INSIDE AGRONOMY

ISSUE 9 - JANUARY 27, 2025

PURDUE UNIVERSITY | Agronomy

February
1 - Ag Alumni Fish Fry
5 - Dean Engle departmental visit
15 - DAA Nominations Due
* See page 5 for Spring Seminar schedule

Dean Engel will be visiting our department next Wednesday, February 5th from 8:30-9:30 AM in place of our regularly scheduled AGRY Faculty Meeting. This meeting will be held in LILY 2-425, and ALL members of AGRY are invited to join.

WELCOME, IGNACIO CIAMPITTI!

"Ignacio Ciampitti, a quantitative agronomist with a focus on the integration of digital agriculture in the context of complex farming systems, has joined Purdue University as the co-director of the **Institute for Digital and Advanced Agricultural Systems (IDAAS)** and a full professor in the **Agronomy department**. Prior to this role, he was one of the founding directors of the Institute for Digital Agriculture and Advanced Analytics at Kansas State University. With a strong academic foundation, including a bachelor's and master's degree from the University of Buenos Aires and Ph.D. in agronomy from Purdue, Ciampitti's research explores the integration of crop eco-physiology and plant nutrition with data science, remote sensing, and crop modeling tools. Ciampitti has trained many graduate students, research scholars and post-doctoral researchers, and led critical key projects with industry and farmers around the globe. Ciampitti brings a wealth of experience from various past and current leadership roles that position him to successfully lead Purdue's IDAAS in advancing technology-driven and data-informed agricultural solutions. In addition to his full-time position, Ciampitti is an associate editor-in-chief for European Journal of Agronomy, a technical editor for Crop Science Journal and serves on the editorial board for Field Crops Research, Remote Sensing, Forecasting journals. Outside of research, Ciampitti enjoys spending time with his family and watching soccer, a passion influenced by his South American heritage."

Submitted by Ignacio Ciampitti

CONGRATULATIONS, DR. ROLAND WILHELM!

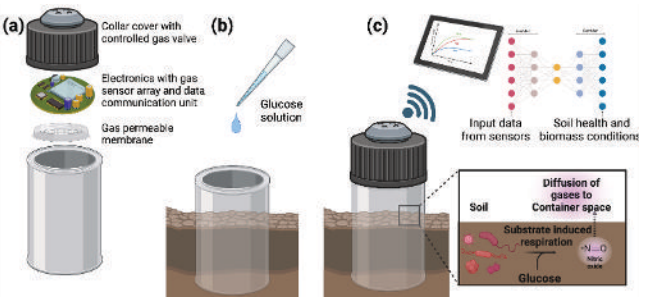
Roli Wilhelm and Rahim Rahimi received funding through the Purdue Agriculture - Engineering Collaborative Projects Competition for a project titled ""N-Sight: Multifunctional Sensing for Nitrogen Dynamics and Soil Health"

"In field soils, the conversion of organic matter to plant available nitrogen is a function of**moisture** (moist soils = 'peak activity') and **microbial biomass** (think: 'total catalytic units') dynamics. Improving estimates of the biological supply of nitrogen would be possible if***i n situ*** and at **high frequency** measurement of these two properties were made. Using gas sensors, and a novel substrate delivery system, we will be able to measure **substrate induced respiration**, based on the CO2 fluxes over short intervals following the stimulation by glucose. To learn more about the science, read these papers:

Anderson JPE, Domsch KH. A physiological method for the quantitative measurement of microbial biomass in soils. *Soil Biology and Biochemistry*1978;**10**: 215–221.

Lin Q, Brookes PC. An evaluation of the substrate-induced respiration method.*Soil Biology and Biochemistry*1999; **31**: 1969–1983.

Beck T, Joergensen RG, Kandeler E, Makeschin F, Nuss E, Oberholzer HR, et al. An inter-laboratory comparison of ten different ways of measuring soil microbial biomass C.*Soil Biology and Biochemistry*1997;**29**: 1023–1032."



