



Undergraduate Research Assistant

Sustainable Cropping Systems Lab, University of Minnesota

Principal Investigator: Dr. Jacob Jungers

The [Sustainable Cropping Systems Lab](#) at the University of Minnesota-Twin Cities is seeking 2-3 Undergraduate Research Assistants (URAs) to work in our lab beginning in the Fall 2021 semester. These paid positions offer opportunities to support research focused on improving agricultural sustainability. Students with an interest in ecology, horticulture, food systems, agronomy, botany, soils, or other agricultural fields are encouraged to apply.

About the Lab

The Sustainable Cropping Systems Lab contributes to the development of new crops and cropping systems that improve agricultural productivity while reducing the environmental footprint of food, fuel, and fiber production. The research includes agronomic trials on new crops such as Kernza® perennial grain (*Intermediate wheatgrass*), as well as studies focused on management of existing crops like alfalfa, pastures, small grains, corn, and soybean. We study organic production and measure environmental impacts of cropping systems including greenhouse gas emissions, nutrient loss, and soil erosion.

Commitment to Justice

We believe that our work is made more creative, novel, and impactful through having a diverse team. The Sustainable Cropping Systems Lab is committed to providing opportunities for students of color and other underrepresented individuals in science to become future leaders in the field. We are a proud equal opportunity employer. All qualified applicants are strongly encouraged to apply, especially those who have been marginalized due to race, color, religion, gender, gender nonconformity, sexual orientation, national origin, genetics, disability, age, or veteran status.

Position Description

Undergraduate Research Assistants will support daily activities within the lab, as well as have the opportunity to take on leadership roles where suitable. Common tasks include sorting harvested plants into groups (e.g. crops vs. weeds), counting plant parts (e.g. stems, seed heads, roots), and weighing

dried biomass and soil samples. When applicable, URAs will be trained on machinery to wash roots from soil samples, grind biomass, and thresh seed and grain from harvested plants. Additional tasks could include tracing images of roots with specialized software and/or preparing seed samples for imaging and analysis. URAs will conduct lab work to address the following questions:

1. How much nitrogen fertilizer is required to maximize Kernza grain yields?
2. How can we terminate deep-rooted perennial crops while conserving the carbon they allocated belowground?
3. How do perennial crops respond to extreme droughts and floods compared to annual crops?
4. How does the frequency and intensity of alfalfa harvest affect root growth and carbon sequestration?
5. How does grazing a perennial grain crop affect future grain yields and soil properties?
6. Can we intercrop legumes into stands of perennial grain crops to provide nitrogen and eliminate synthetic fertilizers?

Many of the tasks conducted in the lab are essential for conducting research in the field of plant science. Importantly, URAs will work alongside the entire lab team including graduate students, post-docs, lab technicians, collaborating faculty, and external partners. URAs will participate in lab meetings and have the opportunity to present their work with the group. This is an excellent opportunity to begin a career in science.

This is a part-time position at \$12/hour beginning in the Fall 2021 semester. Opportunities to continue working through the Spring 2022 semester are available and contingent on funding. A minimum commitment of 10 hours per week is desired. Scheduling of work hours between 8 am and 5 pm is flexible to accommodate classes and other commitments. These positions will report to the Lab Manager and are primarily based at the SCS lab located in the Crop Research Building on the UMN St. Paul Campus. There will also be opportunities to travel to the [Rosemount Research and Outreach Center](#) and other research sites to conduct fieldwork are available.

How to Apply

To apply for the Undergraduate Research Assistant position, please complete [this form](#):

https://docs.google.com/forms/d/e/1FAIpQLSe5Zh-CYCpOjXPsfAw61dxU1TO2u2zTFutDw5Gsa8HWPB7E9w/viewform?usp=sf_link.

Interviews will be conducted with qualified applicants on a rolling basis beginning on September 13 and will continue until all positions are filled.

Any questions related to this position or the application process can be directed to Lab Manager Katherine Bohn (kbohn@umn.edu).