SOUTHWEST-PURDUE AGRICULTURAL CENTER
RESEARCH AND DEMONSTRATION PROJECTS
2025

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Department of Agronomy

Clean Air Status Trends Network/ Dry Deposition Measurements (CASTNET)
Purpose: The measurement of gaseous and collection of gaseous and particulate pollutants in combination with meteorological conditions are made at this site in order to 1) characterize geographic patterns and temporal trends in chemical atmospheric dry deposition 2) support assessments of atmospherically – deposited nutrients.
Contact: Sylvie Brouder & Niki De Armond

National Atmospheric Deposition Program/Mercury Deposition Network (MDN)
Purpose: The collection of rain water from this site in order to: 1) characterize geographic patterns and temporal trends in wet chemical mercury deposition and 2) Support assessments of atmospherically-deposited mercury on the productivity of biological accumulators such as fish.
Contact: Sylvie Brouder & Niki De Armond

National Atmospheric Deposition Program/Mercury Litterfall Network (MLN)
Purpose: The collection of litterfall from this site in order to: 1) characterize geographic patterns and temporal trends in dry chemical mercury deposition and 2) Support assessments of atmospherically-deposited mercury on the productivity of biological accumulators such as fish.
Contact: Sylvie Brouder & SWPAC Staff

National Atmospheric Deposition Program/National Trends Network (NTN)
Purpose: The collection of rain water from this site is made in order to: 1) Characterize geographic patterns and temporal treads in chemicals as well as quantity and conductivity of atmospheric wet deposition and 2) support assessments of atmospherically – deposited nutrients influencing crop productivity.
Contact: Sylvie Brouder& Niki De Armond

National Atmospheric Deposition Program/Ammonia Monitoring Network (AMON)
Purpose: The collection of gaseous ammonia from the site is made in order to 1) characterize geographic patterns and temporal trends in background ammonia levels, 2) support assessments of atmospherically-deposited nitrogen on the ecosystem function.
Contact: Sylvie Brouder& Niki De Armond

Department of Agronomy (Continued)

Purdue Automated Agricultural Weather Station (PAAWS)
Purpose: Automated collection of weather data from this site is sent to the Indiana State Climate Office at Purdue University - data can be observed at: http://climate.agry.purdue.edu
Contact: Beth Hall

National Weather Service Station (NWS)
Purpose: Manual collection of daily weather observations from this site are sent to the NWS via a web-based application known as WxCoder.
Contact: Sylvie Brouder SWPAC Staff

Sorghum Hybrid Trail
Purpose: To compare different sorghum varieties to be grown in this region
Contact: Tesfaye Tesso

Department of Botany & Plant Pathology

Data Generation in Cucurbits for Bio fungicides
Purpose: Testing the efficiency of FMC Bio fungicide products for disease control of phytophthora and fusarium in Watermelon production
Contact: Cesar Escalante

Testing Products and Mixes for Efficacy on Cucurbit Downy Mildew and Anthracnose
Purpose: Testing the efficiency of ISK Biosciences Bio fungicide products compared to conventional fungicides for disease control of downy mildew and anthracnose in Watermelon production
Contact: Cesar Escalante

Efficacy of Regev and Timorex EXT (TEXT) against Powdery Mildew on Watermelon
Purpose: Testing the efficiency of Summit Agro Bio fungicide products compared to conventional fungicides for disease control of gummy stem blight and powdery mildew in Watermelon production
Contact: Cesar Escalante

Data Generation of Biopesticides in Cucurbits
Purpose: Testing the efficiency of Rovensa Next Bio fungicide products compared to conventional fungicides for disease control in Watermelon production
Contact: Cesar Escalante

Testing Products and Mixes for Control of Late Blight, Early Blight and Powdery Mildew
Purpose: Testing the efficiency of ISK Biosciences Bio fungicide products compared to conventional fungicides for disease control in Tomato production
Contact: Cesar Escalante

Evaluation of Biostimulants to Manage Tomato Diseases
Purpose: Testing the efficiency of Miller Bio fungicide products compared to conventional fungicides for disease control in Tomato production
Contact: Cesar Escalante

Department of Botany & Plant Pathology (Continued)

Adjuvant Efficacy in Fungicide in Tomato
Purpose: Testing the efficiency of Miller Bio adjuvant products tank mixed with conventional fungicides for disease control in Tomato production
Contact: Cesar Escalante

Efficacy of Regev Against Early Blight on Tomato
Purpose: Testing the efficiency of Summit Agro Bio fungicide products compared to conventional fungicides for disease control in Tomato production
Contact: Cesar Escalante

Phenotype and Physiological Response of Watermelon to Fusarium Infection in Greenhouse Conditions
Purpose: Greenhouse experiment to understand relationship of Fusarium wilt and waterlogging stress
Contacts: Cesar Escalante & Wenjing Guan

Bio Fungicide Applications on Cut Flowers in a High Tunnel Environment
Purpose: To evaluate the efficacy of bio fungicide applications to cut flowers
Contacts: Cesar Escalante & Wenjing Guan

