

**Opportunity Title:** USDA-ARS Postdoctoral Fellowship - Applying Process-Based Cropping System Models for Conservation Practices

**Opportunity Reference Code:** USDA-ARS-NEA-2026-0178

**Organization** U.S. Department of Agriculture (USDA)

**Reference Code** USDA-ARS-NEA-2026-0178

**How to Apply** *To submit your application, scroll to the bottom of this opportunity and click APPLY.*

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.

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**Application Deadline** 6/19/2026 3:00:00 PM Eastern Time Zone

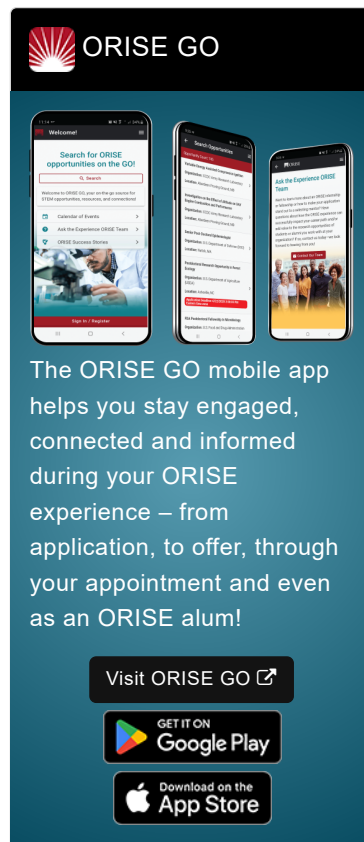
**Description** \*Applications are reviewed on a rolling-basis.

**ARS Office/Lab and Location:** A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), located in Beltsville, Maryland.

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.

The Adaptive Cropping Systems Laboratory (ACSL) at the USDA-ARS Beltsville Agricultural Research Center (BARC) in Beltsville, Maryland conducts integrated experimental and modeling research to understand how crops respond to key abiotic factors such as weather, soil conditions, and management practices. Our team designs and carries out controlled experiments and develops, validates, and applies advanced mathematical models to investigate a wide range of agricultural challenges, including the impacts of extreme weather on crop production, food security, on-farm resource management, and farmer competitiveness.

**Research Project:** Conservation practices, including cover crops, crop

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rotation, and no-tillage, are profoundly important for U.S. agriculture, contributing to its productivity and resilience. The Postdoctoral Program of the USDA ARS offers research opportunities for motivated postdoctoral fellows interested in applying process-based cropping system models to quantify the short- and long-term effects of these conservation practices on soil health and crop productivity for U.S. growers.

This specific project seeks to develop cutting-edge decision support tools for accurately predicting cash and cover crop performance across key U.S. crops, including maize, soybean, wheat, cotton, and cereal rye. By integrating advanced Artificial Intelligence (AI) and Machine Learning (ML) techniques with process-based crop models, this research will empower farmers to optimize conservation practices, increase profitability, and ensure long-term land productivity.

**Learning Objectives:** Through mentorship, you will learn about and gain experience in:

- Leveraging extensive crop and soil sampling data from long-term field experiments across multiple U.S. states to evaluate the long-term effects of conservation practices.
- Evaluating and improving mechanisms embedded in existing crop models to better reflect the interactions among plants, soil, environment, and management.
- Contributing to modeling studies that implement the full scope of conservation practices to simulate their effects on soil health and crop yield.
- Helping tool development to support growers' strategies on cover crop selection, crop rotations, and cash crop management under interannually varying weather conditions.
- Investigating AI/ML-based methodologies to integrate real-time field observations into process-based modeling to improve prediction accuracy.

Through this educational experience, you will develop advanced skills in process-based cropping system modeling, data analysis, and the application of AI/ML techniques in agricultural research. You will also gain a holistic understanding of the entire research data lifecycle, from experimental design and data collection to model development, evaluation, and the translation of scientific findings into practical decision support tools.

**Mentor(s):** The mentor for this opportunity is Eunjin Han ([eunjin.han@usda.gov](mailto:eunjin.han@usda.gov)). If you have questions about the nature of the research, please contact the mentor(s).

**Anticipated Appointment Start Date: September 14, 2026.** 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 upon recommendation of ARS and is contingent on the availability of funds.

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**Level of Participation:** The appointment is full time.

**Participant Stipend:** The participant will receive a monthly stipend commensurate with educational level and experience. **The anticipated stipend range is \$63,940 - \$68,202 annually.**

**Citizenship Requirements:** This opportunity is available to U.S. citizens only.

**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 [ORISE.ARS.Northeast@orau.org](mailto:ORISE.ARS.Northeast@orau.org) and include the reference code for this opportunity.

**Qualifications** The qualified candidate should be currently pursuing or have received a doctoral degree in the one of the relevant fields. Degree must have been received within the past five years, or anticipated to be received by 9/1/2026.

**Preferred skills:**

- Experience in process-based crop, soil, or hydrological modeling.
- Proficiency in Python and other programming languages (Fortran and C/C++ are a plus).
- Familiarity with various cash and cover crop management practices in U.S. agriculture.
- Experience in machine learning.
- Strong computational skills.
- Strong oral and written communication skills.


**Stipend** \$63,940.00 – \$68,202.00 Yearly

**Point of Contact** [Janeen](#)

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
  - **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 9/1/2026 12:00:00 AM.
  - **Discipline(s):**
    - **Computer, Information, and Data Sciences** (1👁)
    - **Engineering** (5👁)
    - **Environmental and Marine Sciences** (1👁)

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- **Life Health and Medical Sciences** ([5](#) )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).