



USDA-NIFA Awards \$10M Grant to NC State, USDA-ARS to Advance Cover Crop Research

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Raleigh, NC: The U.S. Department of Agriculture’s National Institute of Food and Agriculture has awarded a five-year, \$10 million grant to North Carolina State University (NC State) and USDA-Agricultural Research Service (USDA-ARS) to lead a collaborative, nationwide effort to enhance agricultural systems through the use of cover crops and precision agriculture technology.

The project is led by Dr. Chris Reberg-Horton, Assistant Director of Collaborative Research at CEFS and Professor of Cropping Systems at NC State, and Dr. Steven Mirsky, Agro-Ecologist with the USDA-ARS. Additional NC State College of Agriculture and Life Sciences (CALS) faculty will take part in the project, including Dr. Edgar Lobaton, Associate Professor in NC State’s Department of Electrical and Computer Engineering, Dr. Ramon Leon, Assistant Professor in Weed Biology and Ecology, and Dr. Alex Woodley, Assistant Professor in Sustainable and Organic Soil Fertility.

The interdisciplinary team working on this project – consisting of nearly 100 scientists at 36 institutions in 23 states – includes crop experts, social scientists and computer modelers who will research how cover crops can impact key factors like pest and disease pressure, water use, soil nutrient levels, and overall yield of cash crops such as soybeans, corn, and cotton. The existing research network, called [Precision Sustainable Agriculture](#), will expand in order to collect more types of data from more locations, with diverse climates and different soil types.

The teams will also work to develop a suite of new tools, from online and cloud-based platforms to on-farm monitoring systems, decision-support apps, machine learning, and data management to improve performance, profitability, and sustainability in farming systems. The goal is that these new tools and research findings will help farmers make more informed agricultural management decisions specific to the unique conditions of their operations. “Cover crop farmers want to know when to plant their cash crops and how [...] to manage their nitrogen,” Reberg-Horton said. “We’re developing different studies that are documenting nitrogen availability and how to adjust that nitrogen based on your management of your cover crops. A big part of the central theme in this grant is to build decision-support tools.”

The project aims to accelerate the adoption of cover crops to address challenges in agriculture and to create more sustainable and adaptable growing systems in the face of declining soil fertility, water scarcity, and climate change. “Today individual farmers are making management decisions such as whether to grow cover crops, what types to plant and when to kill them,” Reberg-Horton said. “By collecting data across our vast network about what decisions they make and how that impacts cash crop yields, we can learn faster together.”

The Center for Environmental Farming Systems is a partnership of North Carolina State University, North Carolina Agricultural and Technical State University and the North Carolina Department of Agriculture and Consumer Services. CEFS develops and promotes just and equitable food and farming systems that conserve natural resources, strengthen communities, improve health outcomes, and provide economic opportunities in North Carolina and beyond. For more information please visit www.cefs.ncsu.edu.