Stewarding energy use

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Annick Anctil is part of a $2.5 million study on agriculture’s consumption of water and energy

Around the world, irrigated agriculture is the largest consumer of water and one of the largest users of energy.

Michigan State University scientists are leading a $2.5 million USDA National Institute of Food and Agriculture grant to better manage these resources and define more sustainable ways for irrigated agriculture to meet current and future demand for food.

Annick Anctil, assistant professor of civil and environmental engineering, is one of MSU’s contributing scientists.

“My research focus is on the environmental impact of energy production,” she explained. “My work will study how energy demand will increase as a result of increased irrigation in the US.

“We are interested in how the environmental footprint of irrigation could be reduced by using renewable energy sources such as wind and solar,” she added.

The interdisciplinary team will focus its efforts on two major irrigated regions in the U.S. and an area that has seen a rapid increase of irrigation – the High Plains, California’s Central Valley and Michigan’s Lower Peninsula, respectively.

“Irrigated agriculture is at the core of the nexus of food, energy and water, or FEW, systems,” said David Hyndman, MSU hydrogeologist and the grant’s lead investigator. “Global change is expected to place additional pressure on these systems as U.S. climate warms and becomes more variable, and demand for food increases due to global..."
population growth and diet shifts.”

They will quantify the effects of projected increases in food production on energy consumption and water resources under a changing climate. They’ll also simulate the effects of potential water policies and their associated influence on the energy and water footprints of U.S. agriculture.

In addition, they’ll quantify the likely effects of large-scale shifts in irrigated agriculture over the next century on regional climate.

The project team includes scientists, farmers and policymakers – a network that will enable the research to have a significant impact on decisions and policies that can increase water, energy and nutrient use efficiency, while maintaining crop yields and farmer profitability, Hyndman said.

“Water use in most of these intensively irrigated regions is not sustainable,” he said. “Research is needed to help define science-based policies that can improve the long-term sustainability of irrigated agriculture across the country and its critical role in feeding a growing population under projected changes in climate.”

Other MSU scientists participating in the study include: Bruno Basso, Anthony Kendall, Paolo Sabbatini, Jinhua Zhao, and Adam Zwickle.

Researchers from the University of Wisconsin, Kansas Geological Survey, NOAA-Great Lake Environmental Research Laboratory and Dartmouth University are also contributing.

Related Website: Annick Anctil
Story courtesy of MSUToday.
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