

AGRONOMY SEMINAR SERIES

FALL 2024

"Host-mediated microbiome selection improves plant health."



Monday, September 23rd

2:30 P.M. LILY 2-425

Attend virtually via Zoom

Seminar links will be posted at
purdue.ag/agryseminars

DR. CHUNTAO YIN

Chuntao Yin, Ph.D., USDA-ARS
North Central Agricultural Research Laboratory
Integrated Cropping Systems Research Unit
Brookings, South Dakota

Plant-microbe-soil interactions play vital roles in soil and plant health. Natural suppression of *Rhizoctonia* bare patch often occurs in long-term no-till monoculture wheat fields. Soil microbes have been suggested as contributing to disease suppression. However, the microbial basis of disease suppression is not well understood. Using high-throughput sequencing, we found that wheat rhizobomes are significantly different between inside the patches and outside the patches. Disease suppression can be duplicated in the greenhouse. Moreover, we revealed that host-mediated microbiome selection by successive wheat plantings and pathogen infection enhanced plant against soilborne pathogen through recruiting plant beneficial microbes. A group of bacteria were isolated and identified that exhibit inhibition of pathogen growth and protect plants against soilborne diseases. Further, four synthetic bacterial communities were created that enhanced plant performance in biotic stress. Our findings suggest that host-mediated microbiome selection offers the potential for addressing agronomic concerns associated with plant diseases and crop productivity.

Dr. Yin completed her undergraduate study from Central China Normal University in Wuhan, China, in 1992. After receiving her master and Ph.D. degrees from the University of the Chinese Academy of Sciences in China, Dr. Yin spent one year as a visiting scientist in the Department of Plant Pathology at Kansas State University. From 2006-2021, she worked as a research associate in the Department of Plant Pathology, Washington State University, and USDA-ARS, Wheat Health, Genetics, and Quality Research Unit, Pullman, WA. In 2021, Dr. Yin joined USDA-ARS and started her new roles in the area of soil health, pest management, and microbiome.