Improving the Management of Root Rots of Field Peas

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Root diseases of field peas, caused primarily by the fungal pathogen *Fusarium* spp. and by the fungal-like pathogen *Aphanomyces euteiches*, have become important limiting factors for the production of field peas in parts of north-central and northwestern North Dakota. Severe outbreaks of Fusarium and Aphanomyces root rot have caused some producers to abandon the crop. No management strategies are currently available; commercial varieties do not carry satisfactory resistance, registered seed treatments do not confer satisfactory efficacy, and crop rotation is of limited effectiveness due to the persistence of the pathogens in the soil.

The Carrington Research Extension Center has initiated a wide range of experiments designed to develop improved management strategies for root rots on field peas.

- A crop rotation experiment was initiated in 2014 (with a second study location in Hettinger, ND) to identify the crop rotation interval needed to prevent buildup of the root rot pathogens and to assess the impact of including flax in rotations with peas; some agronomists have suggested that flax may negatively impact peas when grown in rotation, but no data are available to support this assertion.
- Field trials were conducted in Carrington with a second study location in Minot to evaluate the impact, if any, of common herbicide programs on root rots of field peas. Producers in the United States and Canada have suggested that herbicides can negatively impact root rot development on peas, but no data are available quantifying the impact of herbicides on root rots in pea, and it is unclear which, if any, herbicides and herbicide programs might exacerbate root rots in field peas. Data from these experiments are still being analyzed. Additional field trials are planned for 2016.
- An initial field trial was conducted in Carrington in 2015 to evaluate whether seed treatment with ILeVo (fluopyram; Bayer CropScience) might show satisfactory efficacy against Fusarium root rot of field peas; ILeVo is the only seed treatment known to exhibit satisfactory efficacy against sudden death syndrome of soybeans, another important soil-borne disease caused by Fusarium pathogens. Disease pressure was low in the trial, but results were promising. Seed treatment with ILeVo (2.53 fl oz / 300,000 seeds) conferred a 50% reduction in root rot severity at full bloom and early pod-development, while the traditional seed treatment package Evergol energy (prothioconazole + penfluflen + metalaxyl + imidacloprid; Bayer CropScience) conferred no reduction in root rot severity. The application rate tested in 2015 would be relatively expensive, and testing in 2016 will focus on lower application rates. Funding is currently being sought to establish field trials testing ILeVo at two or more locations in 2016.

Field trials were initiated in 2015 to assess the application of fungicides in-furrow with the seed for management of root diseases of field peas and to identify sources of resistance to Fusarium root rot of field peas. Data from the experiments are still being analyzed. This research is being conducted in collaboration with Julie Pasche, NDSU's pulse crops pathologist. Additional testing is planned for 2016.