



## Cobleskill Student Hillary Bundick Gains Research and Extension Skills During Cornell Internship

By Lisa Fields

SUNY Cobleskill Plant Science B.T. student Hillary Bundick's original career plan was to become a veterinarian. Her goal was fueled by her interest in science and love of horses. She enrolled as a Biotechnology student but after taking Entomology with Dr. Ted Bruetsch and Intro to Soils, taught by her advisor, Dr. John Kowal, she decided to change her career plan and pursue a major in Agronomy instead. "I felt that I moved from just looking around for a major to being enthusiastic. I had found a direction." Her new interest took root and she excelled.

Cobleskill B.T. students are required to do a 15-week internship which they complete in their final year. Bundick's internship was scheduled for the summer of 2009. With a major in Agronomy but no agricultural background to guide her, she was unsure of what internship to pursue. That changed when she attended the internship presentation of fellow student Chie Miyamoto's in May of 2008. Miyamoto was the second Cobleskill Plant Science intern with Dr. Quirine Ketterings' Nutrient Management Spear Program (NMSP) at Cornell University. Miyamoto's presentation inspired Bundick to pursue an internship with the NMSP.

The Cobleskill-NMSP internship program started in 2007 and evolved into a standing invitation for Cobleskill students with an interest in applied research and extension in agriculture and environmental management. Bundick, and fellow student John Weiss, joined the NMSP in the summer of 2009, the 3<sup>rd</sup> year of the internship program.

As part of their internship program, students work with NMSP staff, students, and project collaborators to gain experience in applied research and extension through laboratory and field work, writing, and interaction with extension audiences. Kowal sees this link with Cornell as a great opportunity. "As NMSP interns they are able to work directly with research in the laboratory and the field and get exposed to extension.

This is an ideal follow-up to the fundamentals and laboratory procedures they learn about at Cobleskill. Kowal noted, "Hillary was a passionate student, always asking questions, which made her a perfect candidate for an NMSP internship."



SUNY Cobleskill Plant Science major Hillary Bundick (left) and Dr. John Kowal, Professor and Department Chair of Plant Science at SUNY Cobleskill.

Ketterings greatly enjoys working with the interns and considers them essential team members for the NMSP. "We look for young people with a thirst to learn and a willingness to dive into the unknown. When they apply for the internship, I don't expect them to have all the skills and knowledge required of the professional staff, but they should have the attitude that allows them to learn."

Ketterings adds, "I try to place the interns with projects that best fit their specific interest and future goals, so each intern's program is somewhat unique." Bundick was specifically interested in laboratory research so she joined projects that involved running soil samples for the Illinois Soil Nitrogen Test (ISNT) and for

organic matter using the loss-on-ignition method (LOI). The ISNT reflects a soil's nitrogen supply potential. Bundick ran ISNTs and LOIs on samples collected from an on-farm cover crop project in eastern New York, comparing N availability to corn from rolled versus plowed-in rye. The data will be included in ongoing work on determining the N benefits of winter cover crops in the Northeast.

Bundick was excited to apply formulas and theory from her class work to current research applications. An example was an on-the-spot request to calculate titrations for doctoral student Ryan Haden. Haden's research involved soils from five different countries, examining ammonia volatilization and nitrite formation after urea or ammonium sulfate application. Bundick remarks, "I was nervous about this request, but I thought through the process I had learned in Dr. Bruetsch's Plant Nutrition class. When I completed the calculations I was told "good job!" Haden enjoyed working with Bundick and teaching her about his doctoral work, commenting that she was "really good at being my right arm."

Field activities also provided Bundick with a great learning experience. Projects that had on-farm data collection included studies on potassium and sulfur needs of alfalfa, manure application methodologies and their impact on nitrogen availability, and nitrogen needs for corn. Field activities often required a full crew and involved long days of labor. By working together, the crew ensured that tasks were done as efficiently as possible.

"I found the field work very interesting. I learned about the integrity of the whole process from the field where the samples are taken to the lab where the soil and plant analyses are done. And I learned about the involvement of extension and the farmers. Despite the hard work and long days, it was also fun working with others on the team."

Teamwork is important in the NMSP. "By working with other team members, students learn about the importance of good communication, both in the laboratory and in

the field," Ketterings explains. Within the NMSP, each person has lead responsibility for one or more projects but they often need the help of others to complete those projects successfully. "Our philosophy is that we do not exist solely to pursue our own particular interests. We exist because our work as individuals has meaning in a bigger picture of the program's purpose" Ketterings adds.

"I did not realize how interested and involved the farmers would be in our research projects," Bundick commented. This interaction emphasized the impact of relevant work that involves the end user in the entire process.

The culmination of Hillary's learning was the writing of a 2-page factsheet entitled "Enhanced Efficiency Nitrogen Sources". Bundick experienced the challenge of relaying technically correct information in language understandable to an extension audience. In the factsheet she described various technologies that can enhance N availability from fertilizer sources. She received input on drafts from Dr. Tom Bruulsema of the International Plant Nutrition Institute (IPNI) and Extension staff. "It was exciting to write something people will actually use."

What's next for Bundick? She recently visited the University of Wisconsin in consideration of pursuing her Masters of Science degree there. "Right now I'm not yet sure of my exact course of study."

Ketterings remarks, "This summer I saw Hillary work in the laboratory and in the field with our other interns, our graduate students, staff, myself and other collaborators in extension. She gained skills and knowledge in applied research and extension, with an unwavering enthusiasm that greatly inspired others in our team. I have no doubt she will be successful in any graduate degree program she undertakes."

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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.css.cornell.edu>) or contact Quirine Ketterings at [qmk2@cornell.edu](mailto:qmk2@cornell.edu) or (607) 255-3061.