Submitted by Roli Wilhelm

It's Official: 2024 was Indiana's hottest year on record

By: Austin Pearson, Beth Hall, Melissa Widhalm

The 2024 final temperature data were released on January 10th, revealing Indiana had its hottest year since record keeping began in 1895. The average temperature for the year was 55.2°F, which was 0.1°F higher than the previous record set in 2012 (55.1°F). The top five warmest years on record are now 2024, followed by 2012, 1998 (54.9°F), 1921 (54.9°F), and 2023 (54.3°F). The warmth of 2024 was felt not only in Indiana but also in Kentucky, Michigan, Minnesota, Ohio, and Wisconsin, all of which recorded their warmest annual average temperature. Illinois and Missouri had their second warmest year, while Iowa recorded its third warmest year. Since 1991, Indiana has had temperature anomalies more than 1°F above the long-term average (1901-2000) in 20 out of 34 years. Notable outliers were 2014 and 1996, which recorded anomalies of 1.9°F and 1.2°F below the long-term average, respectively (Figure 1).

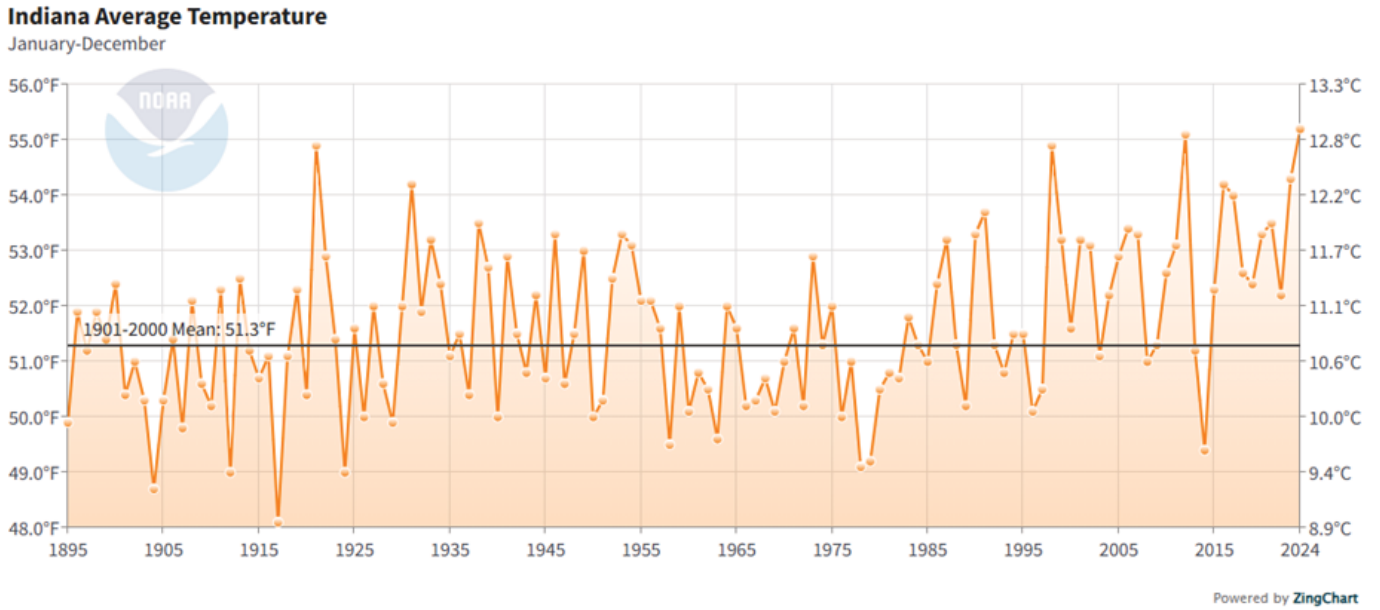


Figure 1: Time series of annual Indiana average temperatures from 1895-2024.

In 2024, consistent warmth defined the year. All months, except July (1.1°F below normal), had above-normal temperatures. The most notable anomalies occurred in February, March, and November, registering 8.2°F, 5.3°F, and 5.0°F above the 1991-2020 climatological average, respectively (Table 1).

