



## Japanese Cobleskill Student Interns at Cornell

By Kate Birchenough

Chie Miyamoto, a recent SUNY Cobleskill graduate, spent the last 15 weeks working with Cornell University's Nutrient Management Spear Program (NMSP), for her bachelor's internship. She came to Cobleskill from Japan without any prior knowledge of agriculture, but expressed great interest in environmental science and related issues, thus leading her down the plant science path at the college.

In order to complete her bachelor's at SUNY Cobleskill, she began looking for an internship that satisfied both her academic and personal interest in the environment. Her main advisor at Cobleskill, Plant Science Professor and Department Chair Dr. John Kowal, directed her toward the Spear Program at Cornell University, after seeing the internship presentation of Wayne Berry, another Cobleskill graduate and former NMSP intern.

"I knew I was interested in soil science and laboratory work," she said. "So I asked Dr. Kowal and that is when I checked the NMSP website. What I saw on the site was very interesting, and when offered the opportunity to join the program as an intern, I decided to take it."

The college Miyamoto attended in Japan has a relationship with SUNY Cobleskill, so Miyamoto decided to make the most of her college years and study in the United States.

"I studied environmental science and related issues for my associate's degree," she said. "It was then that I had to take a soil science class – I found it really interesting; I got really into it."

She worked directly with Dr. Quirine Ketterings, of NMSP, and Cornell Nutrient Analysis Laboratory (CNAL) Director Dr. Renuka Rao on two major projects: the Illinois Soil Nitrogen Test (ISNT) project and alfalfa-sulfur project.

Miyamoto learned to conduct the ISNT in the laboratory, a soil test that was being studied for its potential to help farmers and consultants assess the soil nitrogen supply potential of fields to aid with nitrogen fertilizer decisions on farms. She developed the documentation for ISNT standard operating procedures for the test and it can now be offered as a CNAL service to growers in New York State.

Ketterings, forage specialists Debbie and Jerry Cherney, and Kevin Dietzel, a staff member at NMSP, had discussed the need for a sulfur soil test as part of their study on sulfur needs for alfalfa. The main research question was which soil test is the best index of sulfur availability for alfalfa and possibly other field crops. For this project Miyamoto searched through literature and developed both a literature summary and a research protocol and implemented the research. She selected two soils from the larger sulfur study, incubated them with different amounts of sulfur, and then once the incubation was complete, she worked with Rao and the CNAL staff to conduct five different soil sulfur tests to see which soil test



Cobleskill-Cornell intern Chie Miyamoto helps harvest alfalfa in a greenhouse sulfur application experiment.

"Chie was very focused and knew what she wanted before she knew about Dr. Ketterings' work," said Kowal. "After I saw Wayne's presentation, it all clicked."

extraction and detection methods were most promising. During her internship she also participated in a greenhouse study on sulfur needs for alfalfa, and helped with research station and on-farm field trials.

Though Miyamoto admits not having much of an agricultural background, what she learned in the classes she took, including soil fertility, plant nutrition and plant science courses, helped her understand the reasoning behind the research she was doing at Cornell.

"I was amazed at Chie's positive attitude and work ethic, even for tasks that were new to her and topics that she was asked to develop first approaches or drafts for on her own", said Dietzel, who worked closely with Miyamoto on the sulfur project.

Also Ketterings noted Miyamoto's innate ability to work independently as well as a member of the larger team.

"She started out with helping other students and staff in their projects but it did not take long for me to realize she was more than ready to undertake an independent research project of her own. She had a solid background in plant science and soil science and quickly picked up on the applications of both to nutrient management questions," said Ketterings. "It has been really great to see her take on this project, develop the protocols and gain skills in the analytical procedures."

"Chie's work contributes greatly to the extension and research missions of the Cornell Nutrient Analysis Laboratory," said Rao. "The joint project between CNAL and the Nutrient Management Spear Program gave us a chance to address a long-standing research and extension question and this was a win-win situation for Chie too. The project allowed her to gain analytical skills and get familiar with the concepts and operations of various instruments in CNAL such as inductively coupled Argon plasma (ICP) and spectrometer for colorimetric determination of sulfur content in solution. While working with us Chie had the opportunity to interact with other CNAL staff and gain first-

hand knowledge of the functioning of a service laboratory in an academic setting," said Rao.

Like other interns, Miyamoto got exposed to and involved with extension activities of the NMSP as well. She wrote an Agronomy Fact Sheet on nitrogen fixation. The Agronomy Fact Sheets series are two-pagers that explain in layman's terms a specific soil or crop management topic. When putting this together, Miyamoto immersed herself into the world of soil periodicals and journals, sorting through pages of information about N fixation. She worked with Ketterings, Cherney, and Tom Kilcer, field crop educator with CCE of Rensselaer County, and published the Agronomy Fact Sheet at the end of April.

"I greatly enjoy the opportunities to work with SUNY Cobleskill students, so when Dr. Kowal approached me about the possibility to work with Chie this year, I did not hesitate at all," said Ketterings. "The SUNY Cobleskill students we have worked with have all had a solid background in agronomy and plant sciences, shown great work ethics and the desire to learn as much as they can, and work hard to achieve goals. Chie was no exception, very successfully following in the footsteps of her predecessors."

Miyamoto, pleased with her experience, was offered a position to continue working on applied research and extension with NMSP after her graduation from SUNY Cobleskill.

"Internships like this help students take the knowledge from the classroom out into the work place," said Kowal. "It gives them a greater understanding of what is being taught; it's a nice evolution of knowledge."



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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 Sciences, Cornell Cooperative Extension and PRODAIRY. 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 [gmk2@cornell.edu](mailto:gmk2@cornell.edu) or (607) 255-3061.