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New research funding will show how climate change affects corn-based cropping systems

Lamberton, Minn. (2/18/2011) – A new \$20 million grant will involve research on keeping Midwest corn-based cropping systems resilient in the face of future climate uncertainties. The grant, announced today by the Department of Agriculture's National Institute of Food and Agriculture (USDA-NIFA) involves nine land-grant universities, including the University of Minnesota.

A team of 42 scientists from the universities and two USDA Agricultural Research Service institutions in eight north-central states will collect and analyze data over the next five years. The region produces 8 billion bushels of corn, which is 64 percent of the annual harvest in the United States.

Researchers will begin collecting data on carbon, nitrogen and water movement this spring from 21 research sites in the eight states. Special equipment will be used to monitor greenhouse gas emissions at many of the sites. The team will integrate field and climate data to create models and evaluate crop management practices.

"The goal is to create a database of plot, field, farm and watershed data that can be combined with climate data to develop scenarios based on different practices," said Lois Wright Morton, Iowa State professor of sociology, interim director of the Leopold Center for Sustainable Agriculture and project director. "Farmers in the region will have opportunities to participate in on-farm research and evaluate research models. The project will also offer training for teachers and the next generation of scientists to better understand the relationships among climate shifts and agriculture."

Jeff Strock, University of Minnesota associate professor of soil science, will be collecting data from a site in southwest Minnesota on a cooperating farmer's field. The Minnesota research is focused on

field-scale drainage water management and will include measurements of soil quality, greenhouse gas emission, crop and plant production, and water quality. Drainage water management has the potential to reduce the impact of climate change on the productivity of agricultural systems by providing opportunities to increase water use efficiency and decrease nitrogen loss through drainage systems.

“The grant takes a synergistic approach to understanding the effects of climate variability and impacts on the sustainability of corn-based cropping systems throughout the Midwest,” Strock said.

“This type of interdisciplinary research enables us to integrate and coordinate research, extension and education,” said Allen Levine, dean of the U of M’s College of Food, Agricultural and Natural Resource Sciences. “This project will help both scientists and the agricultural industry identify and define corn-based cropping systems that are productive and resilient in the face of weather uncertainties and risks.”

The grant, one of three announced Friday, is part of USDA-NIFA’s program on decreasing greenhouse gas emissions and increasing carbon sequestration. The long-term national outcome is to reduce the use of energy, nitrogen and water by 10 percent and increase carbon sequestration by 15 percent through resilient agriculture and forest production systems.

The grant is part of the USDA-NIFA Coordinated Agricultural Program. This project’s researchers include agronomists, agricultural engineers, environmental scientists, hydrologists, soil scientists, sociologists, watershed engineers and natural resource scientists. Follow the project’s progress on the SWROC website at <http://swroc.cfans.umn.edu/ResearchandOutreach/SoilManagement/index.htm>.