



Cornell Sustainable Animal Agriculture Internship Gave Nikki Luijben from the Netherlands a Unique Learning Experience

By Lisa Fields

Nikki Luijben's dual citizenship in the Netherlands and the United States led to a unique learning experience at Cornell College of Agriculture and Life Sciences (CALs) in the summer of 2017. Luijben is a junior majoring in Land and Water Management (Sustainable Regional Development) at the Van Hall Larenstein University of Applied Sciences in Velp, the Netherlands.

"I chose my major because the environment is very important and I want to be part of making improvements to water and soil resources," Luijben explained. "I view myself as a global citizen, and hope to travel internationally in my career, so I looked for a learning experience in another country during college."

Luijben learned about the CALs Sustainable Animal Agriculture Internship opportunity by contacting Professor Quirine Ketterings, director of the Nutrient Management Spear Program (NMSP) in the Department of Animal Science. She said, "A colleague of mine suggested I contact Quirine. When she told me about the 2017 internship in Sustainable Animal Agriculture, I applied and was accepted. I was so excited to be able to come to Cornell!"

Ketterings added, "When Nikki contacted me, I thought she would be a great fit with our new, USDA National Institute of Food and Agriculture (NIFA)-funded, summer internship program in Sustainable Animal Agriculture. Because of her upbringing in the Netherlands and her academic background there, she could bring perspectives and experiences from a different country and continent. This presented a unique opportunity both for Nikki and the other eight students in the program. In addition, I had hosted interns from the same school in the past and was really happy to be able to re-establish connections through our summer internship program."

Luijben was the only student in the 8 week internship with a background in soil and water management. "The other students were either

Animal Science or pre-veterinary majors," Luijben noted. "This was my first opportunity to learn about animal and plant sciences. The focus of my courses has been hydrology, civil engineering, planning and soils. It was a great experience to be exposed to topics I don't learn about in my studies at home. I learned that environmental issues connected with my major studies are also very much part of animal and crop production."



Nikki Luijben, junior majoring in Land and Water Management at the Van Hall Larenstein University of Applied Sciences in Velp, the Netherlands, was one of nine interns in the summer 2017 Sustainable Animal Agriculture Internship Program of the Animal Science Department in CALs at Cornell.

The seminar format of the internship was particularly satisfying for Luijben. "Each week we were given a topic to explore. Monday there was a lecture presentation and then we were given questions to develop answers to, along with reading assignments, field trips and sometimes lab work relative to the lecture topic," she explained. "We worked together in small groups to develop responses to each week's questions. At times that involved further

reading and literature reviews. We also each wrote a reflective weekly blog. On Fridays we presented our responses in a larger group discussion. The discussion format was a new way for me to interact with other students. It helped me improve my communication in English, and it was also a lot of fun. It was an amazing experience to have the interaction with the professors and staff, too."

The Sustainable Animal Agriculture internship curriculum included nutrition and reproduction and ethical-humane treatment of both dairy cattle and companion animals. Crop production and soils topics included nutrient management on dairy farms, plant breeding techniques and genetic engineering. The integration of research and extension was included in many of the assignments and field experiences. Field trips included the Musgrave Research Farm Field Day in Aurora, NY, and visits to the plant breeding field research site on campus, the Cornell Veterinary College and small animal clinic, dairy farms, and the Miner Institute in Chazy, NY.

Luijben described some highlights of her internship experience. "I learned about the technical processes of genetically modifying organisms. That was super interesting and really relevant. Hearing about the conflicts that are part of the use of GMOs was surprising, and we had very informative and thoughtful discussions. A really exciting activity for me was cloning DNA in the lab. I was thrilled to have the opportunity to actually do that!"

Along with new topics, Luijben also enjoyed applying her background knowledge to an assignment centered on a case study of Owasco Lake water quality issues, led by Judy Wright of Cornell Cooperative Extension of Cayuga County, and Karl Czymmek of the PRODAIRY Program at Cornell University. "I got to use my knowledge of hydrology, soils, engineering and planning in our discussions about the conflicts between the farmers and non-farmers and suggested solutions," Luijben said. "The problem the community faces to find acceptable voluntary guidelines for managing manure

relates to other challenges faced by communities throughout the world. It was a really valuable and relevant assignment."

Luijben's individual project also related to managing water quality. The title was 'Evaluation of Three Whole Farm Nutrient Assessment Systems for their Potential Impact on Nutrient Use Efficiency.' Under guidance of Mart Ros, postdoctoral researcher with the NMSP, Luijben compared three programs, Cornell's Nutrient Mass Balance Assessment, the Netherlands' Annual Nutrient Cycling Assessment (ANCA) and New Zealand's Overseer nutrient management guidelines. "I learned about the approaches and examined the impact of each program on farms' nutrient levels over time. I presented to the group in week 6 of the program, and also prepared a poster that I presented at the end of the internship," Luijben explained. "In addition, at the Musgrave Research Farm Field Day I did a presentation together with graduate student Sarah Lyons. The guidance I got to put together the information and to speak to an audience about it was very helpful to improving my presentation skills."

Expressing her enthusiasm about the overall experience, Luijben said, "It was amazing for me to be around so many really smart people who are so dedicated to their work and also very friendly and helpful. The connections I made mean a lot to me and will be important when I graduate and start a career." She added, "I plan to work internationally, to see other places in the world and to help solve environmental problems. I may decide to go to graduate school, but first I want to experience other cultures and develop my working skills. The exposure I had to the technology and methods of farming here, along with the issues New York farmers face, was a very valuable first step toward my future career."

(August 22, 2017)



Cornell University
Cooperative Extension



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.