University Wheat Fungicide Trial
Purpose: Evaluation of fungicide efficacy on wheat scab.
Contacts: Darcy Telenko & Su Shim

Industry Wheat Fungicide Trial
Purpose: Evaluation of fungicide efficacy on wheat scab.
Contacts: Darcy Telenko & Su Shim

University Soybean Fungicide Trial #1
Purpose: Uniform fungicide evaluation in soybeans.
Contacts: Darcy Telenko & Su Shim

University Soybean Fungicide Trial #2
Purpose: Uniform fungicide evaluation in soybeans.
Contacts: Darcy Telenko & Su Shim

Industry Soybean Fungicide Trial
Purpose: Uniform fungicide evaluation in soybeans.
Contacts: Darcy Telenko & Su Shim

Corn Fungicide Evaluation
Purpose: Uniform fungicide evaluation in corn.
Contacts: Darcy Telenko & Su Shim

Industry Corn Fungicide Evaluation
Purpose: Uniform fungicide evaluation in corn.
Contacts: Darcy Telenko & Su Shim

Department of Botany & Plant Pathology (Continued)

Cowpea Protein Improvement Project
Purpose: Evaluating cowpea lines for seed protein concentration, growth habits and tannins content.
Contacts: Jeneen Fields & Jean Paul Iyakaremye

Department of Entomology

Uncovering The Effects of Insects on Watermelon Production
Purpose: This study aims to quantify the pollination services provided to growers via crop yield without the addition of imported species when pesticides are omitted from the system. This will allow the full benefits wild pollinators supply to growers to be seen without the environmental and behavioral determent of pesticides affecting pollination behaviors, while eliminating the confounding effects of supplemented honey bees.
Contact: Ian Kaplan & Amy Bagby

Can Robust Pollinator Communities Compensate for Reduced Pollen Flow
Purpose: This study aims to quantify the pollination services provided to growers via crop yield without the addition of imported species when pesticides are omitted from the system. This will allow the full benefits wild pollinators supply to growers to be seen without the environmental and behavioral determent of pesticides affecting pollination behaviors, while eliminating the confounding effects of supplemented honey bees.
Contact: Ian Kaplan & Amy Bagby

Resilient Ag Demonstration Plot – Conventional, Wheat & Double Crop Soybeans
Purpose: The purpose is to establish long-term commercial scale plots to compare current (conventional) practices to those that are referred to as resilient.
Contact: Laura Ingwell & Christian Krupke

Resilient Ag Demonstration Plot – Resilient, Wheat & Double Crop Soybeans
Purpose: The purpose is to establish long-term commercial scale plots to compare current (conventional) practices to those that are referred to as resilient.
Contact: Laura Ingwell & Christian Krupke

Squash Bug Management on Pumpkin Trial
Purpose: Testing the efficacy of insecticides in no-till pumpkins to manage squash bugs
Contact: Laura Ingwell

Corn Earworm Trapping Network
Purpose: To monitor the presence of corn earworm moths.
Contact: Laura Ingwell & John Obermeyer

Squash Vine Bore Trapping Network
Purpose: To monitor the presence of squash vine bore moths.
Contact: Laura Ingwell

Department of Entomology (Continued)

Armyworm Pheromone Trapping
Purpose: To monitor the presence of armyworm moths.
Contact: Laura Ingwell

Indiana Cooperative Agricultural Pest Survey (CAPS) for Exotic Insect Pests of Soybean & Corn
Purpose: Establish traps sites and sample areas needed to monitor for exotic insect species.
Contact: Alicia Kelly

Monitoring Activity of Lesser Chestnut Weevil
Purpose: To monitor and observe chestnut weevil for a multi-state collaboration
Contacts: Elizabeth Long

Chemical Composition in Resposes to Herbivory in Moderate Trees in Indiana
Purpose: This project is focused on understanding the chemical defense and diversity in different dominant tree species all over Indiana.
Contact: John Couture & Shahla Mohammadi

Trapping for Invasive Spotted Lanternfly (SLF)
Purpose: The primary objective is to identify new populations of spotted lanternfly in Indiana. Spotted lanternfly prefers tree of heaven in early stages but may move to other hosts throughout the growing season, like black walnut and maple. As a result of feeding, these trees and other crops may be damaged, and populations can spread further. By implementing SLF traps, I aim to monitor the spread of SLF to understand preferred habitats. This monitoring would include setting up circle traps on tree of heaven, black walnut, black cherry, maple, or other common hosts of spotted lanternfly.
Contact: John Couture & Elisabeth Joll

Purdue Extension

Day on the Farm for 3rd Graders
Purpose: Educational event to allow Knox County 3rd graders an opportunity to plant a watermelon and visit a farm.
Contact: Valerie Clingerman & Mitch Wagoner

Pumpkin Days for 1st Graders
Purpose: Educational event to allow Knox County 1st graders the opportunity to visit a pumpkin field and pick their own pumpkins.
Contact: Valerie Clingerman & Mitch Wagoner

