

John Kuhn: Ag Science Intern, Plant Disease Hunter – by Bob Hoffman

John Kuhn spends the school year studying agricultural biotechnology in Pullman, but this past summer the Rosalia native moved to Mount Vernon to serve as an intern under Vegetable Seed Pathologist Lindsey du Toit at the Northwestern Washington Research and Extension Center.

Kuhn was inspired by du Toit when, as a guest lecturer, she spoke about a plant pathology issue in one of his classes. When CAHNRS initiated a “translational internship” program to offer structured undergraduate internships in specific fields of study, Kuhn jumped at the chance to serve under du Toit.

The internship was designed so Kuhn could assist du Toit and several graduate students in their research, while working on his own project. At times he has conducted soil dilution platings, a method to determine fungal or bacterial concentrations in soil by screening and diluting soil samples, and then placing dilutions of various concentrations onto growth media. He also spent time watering and transplanting plants and recording data in the field.

Kuhn had an extraordinary opportunity to advance science while learning about the nationwide implications of plant pathology issues when he traveled to the nation’s “Salad Bowl” of Salinas Valley in California. Most of the nation’s commercial spinach seed is grown in western Washington and Oregon, although most of the spinach we eat is grown in California. du Toit was conducting trials with a California grower to determine how a fungus that is frequently present on spinach seeds might be affecting lettuce that is grown in rotation with the spinach. With Salinas growers buying huge amounts of spinach seed from Washington—to plant up to 3 million seeds per acre—and also producing 70% of the nation’s lettuce, the answer has a huge implication for nationwide commerce and the dinner of every American.

Kuhn travelled at university expense to California to help harvest a spinach crop, and then take samples of the remaining spinach plants—roots and stems—and place samples on a growth medium to measure the presence of the fungus. While there, he worked in a private research lab and met with growers and field managers. “This trip allowed John to see how cooperation between private and public research can help develop real solutions for agriculture,” said du Toit.

For his own project, Kuhn tried to identify the presence of a specific bacterial leaf blight in Washington. This leaf blight affects beets and Swiss chard. “It can cause problems with yield and the productivity of the plant as a whole,” explained Kuhn. The problem is that this blight, while suspected to be present in Washington, has never been identified through a peer-reviewed, scientific process in Washington, making it hard for researchers to receive USDA approval to work with the bacterium within the state.

While Kuhn was unable to isolate the targeted bacterium from the samples he received from seed companies, said du Toit, “he had good exposure to complications involved in identifying bacteria. He also learned that multiple methods can be used to identify bacteria, and he learned appropriate control treatments.”

Kuhn was enthusiastic about his opportunity to travel from the wheatlands of his home to the lush, green fields of Mt. Vernon for the internship. “Having access to faculty members off campus is very beneficial, because of the diversity of agriculture in Washington State,” he said. “Working with Dr. du Toit has been an amazing experience. She opens all doors of opportunity and allows students to get hands-on experience, and explains in great detail the practical applications of the research project.”