



Northern New York Agricultural Development Program News

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Link: <http://www.nnyagdev.org/wp-content/uploads/2015/04/NNYADPCornSoyDiseaseReportPRLong.pdf>

Northern New York Agricultural Development Program Issues Crop Disease Report

The farmer-driven Northern New York Agricultural Development Program has issued the results of a two-year project benchmarking common and newly-emerging diseases of corn and soybean crops in the six northernmost counties of New York State: Clinton, Essex, Franklin, Jefferson, Lewis, and St. Lawrence. The NNYADP Corn and Soybean Diseases Diagnosis and Assessment project found one disease of corn not seen in the region in more than 30 years, and one soybean disease new to New York state.

The complete report on the NNYADP Corn and Soybean Diseases Diagnosis and Assessment project is posted at www.nnyagdev.org.

Cornell University Plant Pathologist Gary C. Bergstrom led the project team that included 26 cooperating farmers and Cornell Cooperative Extension field crop specialists Michael Hunter and Kitty O'Neil scouting for diseases in NNY corn and soybean fields in 2013 and 2014. The survey found head smut in corn and northern stem canker in soybeans.

Head smut has not been identified in New York since the 1980s.

Northern stem canker has not previously been identified or documented in New York State. Northern stem canker was also identified in western NY crops in 2014.

In addition to field checks during routine farm visits by the Extension personnel, an intensive field survey was conducted for disease detection and diagnosis in seven sentinel fields of corn and 13 sentinel fields of soybean.

The sentinel fields were chosen to maximize the diversity of environment and cropping practices in each county. Each sentinel field was assessed one to three times during the growing season to include various growth stages of the crop.

Jaime Cummings in the field crops pathology lab at Cornell University analyzed the survey samples for pathogen identification; the USDA Laboratory of Dr. Xiaohong Wang at Cornell in Ithaca analyzed the samples specifically for soybean cyst nematode.

Corn Diseases in Focus

Four corn diseases and nine soybean diseases in total were identified and diagnosed among the NNY farm fields surveyed in 2013-2014. No disease occurred at high severity

in 2014.

In 2013, northern corn leaf blight was the dominant disease in cornfields throughout northern NY, indicating that it is widespread and undermanaged on many farms. It was widespread, though not universal, in northern New York cornfields in 2014. Northern corn leaf blight was observed in seven of the seven cornfields surveyed during August through October, though only at low to moderately low levels.

Because of the lateness of the epidemic in 2014, significant yield losses were unlikely and application of foliar fungicides at tassel emergence would not likely have resulted in an economical return on investment. The amount of fungal inoculum in corn debris will be elevated in the region for 2015, so NNY farmers are urged to plant corn hybrids with moderate resistance to NCLB in 2015.

Brown midrib corn hybrids were not included among the NNY fields surveyed in 2014, yet some BMR hybrids showed severe damage from NCLB in the region in 2014. Fungicide application may be especially warranted for BMR corn in 2015 and BMR fields should be included in the 2015 regional survey.

The other corn foliar diseases, common rust and eyespot, are fairly common and widespread and only occurred at low levels in the fields where they were found.

The important finding on corn in 2014 was the head smut in Jefferson County, which has not been identified in NY since the 1980s.

The research team has new funding for 2015 and will be on the watch for gray leaf spot which has become a highly damaging disease of corn in humid valleys in the Southern Tier and Hudson Valley regions of NYS; similar environments exist in parts of Northern NY. Gray leaf spot was not found by the 2013-14 survey in NNY.

Soybeans Assessed

Frogeye leaf spot, sudden death syndrome, brown stem rot, and soybean vein necrosis virus were each confirmed in individual soybean fields in NNY in 2012 for the first time. Prior to the inception of this NNYADP project, it was unknown how widespread or severe these diseases may be across the breadth of NNY farms.

White mold was identified in nine of 13 soybean fields at moderately low levels. The foliar soybean diseases identified in the region, such as bacterial pustule and downy mildew, are common and only occurred at low levels.

None of the soybean fields surveyed in 2014 showed significant foliar disease development and therefore foliar fungicides would not likely have contributed to economical yield enhancement in those fields. There was no indication that the bacterial pustule or downy mildew observed warrant altered management practices for control.

Septoria brown spot can cause yield losses if it is severe during early pod-filling, which was not the case in 2014.

The important finding on soybean in 2014 was northern stem canker, which has never previously been identified or documented in New York state. Northern stem canker was also identified in nine other soybean fields across western NY in 2014, indicating that this previously unknown disease may be widespread and undermanaged throughout

soybean production areas of New York.

Soybean cyst nematode was not confirmed in the region; researchers plan a more intense assay for the pest as part of new project work in 2015.

Results Valuable to Farmers

Corn is a foundational crop for the Northern New York dairy and cash grain industries, while soybeans continue to show great economic promise with expanding acreage in the region. Early detection of diseases helps farmers make informed seed selection, crop rotation, and other disease management decisions.

'Emerging and re-emerging plant diseases are a continual threat to crop sustainability and the profit margin for crop producers is often a narrow one. Production of both corn and soybean is expanding to include more marginal, poorly drained soils in Northern New York, raising questions about the impact of diseases in stressful environments. New diseases arise and formerly minor diseases become more damaging on a regular basis,' Bergstrom said.

'Increased local knowledge of crop diseases is the main benefit expected from this project,' Bergstrom added. 'Northern NY farmers are increasingly faced with important management decisions that require knowledge of plant diseases such as:

- 1) What corn hybrids and soybean varieties should I grow? What diseases do I need genetic resistance to and at what levels in the hybrid or variety,
- 2) Should I apply foliar fungicide? Does the disease pressure in my field or in the general area warrant a chemical application? and
- 3) What crop rotation sequences and tillage practices make most sense for my farm? Are plant disease organisms building up in my soil or crop debris that suggests I need to change my cropping sequence or tillage practices in particular fields?'

Project to Continue in 2015

White mold and northern stem canker are potentially serious soil-borne diseases with long-term implications for crop rotation sequence. Results of the 2013-2014 research will be used to start mapping the distribution of corn and soybean diseases in NY and will be made available to growers through extension outreach to aid in their management decisions.

The Northern New York Agricultural Development Program will continue its proactive disease assessment program in 2015 to help protect the security and profitability of corn and soybean production in Northern NY. Funding is from the \$600,000 designated for the NNYADP in the 2014-2015 State Budget.

'Multiyear surveys better capture the reality of disease occurrences due to the variation in weather from year to year, because each disease may be favored by specific weather conditions,' Bergstrom pointed out.

Important new disease finds will be published through national databases and publications; pathogen isolates archived in the Cornell University Field Crop Pathogen Culture Collection; and DNA sequences submitted to GenBank.

The Northern New York Agricultural Development Program provides small grants for on-farm research and technical assistance projects in Clinton, Essex, Franklin, Jefferson, Lewis and St. Lawrence counties. Success stories and research results are posted at www.nnyagdev.org.

Funds from the NY Soybean Check-Off Program supported the soybean cyst nematode laboratory analyses for this project.