SPOTLIGHT - Sustainable Agricultural Systems Coordinated Agricultural Projects (SAS CAPs)

A project of the USDA, the Agriculture and Food Research Initiative (AFRI) Sustainable Agricultural Systems Coordinated Agricultural Projects (SAS CAP) aim to transform the U.S. agricultural system with interdisciplinary and collaborative projects, taking a visionary approach to address current needs while anticipating future environmental, social, and economic impacts, mitigating potential future challenges, and delivering societal benefits. This long-term, cross-sector approach will allow CAP studies to address complex topics that other projects cannot. Focus areas include sustainable agricultural intensification, climate adaptation, value-added innovation, and food and nutrition translation. Major expected outcomes include improved access to safe, nutritious, and sustainably produced agricultural products as well as improved quality of life and economic opportunity for rural Americans and others involved in food and agriculture. In addition, these projects help fund graduate and undergraduate research opportunities and train agricultural workers.[5]

a. Kernza®CAP

The Kernza®CAP is a five-year, $10 million grant funding continued development of intermediate wheatgrass (Kernza® perennial grain), which saw its first commercial release in 2020 with the variety MN-Clearwater. The KernzaCAP is led by multiple partners at the University of Minnesota and The Land Institute with a full project team that includes researchers, nonprofit organizations, topic specialists, farmers, industry partners, and others across a number of states and institutions. The project has six main objectives: advance germplasm and trait evaluation; enhance agronomic and on-farm knowledge; improve environmental quality; engage education, extension, and policy; develop supply chains and economic drivers; and intentional integration. There is a strong project focus on whole systems thinking, acknowledging that perennial crops must be coupled with supportive policies, education and behavior change, market pull, and a reexamination of equity and emphasis on community-driven regionalized economic models to truly activate transformative change.

Credit: Jacob Jungers

b. IPREFER (Integrated Pennycress Research Enabling Farm & Energy Resilience Project)

Credit: David Marks

IPREFER is a five-year, $10 million grant funding research focused on increasing winter pennycress production through agronomic and genomic methods and developing the supply chain, especially addressing post-harvest seed management. This project also aims to develop education and extension networks to boost adoption and profitability by training farmers, workers, and scientists. IPREFER includes collaborators at six Midwestern universities, the USDA, the Agricultural Utilization Research Institute, McLean County SWCD, and CoverCress Inc. as a commercial partner. Beginning in 2013, CoverCress Inc. has done extensive research to develop CoverCress, an improved variety of pennycress that is ideally suited for production of edible oil, biofuel, and high-protein feed. Since joining the IPREFER project in September 2019, CoverCress Inc. has secured $13 million in additional research and development funding and contributes essential work on both agronomic and value chain development.

Pennycress is a prime example of collaborative success. Considered a weed for centuries, it is now a recognized agricultural crop in both Illinois and Minnesota after less than a decade of intense breeding and domestication efforts. Significant efforts in trait discovery in pennycress were spearheaded by Dr. Ratan Chopra and Dr. David Marks, and led to the identification of key domestication traits that are being integrated into elite pennycress varieties. This progress offers farmers both new economic opportunities and a system that helps protect their soil and water resources.

c. Grassland 2.0

Credit: Elizabeth Spratt

Grassland 2.0 is a five-year, $10 million dollar grant focused on supporting profitable farms and healthy people, emphasizing that we can have both thriving, diverse communities as well as clean water, flood mitigation, climate stability, and biodiversity. It requires a paradigm shift from a model that maximizes yields of shallow-rooted plants through fossil fuel inputs and soil disturbance to one focused on well-managed

grazing on perennial grasslands, restoring many of the natural prairie ecosystem services like clean water and wildlife habitat. Grassland 2.0 highlights the need for all stakeholders to be a part of the movement: farmers using sustainable practices, processors and distributors who contribute to value-added supply chains, and consumers buying grassland-based meat and milk, as well as policies and incentives to support needed changes. Some specific examples of action items are for farm input suppliers to develop and market products that help restore grasslands without harming the environment; for policy makers to support transformative, rather than incremental change; and for consumers to shift demand from grain-fed meat and dairy to grassland products. Grassland 2.0 also connects farmers interested in grazing with resources and training.

Boone River, IA - Credit: Eileen Bader

Grassland 2.0 is led by UW-Madison and supported by a team that includes researchers, nonprofit organizations, topic specialists, farmers, industry partners, and others across a number of states and institutions.