

Opportunity Title: USDA-ARS Postdoctoral Fellowship on Soil Processes at

Ryegrass Root - Fragipan Interface

Opportunity Reference Code: USDA-ARS-2022-0356

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0356

How to Apply **Connect with ORISE...on the GO!** Download the new ORISE GO mobile app in the [Apple App Store](#) or [Google Play Store](#) to help you stay engaged, connected, and informed during your ORISE experience and beyond!

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. 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 12/26/2022 2:57:41 PM Eastern Time Zone

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

ARS Office/Lab and Location: A postdoctoral research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), National Laboratory for Agriculture and the Environment located in Ames, Iowa.

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 of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Research Project: The USDA-ARS National Laboratory for Agriculture and the Environment conducts research that integrates fundamental principles of soil, water, and air in cropping, animal, and watershed systems to enable more sustainable crop production, enhanced agricultural system



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efficiency, and improved environmental quality. Its research agenda includes process-level investigations into the chemical, biochemical, and microbiological processes underlying these systems. This project will investigate the soil processes involved in effective use of ryegrass cropping as a management option to break down subsoil fragipan layers. It will seek to identify the biochemical and microbiological processes that occur at the interface of annual ryegrass roots with fragipan layers. The extent of these processes will be related to defined field treatments and to regional variability in fragipan properties. This research will include chemical/mineralogical characterization of fragipans at varying degrees of degradation, biochemical characterization of ryegrass roots and their exudates, and microbiological identification of communities that form within the ryegrass rhizosphere. This project will collaborate with USDA-ARS researchers having appropriate analytical skills.

Learning Objectives: As a result of this training, the participant will improve their skills in chromatographic analyses for soil carbohydrates, amino acids, and organic acids, analyses for soil microbial communities, and chemical digestions of/analyses for soil minerals. This research might also call for novel descriptions of soil physical properties.

Mentor(s): The mentor for this opportunity is Daniel Olk (dan.olk@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

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

Appointment Length: The appointment will initially be for two years, but may be renewed 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

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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 received a doctoral degree in one of the relevant fields, or be currently pursuing the degree with completion before December 31, 2022. Degree must have been received within the past four years.

Candidates with successful research experience in process-level soil science, including soil biochemistry, chemistry, and/or microbiology are encouraged to apply.

**Eligibility
Requirements**

- **Degree:** Doctoral Degree received within the last 48 months or anticipated to be received by 12/31/2022 11:59:00 PM.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (1 )
 - **Earth and Geosciences** (2 )
 - **Environmental and Marine Sciences** (1 )
 - **Life Health and Medical Sciences** (2 )