

**Progress report
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Project: Evaluation of canola breeding lines for resistance to blackleg

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A blackleg nursery was established in Langdon in the summer of 2009 to evaluate 50 NDSU canola breeding lines that already have a gene for herbicide-tolerance. A similar nursery was established in Fargo. The Langdon nursery was supplemented with blackleg-infected stems collected from commercial fields in 2008. The Fargo nursery was inoculated with a mixture of three PG2 isolates when plants were at the three leaf stage. Warm and dry conditions reduced growth of plants in the nursery and prevented the establishment of blackleg. In the Langdon nursery, four breeding lines 9041, 9229, 9082, and 9092 had an average incidence of 23% with a mean severity of 1.8 in a scale of 0-5 compared to the commercial controls DKL 30-42 and DKL 52-41 who had an average incidence of 33% and similar severity. In this trial, Westar the universal susceptible had an average blackleg incidence of 54% with a severity of 2.8 which were significantly higher than the breeding lines and commercial controls. In a separate trial conducted in Manitoba, Canada, 50 breeding lines were planted in single rows with no replications in a nursery where PG2, PG3 and PGT were naturally established. Lines 9073 and 9228 had the lowest levels of blackleg with an average of 7% incidence and a mean severity of 0.1 in a 0-5 scale. Other lines, like 9096 and, 9091, 9051, and 9030 had 13% incidence and a mean severity of 0.1. The commercial control DKL 30-42 and Westar had 53% and 67% incidence and a mean severity of 0.9 and 3.0, respectively. The information generated in these trials is being used by the breeder, who is also a Co-PI in this project.

Project: Characterization of the reaction of *Brassica napus*, *B. rapa*, and *B. juncea* plant introductions to isolates of pathogenicity groups 3 and 4 of *Leptosphaeria maculans*

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The objective of this project is to identify sources of resistance against PG3 and 4 of blackleg. So far we have evaluated 388 accessions of the *Brassica rapa* collection and have not found a single material that bears useful levels of resistance to strains from either pathogenicity groups. Elite materials from 27 accessions from the *B. napus* collection have also been evaluated with similar results. These *B. napus* materials had been previously identified as having useful levels of resistance against *S. sclerotiorum*. From the *B. juncea* collection, 96 accessions have been evaluated. All of them were susceptible to strains of both pathogenicity groups. One hundred additional *B. juncea* materials are being evaluated at the time of this writing.