Table 1: Indiana Average Temperatures (°F) Compared to the 1991-2020 Normal

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2024	27.8	39.6	46.3	54.8	66.6	72.9	73.2	73.1	68.4	57.6	47.4	34.6	55.2
1991-2020 Normal	27.7	31.4	41.0	52.1	62.5	71.2	74.3	72.6	66.0	54.5	42.4	32.5	52.3
Departure	0.1	8.2	5.3	2.7	4.1	1.7	-1.1	0.5	2.4	3.1	5.0	2.1	2.9

In 2024, statewide precipitation was 0.9 inches below normal, or 98 percent of normal. The year exhibited significant variability, with the state experiencing both wet and dry months (Table 2). January and April were the wettest months, each seeing departures exceeding 2.00 inches above normal. In contrast, June and October had departures more than 1.50 inches below normal.

Table 2: Indiana Precipitation (inches) Compared to the 1991-2020 Normal

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2024	5.11	1.12	2.78	6.67	4.77	2.81	5.17	2.65	3.19	0.34	4.05	4.07	42.73
1991-2020 Normal	2.95	2.48	3.33	4.39	4.78	4.80	4.29	3.60	3.29	3.33	3.38	3.01	43.63
Departure	2.16	-1.36	-0.55	2.28	-0.01	-1.99	0.88	-0.95	-0.10	-2.99	0.67	1.06	-0.90

2024 American Forage Grassland Council Annual Conference

Dr. Keith Johnson- Forage Extension Specialist, receives the Presidential Citation Award from the American Forage & Grassland Council's annual conference. This award represents the years of dedicated service and contribution to the Forage & Grassland industries and producers. We are certainly proud of Dr. Johnson and his accomplishments!

Please let me know if you need any further information regarding this award.

*Website link American Forage and Grassland Council

(right) President, Jason Tower (Purdue SIPAC Superintendent) gives remarks at this year's conference, held in Florida.

(below) Purdue Forage Bowl Team soaks in the sun before heading back to Boiler-nation! The team was coached by Dr. Keith Johnson.

Submitted by Purdue Agriculture Purdue Extension Purdue DTC

AGSO SOCIAL EVENT

On January 25, 2025, the Agronomy Graduate Student Organization hosted an exciting bowling competition, bringing together graduate students and postdocs for an evening of fun and friendly rivalry. The event was a resounding success, with participants enjoying the opportunity to unwind, connect, and build camaraderie outside of their academic work. Many expressed their enthusiasm and hope for more events like this in the future to continue fostering a sense of community within the department.

Submitted by Sophia Qu

AGRONOMY SEMINAR SERIES
SPRING 2025

Soil Explorer - Visualizing and Understanding Soil Landscapes

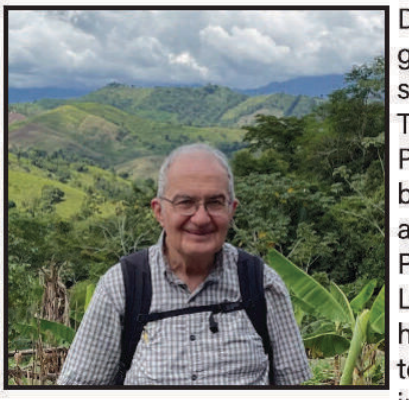
Monday, February 3, 2025
2:30 p.m. LILY 2-425

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

DR. DARRELL G. SCHULZE

PURDUE AGRONOMY DEPARTMENT
PROFESSOR OF SOIL SCIENCE

For most of the 125-year history of the U.S. National Cooperative Soil Survey, soil surveys were published as paper-based maps and reports that met the needs for localized conservation and land use planning. Web Soil Survey has now replaced paper maps but still provides maps and data for only small areas at a time. The SoilExplorer.net website and mobile app for iPhone/iPad, was developed to visualize soil properties so one can see both the overview and the details of soil landscapes, enabling understanding of connections and relationships that are not apparent when viewing only small areas. Soil Explorer is used extensively in our soils teaching and extensions programs here at Purdue, as well as by educators, researchers, and the public. The website averages 20.5 users per day and the mobile app averages 4 downloads per day. I will give an overview of how Soil Explorer evolved into its current implementation and then show a few of the fascinating soil landscape features right here around campus, in various parts of Indiana, and if time permits, Kenya and Peru.



