Environmental and Water Resources Engineering Seminar Series Presents:

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TEXAS

Pathways toward multiple metrics of sustainability in Arkansas rice production

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Abstract

Recent attention on climate-smart agricultural practices in U.S. rice production and other agricultural systems create opportunities for conservation co-benefits amidst the sustainable intensification of agricultural production. As rice cultivation is responsible for 8-10% of the world's anthropogenic methane emissions, reducing this source is important in generating a climate-friendly food system. An irrigation practice that saves water, known as alternate wetting and drying (AWD), introduces deliberate soil aerobic conditions of 3-10 days each that can also reduce methane emissions. My group and collaborators use a variety of techniques over the rice field landscape to better quantify these dynamics at the production scale, and we have demonstrated both the methane emissions reductions and water savings possible through AWD implementation or related techniques. These findings will be contextualized in a discussion about sustainability and opportunities for farmer adaption for aspects of rice production in the U.S. Mid-South.

Background

Dr. Runkle previously performed post-doctoral research at the Institute of Soil Science at the University of Hamburg in Germany, and he has degrees in Civil & Environmental Engineering from Princeton University and the University of California, Berkeley. He was awarded a US National Science Foundation Faculty Early Career Development program grant and also has funding from the United States Department of Agriculture, Geological Survey, Department of Energy, NASA, and the private sector. He researches terrestrial carbon and water cycles in natural and managed landscapes, with a focus on rice production systems in Arkansas. His group works on production farms to test more sustainable approaches to rice production and to develop decision support tools.

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