



Fungicide control of *Mycosphaerella* blight in field pea

CATEGORY [disease](#) | *July 28, 2021*

In 10 of the 13 trials, double-nozzle configurations provided a 15% reduction in disease severity and up to a 60% increase in yield compared to the untreated control. However, droplet size and angle of application had no effect on field pea yield. Moderate water volume of 40 to 80 L/ac (100 to 200 L/ha) improved fungicide efficacy compared to larger water volumes.

Mycosphaerella blight, caused by *Peyronellaea pinodes*, is a foliar pathogen of field pea that is managed largely with foliar fungicide application at flowering. The challenge when applying foliar fungicides is that the spray must penetrate deep into the crop canopy where the pathogen initially develops.

Several field trials were conducted across the Canadian prairies from 2008 to 2011 to assess the efficacy of various nozzle numbers and orientations, droplet sizes, and water volumes for the management of *Mycosphaerella* blight to increase yield in field pea. The trials were conducted at the Agriculture and Agri-Food Canada Research and Development Centres at Morden, Manitoba,

Saskatoon, Saskatchewan, and Lacombe, Alberta, and at the Crop Diversification Centre North, Alberta Agriculture and Forestry, Edmonton, Alberta.

The initial study compared the efficacy of single- and double-nozzle treatments at Morden in 2008, 2009, and 2010, and Saskatoon in 2008 and 2009. The treatments were pyraclostrobin fungicide (Headline EC) applied at early flowering using ComboJet nozzles (ER, extended range; MR, mid-range; DR, drift reduction) with a flat fan pattern and an 80° angle of dispersion from the nozzle tip. In a second study, one double-nozzle treatment and a treatment with reduced carrier volume from the first study were replaced with three treatments applied at a 60° forward angle from the nozzle tip.

Several field pea cultivars were assessed to test fungicide delivery on different canopy structures that could affect efficacy.

The timing of fungicide applications depended on *Mycosphaerella* blight severity at each location. The fungicide was applied either once at the early flowering stage when symptoms were noted, or twice with applications once at the early flowering stage and once 10 to 14 days later at the mid-flower to early pod stage.

A final field trial was conducted at Saskatoon, SK, and Lacombe, AB, in 2010 and 2011 to examine the effect on yield of selected water volumes and nozzle number. Treatments were rates of carrier volume applied at 20, 40, 80, 162, 324 L/ac (50, 100, 200, 400, and 800 L/ha) with single (ER8002, ER8004, ER8008, ER8025) or double nozzles (ER8001, ER8002, ER8004, ER8015).

Double nozzles provided the best control and yield

These studies examined 10 combinations of nozzles and application angles over 4 locations, with 6 cultivars and 5 carrier volumes on 2 cultivars for a total of 17 station years.

In 10 of the 13 nozzle combination trials, double nozzle configurations gave 15% better control of *Mycosphaerella* blight than the nontreated control. Single-nozzle treatments were generally intermediate, but often did not improve disease ratings relative to the control. In many cases, these small differences in blight severity were not correlated with yield, but double-nozzle treatments produced higher yields than the nontreated control in 6 of 17 station years.

These studies show both fine- and coarse-nozzle treatments generally resulted in similar disease reduction relative to the control.

Nozzle orientation was also studied. Under dry conditions at Morden and Edmonton in 2009, a nozzle orientation angle of 60° reduced *Mycosphaerella* blight severity and improved yield. However, at other locations and years, a lower angle was just as effective. The researchers concluded that vertical application is as effective as angled application. Factors such as disease pressure and cultivar characteristics such as standability, leaf type and plant height appear to be more important for management of *Mycosphaerella* blight than the application angle of the fungicide.

Under low to moderate disease pressure water carrier volume did not affect blight severity or impact seed yield. However, increasing the carrier volume up to 80 L/ac under high disease pressure reduced blight severity and increased yield. Larger water volumes up to 324 L/ac resulted in increased severity and reduced yield, likely as a result of fungicide run-off due to saturation of the leaf surface.

The results of these studies show that double nozzles may provide an advantage for management of *Mycosphaerella* blight when applying fungicide in moderate carrier volumes of 40 to 80 L/ac. When deciding on effective sprayer techniques for fungicide application, disease pressure, environmental conditions and cultivar characteristics are important to consider.

The authors thank K. Bassendowski, T. Dubitz and L. Schnepf for technical assistance, BASF for providing fungicide, Dr. T. Wolf, AAFC Saskatoon, for nozzles and recommendations on treatment selection, and the Alberta Pulse Growers for partial funding of the project.

R. Bowness, B. D. Gossen, K. F. Chang, C. J. Willenborg, R. L. Conner & S. E. Strelkov (2021): Effect of fungicide application technology on seed yield in field pea under variable *Mycosphaerella* blight pressure, *Canadian Journal of Plant Pathology*, <https://doi.org/10.1080/07060661.2021.1872868>