

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Alfalfa Root

Physiology and Morphology

Opportunity Reference Code: USDA-ARS-2022-0095

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0095

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A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. Click [here](#) for detailed information about acceptable transcripts.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

All documents must be in English or include an official English translation.

Application Deadline 3/28/2022 3:00:00 PM Eastern Time Zone

Description *Applications may be reviewed on a rolling-basis.

ARS Office/Lab and Location: A research opportunity is available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Plant Science Research Unit located in St. Paul, Minnesota.

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency with a mission to find solutions to agricultural problems that affect Americans every day from field to table. ARS will deliver cutting-edge, scientific tools and innovative solutions for American farmers, producers, industry, and communities to support the nourishment and well-being of all people; sustain our nation's agroecosystems and natural resources; and ensure the economic competitiveness and excellence of our agriculture. The vision the agency is to provide global leadership in agricultural discoveries through scientific excellence.

The mission of the Plant Science Research Unit at St. Paul, Minnesota is to develop new knowledge of the fundamental processes controlling energy content, crop yield, crop quality and use of alfalfa, soybean, oat and wheat; and to use this knowledge to develop germplasm and crop management schemes that increases farm profitability and sustainability.

Research Project: Unique alfalfa germplasms were developed for root system architecture and nitrogen fixation. The participant will be involved in growth chamber and field experiments to evaluate nitrogen fixation, above ground and below ground biomass production, carbon sequestration, winter survival, wet soil tolerance, and microbial interactions in these unique materials. Crosses to combine traits and to evaluate inheritance will also be carried out. The participant will have the opportunity



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to collaborate in QTL mapping and genomic selection for these traits.

The participant will conduct experiments using ^{15}N to measure nitrogen fixation in growth chamber experiments and conduct field experiments to measure root and shoot biomass and other agronomic traits. The participant will collaborate with geneticists to carryout genetic crosses and evaluate progeny.

Learning Objectives: The participant will learn how to measure nitrogen fixation in legumes using radiolabeled isotopes, how to evaluate agronomic traits in field experiments, and methods used in plant breeding and genetic analysis. The participant will gain experience in conducting controlled environment and field experiments with a major field crop.

The project will provide opportunities to learn methods in plant physiology and genetics and to collaborate with a team of plant breeders, agronomists, and plant pathologists. Novel methods in plant phenotyping and breeding will be used in the project. It is anticipated that the participant will be the co-lead author on several publications from the research and hone scientific writing and communication skills.

Mentor(s): The mentor for this opportunity is Deborah Samac (debby.samac@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: April 2022. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed for up to three years upon recommendation of ARS and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details page](#) of the program website for information about the valid immigration statuses that are acceptable for program participation.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process please email USDA-ARS@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have recently received a doctoral degree in

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Agronomy, Plant Breeding, or Plant Physiology, or be currently pursuing the degree with completion by June 1, 2022.

Preferred skills:

- Interest in field research and plant improvement
- Experience in nitrogen fixation and/or nitrogen physiology in plants

**Eligibility
Requirements**

- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Environmental and Marine Sciences** (3 )
 - **Life Health and Medical Sciences** (11 )