



## Crop Advisor Explores Double Crop Concept with NMSP Nitrogen Rate Study at AA Dairy

By Lisa Fields

Jeff Williard had his first experience with double cropping in 2013 with the Nutrient Management Spear Program's (NMSP) Double Crop Nitrogen (N) Rate Study. Williard, a Certified Crop Advisor (CCA) for Agricultural Consulting Services (ACS) in Ithaca, was approached about the field study by Associate Professor Quirine Ketterings, his former college advisor. Ketterings leads the NMSP in Cornell University's Department of Animal Science.

Williard said, "I was eager to see the double crop concept first-hand. Quirine had spoken with Aaron Aman of AA Dairy at a crop meeting. Aaron was interested in hosting plots for the N Rate Study on his farm, and he's also a friend, so the opportunity was ready-made for me to participate. From the information I heard, double cropping seemed like a viable option to help dairies meet their feed needs. This was a current concern because of the tight forage supplies after droughty weather in 2011. I was also intrigued because the project used urea treated with Agrotain, one of the N materials in the project I completed for my B.S. degree honors research in 2011. The on-farm study was a chance to see it perform in field conditions."

Shona Ort, NMSP technician, described the project. "The goal was to develop guidelines for N management of winter grains grown for forage in a double crop rotation. To obtain enough data, we set up N rate studies at 44 farm sites across the state, representing various soil types and crop management practices. We applied Agrotain treated urea in five N rates, from 30 to 120 pounds per acre, and four replications. The N was applied at dormancy break (green-up) and harvest took place in May."

Plot set up was a challenge in AA Dairy's winter triticale field. Williard noted, "We flagged the plots on March 22<sup>nd</sup> in frozen soil under a light cover of snow. Soil sampling was very difficult, and we had to carefully assess where to set the plots, as the stand wasn't all that uniform."

Despite the early spring conditions, the crop had a high yield, averaging 3 tons dry matter per acre in the plots. Both Williard and Aman were surprised at the lack of response to N fertilizer inputs at their site.



Jeff Williard of Agricultural Consulting Services (pictured), worked with Aaron Aman of AA Dairy on a nitrogen rate study for triticale. The triticale yielded 3 tons of DM per acre in May of 2013 and nitrogen fertilizer addition did not increase the yield.

Aman said, "I picked this triticale field for the project because it's the farthest from the farm at eight miles from the barn. We have a methane digester, so the manure applied is just the liquid portion. The study field received 2500 gallons in February and another 5500 gallons in June. I didn't think that 8,000 gallons per acre with the prior rotation of soybeans and corn alternated each year would grow the winter triticale as well as it did. I thought it would show that it needed extra N."

Williard added, "I really expected to see a checkerboard effect from the different N rates, and to have that match up with big yield differences. The lack of N response is a testimony to what a healthy soil and routine applications of moderate manure rates can do for crop production."

Aman explained why he chose to start double-cropping. "The driving force to do this is to build soil fertility and fill a feed need. I

have a strong belief in taking care of the land. Having the winter cover will build and protect soil organic matter over time, and why not plant something that gives you good feed in the spring? In 2012 we put in about 200 acres of winter triticale. We didn't use N fertilizer on any of the acres outside of the plots and our dry matter tonnage averaged 3 tons/acre across the board. The big challenge with winter triticale is getting it harvested and making the right choice of what crop to plant after it. Initially I thought to plant it where I wanted to summer-seed alfalfa. But half the 2013 triticale acres we harvested went into soybeans. The key is to be flexible. You have to look at what the weather is doing, what your feed needs are and the field conditions, and choose your crop accordingly."

Aman's 600 cow dairy farm has a field crew to operate and grow crops on 1,100 acres. He noted, "We managed the challenge of harvesting the winter triticale because we have the crew, but it rained so much in May that it took five days to harvest and we finished on June 1<sup>st</sup>, two weeks past our goal. For us, the need it filled still made it worthwhile. The tonnage plus having another type of crop in our inventory saved us buying both wheat straw and corn silage."

Aman plans to shift his rotated cropland from 4 years in corn to 3 years in corn with the 4<sup>th</sup> year in winter triticale followed by either a short season corn hybrid, soybeans or a sorghum-sudan hybrid, depending on the season's weather and herd feed needs. He said, "I'm excited about getting more acres into double cropping. I told the farm crew, this system is the way of the future, we have to start doing this."

Aman added, "The double-cropped winter triticale is a great risk management tool. The more diversity of crops you have, the better you can handle the variations in weather during the growing season. The field work, managing the crops and trying new things is a joy and a blessing. I tease Jeff that he ought to pay us for the time he gets to spend here

joining in the fun."

"Now that I've worked with it first-hand and learned more about some of the options farmers have, I believe there's a lot of benefit to double cropping," Williard said. "Our first goal was to provide an emergency feed source, and it does that, but it also builds soil quality. The winter cover helps farms meet CAFO requirements, as it sequesters nutrients which helps protect water resources and provides fertilizer value for the following crop. It's definitely a system that needs careful management, as harvest timing and planting of the next crop can be quite a challenge on some farms."

Responses to N additions were recently compiled for the entire study. Ketterings stated, "Of all the sites, 30% did not respond to N additions while 44% needed between 75 and 100 pounds per acre. We are analyzing soil and crop management information to determine under what conditions you get an N response and when the extra N addition may not be needed. Then we can approach our goal to provide guidelines on how much N to add when the need is there."

Williard summed up his experience with the Double Crop N Rate Study. "I'm very glad to have the opportunity to continue my connection with the NMSP, and I look forward to participating in future field studies. There's always something relevant for all of us; farmers, advisors and researchers. We all learn together and help New York agriculture in the process."

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To learn about the statewide cover crop and/or double crop projects, see the NY On-Farm Research Partnership: <http://nmssp.cals.cornell.edu/NYOnFarmResearchPartnership/index.html>. Specifics for the double crop nitrogen rate studies planned for 2014 can be found at: <http://nmssp.cals.cornell.edu/NYOnFarmResearchPartnership/DoubleCrops.html>.



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The **Nutrient Management Spear Program** (NMSP) is an applied research, teaching and extension program for field crop fertilizer and manure management on dairy and livestock farms. It is a collaboration among faculty, staff and students in the Department of Animal Science, Cornell Cooperative Extension, and PRO-DAIRY. Our vision is to assess current knowledge, identify research and educational needs, facilitate new research, technology and knowledge transfer, and aid in the on-farm implementation of strategies for field crop nutrient management including timely application of organic and inorganic nutrient sources to improve farm profitability while protecting the environment. An integrated network approach is used to address research, extension and teaching priorities in nutrient management in New York State. For more information on NMSP projects and extension/teaching activities, visit the program website (<http://nmssp.cals.cornell.edu>) or contact Quirine Ketterings at [qmk2@cornell.edu](mailto:qmk2@cornell.edu) or (607) 255-3061.