Northern New York Agricultural Development Program News

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NNYADP Farm Research Evaluating Why Some Corn Fields Exceed Yield Expectations

With research in the past 10 years showing notable exceptions in how well predictions of corn yield potential matched actual yields on North Country farms, the farmers of the Northern New York Agricultural Development Program wanted to learn more about the factors influencing the beyond-expectations success.

For science-based, real-time, on-farm data, the NNYADP provided grant funding to Dr. Quirine M. Ketterings, director of the Cornell University Nutrient Management Spear Program, in 2013-2015.

Ketterings and the Nutrient Management Spear Program are known for applied research that helps New York farmers more efficiently use the nutrients available in manure, crop rotations, and purchased fertilizer to support crop production and agricultural environmental stewardship.

Newer varieties of corn are higher yielding, as seen in the increase in average corn silage and grain yields in New York State over the past decades. Higher-yielding cornfields, however, do not necessarily require more nitrogen to obtain higher yields. Variations in management, soils, and many other factors impact actual nitrogen need.

“The farmers were asking if higher yielding varieties require more nitrogen and that generated the idea to evaluate actual corn yields on Northern New York fields and to combine that with an assessment of nitrogen management,” Ketterings explains.

In 2013 and 2014, Ketterings worked with farmers and farm advisors in Northern New York to compare actual corn yields with yield expectations based on the Cornell Soils Database that is itself the basis for Cornell's nitrogen application guidelines.

The average yield across 36 cornfields in NNY for 2013 and 2014 combined was 113 bushels per acre, four bushels less than the average yield potential for all sites in the project. However, 25 percent of the 36 cornfields evaluated yielded more than 110 percent of the Cornell yield potential.

With a Northern New York Agricultural Development Program grant for 2015 work, Ketterings will evaluate yield potential using new field technology to gather data on three levels: per farm, per field, and within a field. The results are expected to contribute to the updating of the Cornell corn yield database.

"The Northern New York Agricultural Development Program research is helping us develop an adaptive N management approach that allows for changes over time to build more precise management guidelines," Ketterings says.

The technology Ketterings is using in 2015 includes an optical sensor that evaluates corn plant vigor throughout the growing season based on changing field conditions.

"It is too early to make changes to the Cornell Soils Database. With participation in this project by a large number of Northern New York farms, we can generate the database needed to support changes," Ketterings adds.

Ketterings suggests more farmers get involved in the project, invest in equipment that allows them to actually measure field yields, and share their yield data with the Northern New York Agricultural Development Program project leader.

The Northern New York Agricultural Development Program is a farmer-driven research and technical assistance program serving Clinton, Essex, Franklin, Jefferson, Lewis and St. Lawrence counties. Funding for the Northern New York Agricultural Development Program is supported by New York State Senate leadership and is administered through the New York State Department of Agriculture and Markets. For more information on crop production in Northern New York, visit www.nnyagdev.org.