

2010 Field Pea and Dry Bean Research at the Brandon Research Centre

Annual Report Submitted October 2010

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The 2010 field pea and dry bean pathology research activities funded by MPGA were conducted as outlined in the new Pulse Science Cluster program. All field activities of these studies were successfully completed despite the excessive precipitation that created wet conditions during the 2010 field season. The laboratory work on pathogen identification is ongoing, but some preliminary results are available.

Identification of the pathogens associated with root rot of field pea in Manitoba

In Manitoba, root rot is a major disease of field pea and is capable of causing significant yield reductions due to compromised root systems and reduced plant stands. Control of root rot is difficult and cultivars with complete resistance have yet to become available. Previous studies indicated that the most prevalent causal agents for root rot in field pea in Manitoba were *Rhizoctonia solani* and *Fusarium solani*. However, recent findings also indicate the presence of *F. avenaceum* in root rot affected field peas in Manitoba and North Dakota. These reports suggest that the pathogen population may be changing over time, and emphasize the need to obtain up-to-date information on the pathogen species involved. Confirmation of the prevalence of root rot pathogens of pea is critical in order to screen for host resistance and design effective control measures.

The second year of a 4-year study approved by MPGA was initiated in 2010 to survey crops of field pea for root diseases at 41 different locations in southwest and south-central Manitoba where field pea is commonly grown. The survey for root diseases was conducted from late June to mid-July, when most plants were at the late vegetative (pre-flowering) stage. Ten plants were sampled at each of three random sites for each crop surveyed. The thirty pea plants were rated for severity of root rot using a disease severity scale of 0 (no disease) to 9 (death of plant). In order to confirm identification of root rot pathogens, fifteen symptomatic roots were collected per field for isolation of fungi in the laboratory. Both *Fusarium* and *Rhizoctonia* spp. were isolated and species identification is ongoing. *Fusarium* spp. were more frequently isolated from diseased roots than were *Rhizoctonia* spp. Rapid methods for detection of prevalent *Fusarium* species are being developed. Pathogenicity tests of the predominant isolates of *Fusarium* will be conducted using a susceptible pea cultivar during the winter/spring of 2010-2011.

The predominant pathogens associated with root rot of field peas in Manitoba will be identified through this 4-year study. This information can then be used by plant pathologists and pea breeders to develop cultivars with improved resistance to root rot. Better root rot resistance in

field pea cultivars will increase the profitability of pea production in Manitoba through reduced yield losses.



Stunted pea plants with root rot (L) vs healthy pea plants (R)

Acknowledgements

The funding provided by MPGA for these studies is greatly appreciated. Technical support provided by D. Hausermann, T. Kerley, T. Henderson, W. Penner, and D. Stoesz is gratefully acknowledged.