

What is SAS Soil to Society?

This project is funded through the USDA's Agriculture and Food Research Initiative's (AFRI) Sustainable Agriculture Systems (SAS) program. This 5-year, \$10 million project employs researchers from Washington State University, Johns Hopkins University, Viva Farms, USDA-ARS and Kansas State University in the crop and soil sciences, food science, and health and medicine disciplines to create more nutritious, affordable, and accessible whole grain-based foods.

Updates

We are now officially into year 2 of our 5 year grant! Each of our project teams are collaborating to reach established project objectives and experiencing exciting achievements.



Project team members discussing variety trials at WSU Mt. Vernon Research & Extension in Mt. Vernon, WA.

The **Soil & Cropping Systems Team** has planned and implemented rotational soil management trials in Mt. Vernon, WA and Pullman, WA to look at the impacts of soil and crop management on soil health, production sustainability, and crop yield and quality. The trial in Mt. Vernon, WA includes winter wheat and spring barley with treatments investigating the effects of residue management, tillage intensity, and compost amendments. The trial in Pullman, WA includes winter wheat, spring barley, and peas with treatments investigating lime additions, residue management, and no-till versus conventional tillage. Baseline samples for soil health properties were collected in both trials before treatments were implemented, and soil fertility samples were collected prior to crop planting. Barley lines from the mini world barley core collection (MWBCC) have also been identified for future field crosses and nutritional testing. Varieties identified as desirable by the Soil & Cropping Systems will be utilized for further processing by The Food Science & Products Team.

The **Food Science & Products Team** has been recruiting personnel and conducting preliminary work on the functionality of baking with whole grains through the Approachable Loaf program. This has been carried out at several WSU Breadlab workshops and the annual meeting for this grant, where all the food for two days was whole grain and related to this project. Learn more about the [Approachable Loaf](#) and the [WSU Breadlab](#).



WSU Breadlab's Approachable Loaf.

The **Population and Social Science Team** spent the first year conducting a literature review identifying what motivates consumers to eat whole grain foods. This review includes (1) Prior studies exploring drivers of consumption of pulses and whole grains (2) Challenges related to consumption (3) Evidence linking consumption to human health (4) Discrete choice experiments relevant to future work (5) Studies using similar methods as the team intends to use. The information collected on consumer habits will serve as the foundation for future food product creation and marketing.

The **Human Health and Nutrition Team** is finalizing the protocol for the nutrition testing that will be conducted in years 3-5, including the installation of an anaerobic chamber necessary to analyze the digestive byproducts of these grain varieties and conclude overall nutritional value of project varieties. This nutritional testing will look at fiber, proteins, and phytochemicals, all of which have been shown to alter the gut microbiome. The diverse nutrient profiles of the selected crop varieties are likely to differentially affect the gut microbiome and will be further explored through *in vitro* testing.

The **Education Team** is focusing on both student and farmer continued learning opportunities by focusing on the creation of a high school internship program and curriculum development. Viva Farms has conducted preliminary outreach to 15 food service directors and administrators across 6 school districts to share the details of the project and maintain relationships in preparation for future educational and food service opportunities. Viva Farms is engaged directly in supporting 12 elementary school gardens with planting instructions and hands-on demonstrations across 6 school districts. Four varieties of flint/dent corn were planted at various gardens and maintained and processed with/by students. Students were also taught to save seed for future use in the project.



Dr. Franck Carbonero and Dr. Patrick Solverson, both part of the Human Health and Nutrition Team, enjoying a field tour in Pullman, WA.

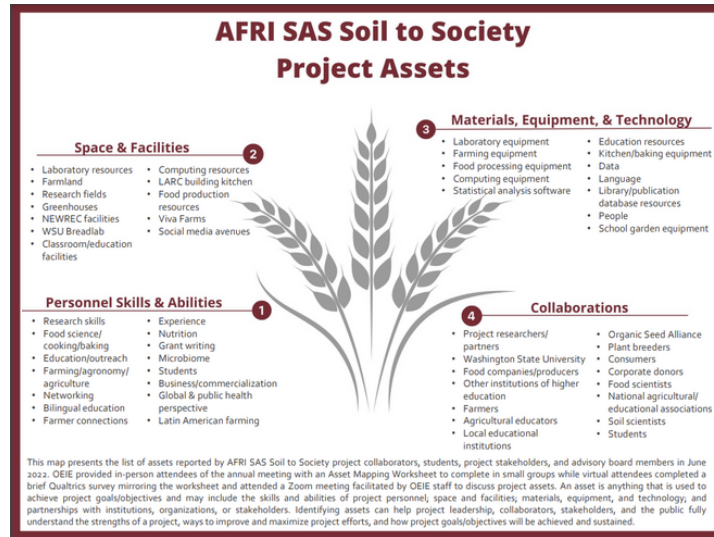
[Read the Full Annual Report Here >](#)

Meet the Kansas State University OEIE Team

The Office of Educational Innovation and Evaluation (OEIE) at Kansas State University (K-State), serves as the external evaluator for the AFRI SAS Soil to Society project, to monitor and evaluate project implementation, progress toward objectives, and outcomes/impacts. The evaluation includes:

- **Formative evaluation to assess performance on project activities and provide feedback to support decision making for project planning and improvement**
- **Summative evaluation to assess and document major accomplishments of the project, including outputs as well as outcomes/impacts for stakeholders**

At the Year 1 annual meeting, OEIE staff Kristin Wright and Laurel Schmidt facilitated an asset mapping activity to identify project assets and encourage collaboration. Below is the map created from the asset mapping results.



[Read the Asset Mapping Summary >](#)

Thank You to Our Partners!



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kmurphy2@wsu.edu
ali.schultheis@wsu.edu



Check out our project website