

AG RESEARCH SPOTLIGHT



LORI HOAGLAND

“Soil microbiology has been around for more than 150 years, but new molecular tools are allowing us to explore and understand this area as we’ve never been able to before.”

—Lori Hoagland, Assistant Professor of Horticulture

The Ag Research Spotlight shines each month on an individual whose work reflects our commitment to the six strategic themes that guide Agricultural Research at Purdue. Our spotlight for December 2012 underscores the theme, “Utilizing molecular approaches to expand the frontiers of agriculture and life science.”

THE RESEARCHER: A small diversified farm run by Lori Hoagland’s grandparents would loom large in influencing her career choices. A native of Lincoln, Nebraska, Hoagland went to the University of Nebraska to study environmental science. She then spent three years in the organic seed industry before returning to Nebraska for a master’s degree and honing her interest in soil microbial ecology. After earning her doctorate in soil science at Washington State University, she came to Purdue in 2010 to fill a newly created Specialty Crop Production Systems position in the Department of Horticulture and Landscape Architecture. She calls building the interdisciplinary job from the ground up “fun but challenging.”

THE RESEARCH: Hoagland’s research focuses on practices that can help farms reduce their reliance on chemical and other off-farm inputs, improve soil health and crop productivity, and enhance the overall sustainability of their operations. She conducts her research using laboratory, field and greenhouse studies to better understand soil microbial ecology and its effect on agriculture. “We want to understand the

mechanisms regulating plant-soil-microbial interactions and use that understanding to develop strategies that help growers improve productivity and sustainability.”

WHY IT MATTERS: Smaller-scale farmers in the US and developing world cannot afford the rising costs of fertilizers and pesticides which can put them at risk. Understanding how to manage soil microbes to reduce reliance on agrochemical inputs, including those that might have unintended environmental consequences, “benefits the growers as well as the environment,” Hoagland explains.

THE DIRT ON THE SOIL: “I love to be outside in the field,” she says. “Soil is our number-one resource for farming; it provides the foundation for agricultural production with soil microbes regulating key agroecosystem processes. Estimates are that we’ve been able to culture just 1 to 10 percent of microorganisms in soil. It’s exciting to think about how a better understanding of soil biology will drive future strategies for greater crop productivity and sustainability.”

PERFECTLY SITED: Key to her research is Purdue’s location in a region with great potential for growing local foods. The Indiana farmers she approaches are receptive to being engaged by Purdue, while far beyond the state, the university’s strong international presence bolsters the applicability of her research in developing countries.