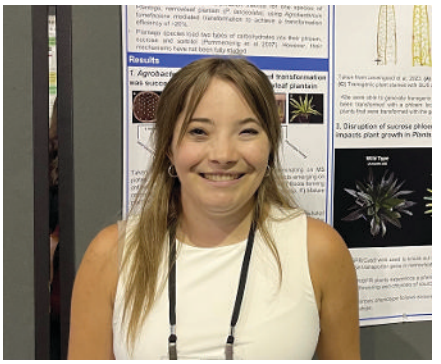
INSIDE AGRONOMY

ISSUE 4 - NOVEMBER 11, 2024

PURDUE UNIVERSITY | Agronomy

Share Your News!

Email your news, photos, and articles to Stephanie Orem at sorem@purdue.edu to be shared in the next issue of Inside Agronomy!



Hannah Levengood, a Ph.D. candidate in Dr. Cankui Zhang's program, has been awarded the 2025 Indiana Seed Industry Graduate Student Study Award. This $3,000 award, funded by donations from the Agricultural Alumni Seed Improvement Association, Indiana Crop Improvement Association, Indiana Seed Trade Association, and Public Varieties of Indiana, supports graduate students with strong leadership potential and research relevant to the seed industry. Since joining the Zhang lab in 2022, Hannah has worked on an NSF-funded project to establish genetic transformation systems in two emerging model species, *Plantago*and quinoa, resulting in three published papers. She also won second place in the Graduate Student Oral Presentation Competition at the 2024 World Congress on In Vitro Biology for her work.

UPCOMING

November

12 - Keith Johnson Virtual Forage Seminar
18 - Barney Geedes - Fall Seminar Series
22 - Agronomy Accolades & Retirements
27-30 - Thanksgiving Break

December

7 - Classes end for the semester
9 - 14 - Finals Week
16 - January 12 - Winter Break for Students

January

13 - Spring semester begins

Congratulations to Dr. Cliff Johnston for earning a joint award with Sandia Labs to look at how clay minerals can be used for direct air capture of CO2.

Dr. Linda Lee Awarded the Women in Science Mentoring Award at ASA Conference!

The Women in Science Mentoring Award recognizes an individual whose efforts have encouraged women and/or girls in the sciences. Mentoring efforts may be demonstrated by such things as the number of women mentored in academic, government, or industry positions; assisting students in presenting and publishing their work, finding financial aid, and providing career guidance; providing psychological support, encouragement, and strategies for maintaining work-life balance for early-career professionals in agronomy, crops, soils, and environmental sciences; and continued interest in the individual professional advancement of women scientists.

Getting to Know the Midwestern Regional Climate Center

By: Austin Pearson, Melissa Widhalm, & Beth Hall

Have you ever noticed the **Indiana State Climate Office (IN-SCO)** and the **Midwestern Regional Climate Center (MRCC)** as you walk down the 2-400 block of Lilly Hall? These two offices, while easy to overlook, play crucial roles in understanding and managing our climate. Though the MRCC and IN-SCO are separate entities, they share similar goals in serving different audiences, sometimes even sharing staff to fulfill the IN-SCO's mission. In our last article, we explored some of the IN-SCO's key functions, but today we'll delve into the MRCC. Before we do, let's back up and discuss a key term:*climate services*.

Both centers provide *climate services*, defined by the American Meteorological Society as "scientifically based information and products that enhance users' knowledge and understanding about the impacts of climate on their decisions and actions". At the national level, the **National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI)** plays a crucial role in collecting, processing, and disseminating environmental data. Regionally, **Regional Climate Centers (RCCs)** are contracted through NCEI to provide climate services. The MRCC serves a 9-state region: Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, Minnesota, Ohio, and Wisconsin. Each respective state has its own state climate office that solely focuses on state needs.

