AGRONOMY SEMINAR SERIES
SPRING 2025

Monday, February 17, 2025
2:30 p.m. LILY 2-425

Attend virtually via Zoom
Seminar links will be posted at: purdue.ag/agryseminars

DR. CHAD PENN

RESEARCH SOIL CHEMIST/ADJUNCT PROFESSOR OF SOIL CHEMISTRY
USDA-ARS NATIONAL SOIL EROSION LABORATORY AT PURDUE
DEPARTMENT OF AGRONOMY AT PURDUE

Faculty Host: Dr. Yichao Rui

Phosphorus Management: Feast and Famine

Phosphorus (P) management can be a paradox. Crop growth requires appreciable amounts of phosphorus for maximizing production, yet even tiny losses from soils to surface waters can be devastating to aquatic ecosystems. The underlying foundation to understanding issues of both phosphorus fertility and water quality is soil-solution chemistry; such understanding is necessary for precision conservation efforts and developing solutions. This lecture will present an overview of current issues, challenges, and research related to soil phosphorus fertility and water quality. Specific topics will touch upon phosphorus remediation, fertilizer management, improving agronomic P recommendations, P use efficiency, and the intersection of hydrology and soil chemistry with regard to how P is transported in tile drainage.

PURDUE UNIVERSITY

Agronomy

Dr. Chad Penn is a Research Soil Chemist at the USDA-ARS National Soil Erosion Laboratory located on-campus at Purdue, and Adjunct Professor of Soil Chemistry in the Department of Agronomy at Purdue. He studies soil chemical processes in the context of solving agronomic and environmental problems and increasing agricultural production and efficiency while minimizing environmental impact. This involves working on issues such as phosphorus pollution from soil to surface waters, crop nutrient use efficiency and fertilizer recommendations, and animal and industrial waste management for beneficial re-use and safe disposal. His current research is focused on nutrient solubility and kinetics, especially phosphorus, as it pertains to losses in runoff and leaching, as well as fertility. His laboratory utilizes a flow-through approach, rainfall simulation, and a state-of-the-art semi-automated indoor growth room. In addition, the National Soil Erosion Research Lab conducts watershed-scale field research within the Western Lake Erie Basin. Dr. Penn is always working to improve the efficiency and economics of phosphorus removal structures, which are landscape-scale filters for removing dissolved phosphorus before reaching a surface water body. He continues to update the P-Trap (Phosphorus Transport Removal App) software used for designing phosphorus removal structures.