Kelly Gude is a PhD student in Horticulture with emphasis on nutritional values of fruits and vegetables. Read on to find out how her effort related to the global food system and what led her to K-State.

1. What is your area of study?
   I am a graduate research and teaching assistant in the Department of Horticulture and Natural Resources while receiving my Ph.D. in Horticulture. My dissertation research surrounds nutrition chemistry and the effect that light intensity and spectral quality play on the nutrient density of fresh vegetables. High tunnels and other protected environment production is becoming more common for fruit and vegetable production (i.e. greenhouse and indoor systems). This is because the environmental protection encourages higher yields, as pest presence and temperature variations are subdued in a protected environment. However, there are some inconsistent results regarding the effect that the plastic used within protected environments has on the nutrient (phytochemical) accumulation of the commodity. Phytochemical accumulation increases in response to stresses (i.e. high light, pest presence, high temperatures, etc.), which are lessened in protected systems. I am testing the effect of 6 different overhead plastic treatments in a high tunnel system to understand how they affect the phenolic and flavonoid (phytochemical) accumulation within specific tomato and leaf lettuce varieties.

2. How does this area affect the food system?
   Protected agriculture systems are common production practices and have increased rapidly throughout the last few decades. The human diet relies on the beneficial phytochemicals from fresh fruits and vegetables as antioxidants. Consumers assume the fresh commodities purchased from the grocery store are packed with those antioxidants gained through plant development. If we continue to grow within these protected environment systems, we need to have a greater understanding of the proper overhead plastic to use to enhance both crop yield and nutrient density.

3. How did you decide to pursue this area of study?
   I received my B.S. in Food Science and interned for a professor performing antioxidant extraction of aronia berries, which are dubbed a “superfood”. They have antioxidant levels greater than both acai berry and blueberry. I wanted to work with nutrition quality of fresh fruit and vegetables. I worked in the postharvest R&D department at Driscoll’s Berries in Watsonville, CA between my M.S. and Ph.D. studies. This experience solidified my interest to continue with my Ph.D.

4. What course(s) do you recommend to other students who are seeking to build understanding of the food system?
   I would suggest the ‘Urban Study Tour’ which takes place in the fall, annually. Each year, it occurs in various locations with a rising presence in urban agriculture. The students actively learn about the logistics, operations, management, technology, livestock, etc. that accompany an urban agriculture operation. ‘Plant Stress’, HORT 960, is another course that delves into the effect the environmental stresses have on plant development. This is especially applicable for all people within the agriculture sect due to changing environment patterns.

   I have also had the opportunity to be a co-P.I. on a USAID project, aiming to enhance postharvest handling and technology capacity in Tanzania. In Tanzania, there is approximately
50% loss of fresh fruit and vegetable postharvest. During the two-year project, we aim to educate agronomists on the importance of postharvest practices and help them to disseminate the information to growers and distribution centers with short courses and hands on practice.

I would suggest to say yes to opportunities to present, teach, and deepen your understanding of agriculture – especially when it is a bit outside of your niche expertise.

5. What are your plans for using this information after you graduate? I wanted to have my dissertation research surround applicable technology, as I have future aspirations to work for the industry sector of fresh fruit and vegetable production. I would like to enhance the nutrient content and bioavailability within fresh commodities for the end-user (consumers).