Australian Exchange Student's Field Research Internship with Cornell's NMSP

By Lisa Fields

Sally Stead began her studies at the University of Melbourne, Australia, with a broad Biology focus but shifted to Agricultural Science as a sophomore. She graduated in May 2011 with a B.S. in Agricultural Science. Stead explained, "Agriculture is such a fundamental requirement of society. I'm interested in the vast opportunities it holds to shape the health of people and natural environments and feed the ever-growing world population. I realized early in college that ag is a more suitable choice as I prefer being in the "bush" to work in a biology lab."

Stead's curriculum allowed her to study abroad for a year. She joined Cornell University's Agricultural Sciences major as a senior and international exchange student in fall of 2010.

Dr. Antonio DiTomasso, Director of the Agricultural Sciences major of the College of Agriculture and Life Sciences (CALS) and Associate Professor of Weed Ecology welcomed Stead into the major. "Sally was a great student to have in our Ag Sciences program. International students like Sally bring a global perspective about agricultural issues to our students while learning how agriculture is practiced and viewed in the U.S. This interaction and exchange is critically important in today's highly globalized and interconnected economies and agricultural sector."

Toward the end of her second semester at Cornell, Stead approached Dr. Quirine Ketterings, Associate Professor and Director of Cornell's Nutrient Management Spear Program (NMSP), to ask if she could join the program as a summer intern that year.

Ketterings commented on the fit between Stead's interests and the program's initiatives. "Sally wanted to gain experience in crop and soil research in New York before heading back to Australia. She had heard about our summer internships and asked if she could join us. I did not hesitate at all to sign her up as it was clear she was eager to learn, would bring a very positive attitude and outlook to the team, and would share her own experiences living and travelling in Australia and other parts of the world."

Stead commented, "I was thrilled by the variety of work I was exposed to and the chance to learn the process and application of scientific research. During my work I think I covered most of NYS and met the spectrum of people involved in ag production and science. It was very exciting to be in a research environment where I could work directly with the people the projects are intended to benefit. I was impressed that the NMSP holds environmental protection as a research goal as I believe that's essential to consider in any production system. It was also my first time in the US. Corn isn't grown much in Australia and dairy production is pasture based. Our summer landscape is a dry and dusty vision dominated by reds, oranges and yellows rather than the lush green of corn fields. Our farmers worry about getting rain, and our winters bring frosts but we don't have much snowfall, so I experienced many contrasts to home." On a lighter note, she added, "I was thrilled when I learned I could walk into tall grass without having to stomp my feet to scare away snakes!"

Sally Stead, Australian exchange student, enjoyed learning about New York agriculture and on-farm research as a summer intern with the Cornell Nutrient Management Spear Program.

As the NMSP's project planning and work phases unfold, all team members have some

level of involvement. This ranges from participation in discussions and leading a project to hands-on work setting up and sampling research plots in the field, laboratory work and data analysis. Stead became immersed in field research tasks that were new to her and provided an in-depth view of New York agriculture. She elaborated. "I became part of the crew working on a starter nitrogen fertilizer study in corn and a fertilizer rate study in alfalfa, as well as a crop rotation experiment. It was exciting to learn about the crops, the soils, the interactions between them and weather conditions, all while getting my hands dirty with real field work. I experienced firsthand the many stages involved in collecting and processing forage and soil samples to generate data. The team was incredibly welcoming and always ready and willing to share expertise."

Stead was also assigned a project of her own using the "Solvita" test on soil samples from all phases of the Manure and Compost study at Cornell's Aurora Research Farm. Initiated in 2001, the study was designed to compare the effect of liquid dairy manure, composted dairy manure solids and inorganic N fertilizer on soil N supply to corn and after inputs cease during alfalfa production. Stead explained, "My work contributed data to a project that's determining the differences between the ability of Solvita and the Illinois Soil Nitrogen Test (ISNT) to predict the mineralizable N supply for crops. The ISNT is the current standard, and reliable, but it requires a laboratory process to get the results. Solvita is a CO_2 respiration test with a colorimetric process that is relatively simple to use. The possibility of a reliable N supply test with a quick turnaround time is an exciting development in nutrient management for farmers and the entire industry."

Ketterings explained, "I was contacted by Woods End Laboratories Inc. in Mt Vernon, Maine, with questions about the ISNT and a request to evaluate the Solvita test. The study at the Musgrave Research Farm in Aurora seemed ideally suited to such an evaluation. Sally's work with the Solvita test during her internship contributed to a very valuable database. We are wrapping up the analyses now and hope to be able to draw final conclusions this fall."

Stead commented about the perspective she gained from her internship. "I acquired a much more realistic appreciation of the challenges and priorities facing those who farm for a living. Although the work could be repetitive at times, it gave me a really rich insight into the activities behind the figures I had so often read in academic journals. I also gained a much better understanding of experimental design and the principles that must be followed to conduct a sound experiment."

Despite the contrasts between Australia and NYS, Stead noted that her work with NMSP has applied well to her position as Project Officer for Sustainable Soil Management at the Victorian Department of Primary Industry, in Melbourne, Australia. The Department of Primary Industry is analogous to the Cooperative Extension system in the United States. "Although the crops grown and climate are quite different, the principles behind the systems translated well. I learned something I could not have through academic studies alone; the capacity to apply scientific knowledge to real-life situations."

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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://nmsp.cals.cornell.edu) or contact Quirine Ketterings at qmk2@cornell.edu or (607) 255-3061.