Darrell Schulze grew up on a small farm on the Texas Blackland Prairies midway between Houston and Austin. Participation in Land Judging in high school lead to a lifelong interest in soil science. While a student at Texas A&M, he worked summers for the USDA Soil Conservation Service (now the Natural Resources Conservation Service), first as a student trainee and, after graduation with his B.S. in Agronomy, as a field soil scientist mapping soils. After completing his M.S. in Soil Science from Texas A&M, he studied abroad in Germany, completing his Ph.D. in Soil Mineralogy at the Technical University of Munich in Freising-Weihenstephan in 1982. His work has spanned scales from the molecular level details of soil clay minerals, particularly iron and manganese oxide minerals, to his current focus on the spatial aspects of soil properties at landscape scales. He is a past president of the Clay Minerals Society, a Fellow of the Soil Science Society of America and a Fellow of the Indiana Academy of Science.

PURDUE UNIVERSITY | Agronomy

AGRONOMY SPRING 2025 SEMINAR SERIES

PURDUE UNIVERSITY | Agronomy

Mondays at 2:30 p.m.
LILY 2-425
(unless otherwise noted)

Join friends and colleagues as they discuss the latest in Agronomy and other related topics.

Zoom links for virtual attendance and online-only seminars will be shared closer to their scheduled date.

A detailed flyer will be shared prior to each seminar. Please refer to the specific event flyer for any changes.

Visit the Agronomy Seminar Series Website at: purdue.ag/agryseminars or by scanning the QR code below.

Date	Speaker
January 27th	**Dr. Bruno Basso - Michigan State University - On-line only** Topic: Understanding Drivers of Spatial and Temporal Variability of the Soil-Plant-Atmosphere System Host: Dr. Bruce Erickson
February 3rd	**Dr. Darrell Schulze - Purdue University - Agronomy** Topic: Soil Explorer - Visualizing and Understanding Soil Landscapes Host: Dr. Cindy Nakatsu
February 10th	**Dr. Gary Steinhardt - Purdue University - Agronomy** Topic: A 48-Year Soils Journey in a Land-Grant University Host: Dr. Eileen Kladivko
February 17th	**Dr. Chad Penn - USDA ARS National Soil Erosion Research Lab** Topic: Phosphorus Management: Feast and Famine Host: Dr. Yichao Rui
February 24th	**Dr. Elizabeth Rieke - Soil Health Institute** Topic: TBD Host: Dr. Roland Wilhelm
March 3rd	**Dr. Mitch Tuinstra - Purdue Agronomy - Dean's Auditorium Seminar** Topic: Named Professor Review Host: Dean Engel
March 10th	**Dr. Ling Li - Mississippi State University** Topic: From Arabidopsis to Crops: A Molecular Tool to Increase Protein Content and Disease Resistance Host: Dr. Cankui Zhang
March 24th	**Dr. Joyce Van Eck - Boyce Thompson Institute - Cornell** Topic: Leveraging Genome Editing for Pre-Breeding of Physalis Species Seminar co-sponsored by Agronomy & Center for Plant Biology Host: Dr. Cankui Zhang
March 31st	**Dr. Eliana Monteverde - University of Illinois Urbana-Champaign** Topic: TBD Host: Dr. Karen Hudson
April 7th	**Dr. Keith Johnson - Purdue University - Agronomy** Topic: Story Telling Has Value at Educational Events Host: Dr. Eileen Kladivko
April 14th	**Dr. Pragati Pramanik - Indian Agriculture Research Institute - Delhi** Topic: Application of Machine Learning Approaches in Soil Health Assessment Host: Dr. Sidd Paul
April 21st	**Dr. Kateryna Zhalnina - Lawrence Berkeley National Lab** Topic: Metabolomics/Cover Crops Host: Dr. Roland Wilhelm
April 28th	**Dr. Jean-Michel Ane - University of Wisconsin - Madison** Topic: Biological Nitrogen Fixation on the Aerial Roots of Maize and Sorghum for Sustainable Agriculture Host: Dr. Jianxin Ma