Seedling diseases: Biology, management and education

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Overview of project objectives

Soilborne seedling and soybean root diseases significantly reduce yields in the North Central region of the United States. Seedling diseases rank among the top four pathogen threats to soybean, because their insidious nature makes them difficult to diagnose and control. It is nearly impossible to predict when they will take a heavy toll, until it happens. The challenges and failures of managing soilborne diseases and pathogens of soybean and other crops are based in part on limitations in knowledge and methods. This project addresses critical limitations in identifying and managing seedling diseases.

Key results

The results have shown *Fusarium proliferatum* to be more aggressive than the other two species *Fusarium oxysporum* and *F. sporotrichioides* based on root morphology and pathogen density. However, *F. oxysporum*, and *F. proliferatum* data suggested that they have an additive (synergistic) effect when causing root rot on soybean. Rhizosphere soil tightly attached to roots and rhizome were collected for quantitative PCR. At a later stage of this set of experiments, fungicide seed treatments will be incorporated as an additional variable affecting the interaction between the different isolates and soybean.

Benefit to farmers

Producers and industry will see benefits in the form of rapid diagnostics and management recommendations. It also will help industry in their assessments in pesticides and germplasm development.

Links

Seedling diseases: Biology, management and education *USB National Soybean Checkoff Research Database*