



Northern New York Agricultural Development Program News

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New Brown Root Rot Lab Test has Northern New York Roots

Northern NY – The new test now available to farmers from the Cornell University Plant Disease Diagnostic Clinic (CU-PDDC) to detect the soil-borne plant pathogen *Phoma sclerotioides*, commonly known as brown root rot (BRR), has northern New York roots.

BRR was first detected in the eastern United States in Clinton County in northern NY in 2004. The pathogen causes root and crown rotting in alfalfa, other perennial legumes, and overwintering grasses, causing yield loss and stand decline of alfalfa.

Dr. Michael Wunsch of North Dakota State University (NDSU) developed the improved molecular test for BRR in collaboration with the Bergstrom Lab and CU-PDDC at Cornell University in Ithaca, NY. With funding from the farmer-driven Northern New York Agricultural Development Program (NNYADP), Wunsch conducted his graduate study research of brown root rot on northern New York farms under the tutelage of Cornell plant pathologist Dr. Gary C. Bergstrom.

“This new test indicates a positive result if plant tissues are infected with any of the seven varieties (biotypes) of the fungus found in North America, including the five biotypes documented in New York,” says Bergstrom.

“Research conducted in northern New York in 2004-2009 in collaboration with area farmers and extension personnel was critical for the development of the improved diagnostic test as it facilitated the collection of the large and diverse set of *P. sclerotioides* isolates, or fungal individuals, required to develop a robust diagnostic test,” says Wunsch, now the plant pathologist at the Carrington Research Extension Center at NDSU, Carrington, ND.

CU-PDCC Director Karen Snover-Clift, who helped fine-tune the test, says, “This new test is a polymerase chain reaction (PCR) test and about 10 times more sensitive in

detecting DNA of the pathogen than the previously available PCR test, and it is specific for *P. sclerotioides*. It does not detect other soil fungi.”

Diagnosing brown root rot via traditional culturing methods requires two to three months; the new Wunsch-Bergstrom test offers crop advisors and producers a rapid method to identify whether brown root rot contributed to poor spring regrowth or winterkill of alfalfa.

The new test has been validated on hundreds of cultures collected from northern New York and hundreds of cultures collected from other regions of North America.

Bergstrom notes that winterkill and weak regrowth of alfalfa were prevalent in spring 2014 in New York and brown root rot may be an important contributor to the damage in different areas.

Wunsch suggests a strategy for coping with BRR may be planting a mixed crop.

“Where brown root rot has been diagnosed as a significant problem, planting alfalfa in a mixture with a perennial grass can be preferable to planting a pure stand of alfalfa. While the roots of overwintering grasses also harbor brown root rot, this disease is unlikely to cause reductions in the survival or yield of perennial grasses,” Wunsch says.

The Northern New York Agricultural Development Program has posted information on costs and how to prepare a test sample on its website at www.nnyagdev.org.

Photo:

A Cornell lab technician checks alfalfa plants in a brown root rot research trial. Photo: Julie Hansen

