J. Howlett. *Can. J. Plant Pathol.* 26:245, 2004. (3) M. Keri et al. *Can. J. Plant Pathol.* 23:199, 2001. (4) A. Mengistu et al. *Plant Dis.* 75:1279, 1991.

[Home](#) • [Visitor's Center](#) • [Media/Outreach Center](#) • [Education Center](#) • [APS Interactive](#)
[Careers & Placement](#) • [Journals & News](#) • [Online Resources](#) • [Meetings](#)
[APS Press Bookstore](#) • [Member Area](#) • [Directories & Rosters](#)
[Viewing Tips](#) • [Copyright](#) • [Disclaimer](#)