The MRCC, directed by Dr. Beth Hall and Associate Director Melissa Widhalm, provides high-quality climate data, tools, interactive maps, and customized services for Midwestern stakeholders and occasionally the nation. Well-known agriculture-related tools include:

·**Cli-MATE** – a nationally known self-service portal for downloading raw climate data and generating customized statistics, tables, and charts.

·**Midwest Climate Watch** – a dashboard of ready-to-view maps for monitoring temperature, precipitation, snow, and more.

·**Soil Temperature Climatology** – a regional tool for determining the time of year when specific temperature thresholds typically occur.

·**Freeze Date Tool** – an interactive tool for visualizing seasonal first freeze dates, growing season length, and long-term trends.

·**Corn Growing Degree Day** – a custom GDD tracker that integrates weather data and corn phenology to inform farm management decisions.

The MRCC receives significant attention for two popular tools: the **Accumulated Winter Severity Index (AWSSI)** and the **Tornado Tracks Tool**. The AWSSI tracks winter severity in near real time, allowing comparisons to previous seasons, while the Tornado Tracks Tool offers a national view of confirmed tornadoes and associated statistics dating back to 1950. The MRCC produces weekly, monthly, quarterly, and annual **climate summaries**. The center also plays a crucial role in legal proceedings, with lawyers utilizing its services to certify weather data for court cases involving traffic accidents, slip and falls, and other ongoing litigation.

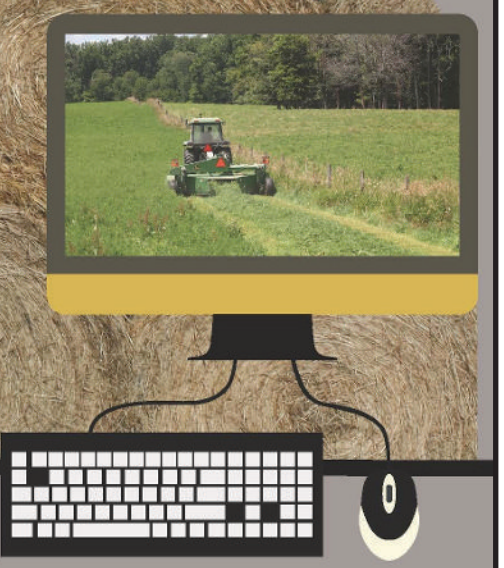
The MRCC is committed and funded to continue developing new tools for various stakeholders, but is also open to project collaboration within the university. Want to stay informed? Subscribe to our quarterly **newsletter**. If you're interested in collaborating on proposals, please email **mrcc@purdue.edu**.

Hey There, Hay Here

Understanding Forage Quality Virtual Seminar

TUESDAY
NOVEMBER 12th

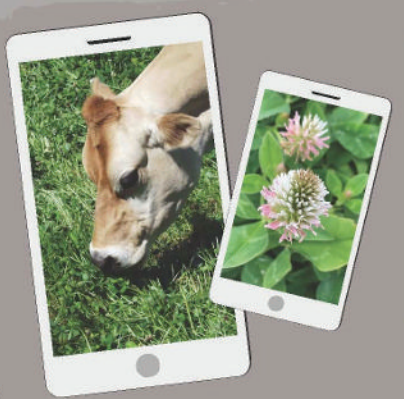
6:30 PM- 8:00 PM EST



JOIN US:

The Indiana Forage Council and Purdue University Extension will host a virtual seminar covering forage quality on November 12th, 2024. Join the event by scanning the QR code, visiting the website or in-person at one of great Indiana satellite locations.

