



Cornell Student's Extension Research and Outreach Internship Reflects Collaboration of Campus and Field Staff

By Lisa Fields

In the summer of 2011 Aaron Santangelo experienced a hands-on internship with Cornell Cooperative Extension's (CCE) Northwest New York Dairy, Livestock and Field Crops Team led by Dr. Mike Stanyard. Santangelo, currently a junior at Cornell, has a double major in Agricultural Science Education and Animal Science. The internship was initiated in collaboration with faculty programs of Dr. Gary Bergstrom, Professor of Plant Pathology, and Dr. Quirine Ketterings, Associate Professor and Director of the Nutrient Management Spear Program (NMSP).

The internship program was one of ten funded by the College of Agriculture and Life Sciences (CAL S). Ketterings explained, "These CCE internships are a really unique opportunity for students to learn about and gain skills in the various aspects of Cornell Cooperative Extension. They're involved in applied research projects while also getting exposed to working directly with farmers, private consultants, and other farm advisors. Mike and his team and our joint projects were a great match for Aaron's background and interests. He was offered the job right after he interviewed for the position."



Cornell student Aaron Santangelo takes soil samples in a soybean field during his internship with the Northwest NY Extension Dairy, Livestock and Field Crops Team led by Dr. Mike Stanyard.

Santangelo said, "My family raised livestock as a hobby and my focus at Cornell was animal science. I had a broad understanding of crops and soils from high school FFA that piqued my interest to learn more. The internship was an excellent opportunity to deepen my knowledge and gain lots of hands-on experience with both the research process and Extension outreach work. It was a great learning experience that I would highly recommend to anyone."

Bergstrom noted, "This was a first for me, and it worked well so we are repeating it in 2012. Aaron was the eyes and ears for us across the spectrum of field crop diseases in his work region. His sampling of wheat in June for head blight (caused by *Fusarium graminearum*) contributed to a genetics research project of national interest on isolates of the fungus and a shift that's occurring in their toxin production."

Santangelo worked on a wide array of projects detailed in a [daily blog work diary](#). He described his many tasks in addition to gathering wheat samples for Dr. Bergstrom. "I worked on wheat research for Mike to determine correlations between tiller counts and heads produced. I counted tillers before and after N applications, followed by head counts later on. Each week I scouted alfalfa, corn, soybeans and wheat for insect pests as well as diseases. I set up and monitored traps for Western Bean Cutworm. In the nutrient management realm I helped NMSP staff set up and routinely sample alfalfa plots in potassium fertilizer rate trials. I also assisted Honor's student Emma Long with cover crop trials for her thesis. We soil sampled for nutrients and specifically for nitrate, plus collected plant biomass and tissue samples. I worked with Mike on a soybean foliar feeding trial of Hydrolyzed Fish Oil as a nutrient amendment."

Santangelo explained the first challenges he encountered in his internship. "After I received training in the procedures of crop scouting and sampling, a staff change left me

without a supervisor near my workplace in Batavia." The situation was quickly resolved as Stanyard became the direct supervisor, providing Aaron with instruction and guidance by phone and e-mail.

Stanyard said, "Working with Aaron was my first experience supervising a student intern. Although much of the work was new to him, he picked things up quickly and always wanted to learn more. It was great because he did above and beyond what was expected."

Santangelo also experienced the challenges involved in coordinating work with both staff and farmers. The impact of weather on harvest plans could change sampling work without advance notice. He noted long days of sweltering heat in the field and getting wet feet. "Early on I learned to always travel with rubber boots and raingear. Getting caught in a rainstorm without them was an experience I didn't want to repeat!"

Stanyard added, "A valuable thing I learned from Aaron's internship was to give up control of certain tasks. He really eased my workload, so I decided to hire him for a project through a soybean grant."

Santangelo explained, "I worked with a group of 6 Mennonite farmers in a "Tag"IPM (tactical agriculture in Integrated Pest Management) group who were new to growing soybeans. I scouted the crop for them each week and was involved in on-farm meetings to discuss the crop's progress and production concerns. It was enlightening to get to know them and their ways of farming which are very different from the other farms I worked with."

On days without pressing field tasks Santangelo rode along with Gerry Bertoldo, DVM and Dairy Specialist, and Nancy Glazier, Small Farms Specialist, both with the NWNY Team. With them, he experienced the full spectrum of Extension work with the dairy industry and participated in several grazing group meetings. A unique experience was a day with Greg Coffta, then bilingual Dairy Support Specialist with the NWNY Team, re-training Hispanic workers on milking

procedures at a large dairy farm. Santangelo noted, "I got to observe a positive outcome through the mediation process of discussion between workers and farm managers."

To gain skill with written communication, Santangelo wrote a 2 page factsheet about forage (or tillage) radishes grown in late summer as an annual cover crop. Available on the NMSP website, the factsheet provides production details and current research results. Santangelo describes the crop's potential to scavenge nitrogen from the soil, protecting water resources from N leaching and providing nutrients to a subsequent crop the next spring. He said, "This was great because of the relevance to the cover crop field trials I'd worked with. At Emma's honors thesis presentation, it was exciting to connect the work process I was part of with the results."

Ketterings added, "Developing an agronomy factsheet helps students write for a specific audience and critically evaluate their writing for effectiveness in reaching that audience. Aaron selected a topic of local interest that helped him further understand our ongoing work on cover crops led by Emma Long, honor's student in our program. Aaron did an excellent job with the factsheet."

Summarizing his 2011 internship, Santangelo stated, "It was a great fit for me. After I earn my Bachelor's degree I plan to obtain a Masters and enter the educational field. Working with Gary, Quirine and the NWNY Team expanded my knowledge of field crops and Extension and provided me with an understanding of the process of conducting research and educating the public." Santangelo will add another dimension to his experiences in summer 2012 working for Syngenta on product research in both vegetables and field crops.

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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 or (607) 255-3061.