



Foliar fungicide not recommended for blackleg-resistant canola

CATEGORY [disease](#) | March 30, 2021

Application of foliar fungicides at the 2 to 4 leaf stage reduced blackleg disease incidence and severity, and improved yield on the susceptible Westar canola cultivar. On two resistant cultivars, however, this fungicide treatment reduced the disease but showed no yield benefit. Since resistant canola cultivars are commonly grown on the Prairies, a routine application of foliar fungicide is not recommended.

With increased blackleg (*Leptosphaeria maculans*) incidence and shorter crop rotations in many parts of the Canadian prairies, there was a growing interest in fungicide treatment to mitigate disease risk despite limited information on efficacy or yield.

The objectives of this study were to assess foliar fungicides for their impact on blackleg disease incidence, severity and yield at early versus late application and one versus two applications at different growth stages on the susceptible canola cultivar, Westar, for the worst-case scenario of cultivar resistance erosion.

Additionally, early application of pyraclostrobin (Headline) fungicide was evaluated on resistant (R) and moderately resistant (MR) canola cultivars to determine the value of treatment on cultivars with blackleg resistance.

At Vegreville, AB and Melfort, SK, field trials were conducted between 2011 and 2014. At Carman, MB, the trials were carried out between 2011 and 2013, and at Scott, SK, and Brandon, MB, between 2012 and 2014.

The plots at each trial site were seeded adjacent to a previous field of the blackleg susceptible Westar. Four fungicide products were selected for in-season application: pyraclostrobin (Headline), azoxystrobin (Quadris), propiconazole (Tilt), and azoxystrobin + propiconazole (Quilt).

Each fungicide was applied at the 2 to 4 leaf stage of Westar to target early infection of cotyledons and the lower true leaves of canola. To compare efficacy between early and late treatments, Headline was also applied at early bolting. Two-fungicide treatments were also sequentially applied to Westar; Headline or Tilt at the 2 to 4 leaf stage, followed by Tilt (to Headline-treated plots) or Headline (to Tilt-treated plots) at early bolting, to compare with the early single-product treatments.

Headline was applied also to the resistant cultivars '43E01' (MR) and '45H29' (R) at the 2 to 4 leaf stage to assess the impact of cultivar resistance on fungicide efficacy. These resistant cultivars both carry the specific R genes *Rlm1/LepR3* and *Rlm3*.

Disease severity was assessed at growth stage 5.3 to 5.4, when canola seed in the lower pods started turning from mottled green-brown to brown. Mean Disease Severity (MDI) and Disease Severity Index (DSI) ratings were used for the assessment.

Disease severity reduced

Blackleg levels varied substantially on non-treated Westar with MDI ranging from 28% to 96% (average 67.9%) and DSI from 8% to 69% (average 31.8%).

Applying Headline, Quadris or Quilt at the 2 to 4 leaf stage, or Headline and Tilt (or vice versa) at the 2 to 4 leaf and early bolting stages to Westar reduced blackleg significantly compared to no treatment. However, the two-application treatments applied at the 2 to 4 leaf and bolting stages was no better than the early application of Headline alone.

On the moderately resistant cultivar, 43E01, MDI was high at 65% and DSI was moderate at 32.9% on the untreated control. The application of Headline at the 2 to 4 leaf stage significantly reduced MDI to 48.6% and DSI to 19%, respectively.

For the resistant cultivar 45H29, MDI was still fairly high at 53.9% but DSI lower at 21.2%. The application of Headline reduced MDI to 42.3% and DSI to 13.7%.

Fungicides improved yield in susceptible but not resistant cultivars

The treatments that reduced MDI and DSI on Westar also limited the yield loss caused by blackleg in a range of 16.5 to 26.9%, relative to the untreated control. Untreated Westar yield was 26 bu/ac (1441 kg/ha), while the treatments that reduced blackleg on Westar yielded significantly higher in the 31 to 33 bu/ac (1720 to 1829 kg/ha) range.

On the moderately resistant and resistant cultivars, even though the application of Headline at the 2 to 4 leaf stage reduced MDI and DSI significantly, there was no yield benefit.

The results of the research clearly show that the early fungicide treatment will provide little benefit when disease pressure is low (MDI <30%) in western Canada, especially on resistant canola cultivars. If resistant cultivars are showing increased blackleg disease levels, consider a management strategy using extended crop rotation as the first line of defense to reduce the amount of inoculum, followed by deploying a resistant canola cultivar with different resistant genes to manage the disease.

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Peng G, Liu C, Fernando D W G, Lang R, McLaren D L, Johnson E N, Kutcher H R, Singh G, Turkington T K & Yu F. 2020. Early fungicide treatment reduces blackleg on canola but yield benefit is realized only on susceptible cultivars under high disease pressure. Can J Plant Pathol.

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