Slow Connection, Poor Connection or No Connection? No problem - take part in the free seminar by joining one of our virtual viewing locations across Indiana. To find a location near you, **contact us: 765-494-4783 or use the QR code / web address below for more details.**



JOIN US

Free Virtual Seminar

Purdue.ag/hayquality

EA/EOU

PURDUE UNIVERSITY Extension

IFC

FOR MORE INFORMATION +765-494-4783 PURDUE.AG/AGRYEXT INDIANAFORAGE.ORG

AGRONOMY SEMINAR SERIES

FALL 2024

"Investigating the symbiotic productivity of rhizobia in association with crop plants"

Monday, November 18th

2:30 P.M. LILY 2-425

Attend virtually via Zoom

Seminar links will be posted at purdue.ag/agryseminars

BARNEY GEDDES, PhD

Assistant Professor
Department of Microbiological Sciences
North Dakota State University

Hosted by Dr. Jianxin Ma
ISA Chair in Soybean Improvement
Department of Agronomy

The nitrogen-fixing symbiosis between legume crops and rhizobia is a pillar of sustainable agriculture. While inoculant strains are selected for their efficiency, naturally occurring root-nodule bacteria (rhizobia) vary substantially in their effectiveness at promoting growth of their host plant via symbiotic nitrogen fixation. Because natural rhizobia compete with inoculants for the occupancy of nodules on crop plants, these variations in rhizobia partner quality have important implications for the productivity of nitrogen-fixing symbioses in agricultural ecosystems. Yet, we a limited understanding of the genetic basis for this variation. In this seminar I will discuss1) research investigating the state of this "rhizobium competition problem" in North Dakota 2) applied efforts to overcome it and 3) basic research into the genetic basis of inefficient symbiosis in rhizobia. These topics span a wide range of disciplines applied from the field to the lab centered on a common aim of improving the productivity of the rhizobium-legume symbiosis in agricultural systems.

Having grown up on a small farm Dr. Barney Geddes is passionate about making discoveries that can be harnessed to improve resilience and productivity in agriculture. Dr. Geddes completed a PhD in microbial genetics at the University of Manitoba in Canada before joining the lab of Dr. Philip Poole at the University of Oxford in the UK as a post doctoral researcher to explore the engineering of nitrogen-fixing cereal crops. In a second post doctoral position with Turlough Finan at McMaster University in Canada he began work to elucidate a "minimal symbiotic genome". In 2020 Dr. Geddes started his research group at North Dakota State University in the Department of Microbiological Sciences. At NDSU his research group uses a blend of bacterial genetics, microbial ecology and synthetic genomics to uncover the determinants that allow microbes to improve crop growth.

PURDUE UNIVERSITY | Agronomy

Agronomy Accolades & Retirements

November 22, 2024
11:00am - 2:00pm at ACRE

Join us as we celebrate another year of agronomic achievements and recognition, and as we bid farewell to two of our retiring faculty.

Keith Johnson
1981-2024

Rich Grant
1985-2024

11:00-12:00
OPEN HOUSE

12:15-1:00
LUNCH

1:00-2:00
PROGRAM

REGISTER:

purdue.ag/agry-accolades

SPRING 2025

Geospatial Informatics

Learn cutting-edge tools in GIS, Remote Sensing, and Digital Soil Mapping

Course #: AGRY 59800GI (3 credit hour) | **CRN #:** Lecture - 29998 / Lab - 29999

Lecture: TR 1:30-2:20pm, LILY G428 | **Lab:** R 2:30-4:20pm, LILY G428

Course Overview

This course delves into advanced topics in geospatial science, focusing on practical applications in soil, agriculture, and natural resource management. Students will learn state-of-the-art techniques in geographic information systems (GIS), remote sensing, and spatial modeling. The course aims to equip students with specialized skills relevant to sustainable soil management, precision agriculture, and environmental sustainability.

Topics Covered

- Emerging Remote Sensing Techniques
- Digital Elevation Model, Global Positioning System, Geodatabase
- Digital Soil Mapping
- Precision Agriculture and Site-Specific Management
- GIS-Based Decision Support System
- R, ESRI ArcGIS Pro, and ArcPy

Prerequisite: Any GIS and/or Remote Sensing course (e.g. FNR 210, ILS 250, ASM 540) **OR** relevant work experiences. Contact the instructor for further information.

Instructor: Dr. Sidd Paul, Assistant Professor of Geospatial Science (sspaul@purdue.edu)

PURDUE UNIVERSITY | Agronomy