Winter Canola Proprietary Germplasm Screen
Purpose: Evaluate winter canola entries for winter hardiness, stand ability, disease tolerance, and yield potential.
Contacts: Kenneth Eck & Brian Caldbeck

National Winter Canola Variety Trial
Purpose: Evaluate canola varieties to identify best adapted varieties for southwest Indiana.
Contacts: Kenneth Eck & Mike Stamm

Purdue Extension (Continued)

Industrial Rapeseed Germplasm Screen
Purpose: Evaluate commercially available industrial rapeseed entries for winter hardiness, standability, disease tolerance, and yield potential.
Contacts: Kenneth Eck & Brian Caldbeck

Wheat Variety Trial
Purpose: Southwestern Indiana Independent Wheat Variety Trials exist to provide growers in this area unique information to their geographic area.
Contacts: Valerie Clingerman & Sarah Brackney

Department of Food Science

Indiana Melon Production Agricultural Region Environmental Surveillance for Foodborne Bacterial Pathogens
Purpose: Seeks to collect air, soil, and water samples in order to develop baseline information that will inform future development of interventions and risk reduction techniques for use by produce growers.
Contacts: Scott Monroe, Amanda Deering, Katheryn Parraga & Tari Gary

Indiana Cantaloupe Longitudinal Environmental Study
Purpose: This study seeks to understand movement of human pathogens in the environment and identify points of entry into growing crops. This involves passive air sampling, soil sampling and establishment of a sentinel plot to which contaminated water may be applied and from which plant samples may be obtained.
Contacts: Scott Monroe, Amanda Deering, Katheryn Parraga & Tari Gary

Department of Forestry and Natural Resources

Spatially Explicit Densities of Indiana Wildlife
Purpose: To test and optimize methodology for the detection of nocturnal and diurnal wildlife using thermal and RGB imagery and video to count the number of deer, coyote and turkey population.
Contact: Tina Jackson & Patrick Zollner

Department of Horticulture & Landscape Architecture

Chestnut Study
Purpose: Evaluate Chestnut tree growth and nut production.
Contact: Miranda Purcell

Standard-sized Seedless Watermelon Cultivar Evaluation (Yearly)
Purpose: We collaborate with seed companies to evaluate newly developed standard-sized seedless watermelon cultivars under Midwest growing conditions, with the goal of supporting local growers in selecting cultivars
Contact: Wenjing Guan

Department of Horticulture & Landscape Architecture (continued)

Personal-Sized Seedless Watermelon Cultivar Evaluation (Yearly)
Purpose: We collaborate with seed companies to evaluate newly developed personal-sized seedless watermelon cultivars under Midwest growing conditions, with the goal of supporting local growers in selecting cultivars

Contact: Wenjing Guan

Building Suppressive Soils against Root-knot Nematode (Long-Term)
Purpose: Our hypothesis is that enhancing soil microbial diversity and increasing soil organic matter will improve the soil's capacity to suppress root-knot nematode population increases when a susceptible crop is planted. We are evaluating different soil management practices in replicated small plots and testing the soil's ability to suppress root-knot nematodes.

Contact: Wenjing Guan and Lei Zhang

Spring Broccoli Cultivar Evaluation (2025)
Purpose: We collaborate with other states to evaluate broccoli cultivar performance under heat stress.
Contact: Wenjing Guan

Evaluation of Alternative Watermelon Production Systems (Long-Term)
Purpose: We are conducting long-term evaluations of different watermelon rotational strategies, representing both efficient and regenerative production systems. In the efficient system, watermelons are grown continuously in the same area without rotation. This system incorporates off-season biofumigation, grafting, and the use of selected biostimulant products. The regenerative system, by contrast, rotates watermelons with selected cover crop mixes to restore soil health and support resilient watermelon production. A watermelon–corn–soybean rotation is included as a standard control

Contact: Wenjing Guan

Melon Post-harvest Shelf-Life Evaluation (2024-2026)
Purpose: This project directly responds to the needs of local cantaloupe growers, who have identified limited shelf-life as a major barrier to marketing eastern cantaloupes in grocery chains. We are evaluating factors such as eastern-cultivar cultivars, harvest maturity, storage conditions, and sanitizer treatments, with the overall goal of extending cantaloupe shelf-life.

Contact: Wenjing Guan and Scott Monroe

Intelligent Wireless Sensing for Watermelon Ripeness Estimation (2025-2026)
Purpose: This project is supported through a 2024 Purdue Ag-Eng Day project. We aim to develop Wireless Sensing System that utilizes Wireless Signals and Deep Learning techniques to estimate the ripeness of watermelons, with the ultimate goal of developing mechanical watermelon harvester.

Contact: Wenjing Guan and Su Lu

Evaluate Mulch Materials in Specialty Crop Production (2025-2026)
Purpose: While plastic mulch provides agronomic benefits, its use raises concerns about disposal, environmental impact, and long-term soil health. This project compares plastic mulch with alternative materials, including cellulose mulch, wood chips, compost, and sheep wool. We aim to understand how different mulch materials affect crop production, weed control, soil moisture retention, and soil fertility.

Contact: Wenjing Guan

Department of Horticulture & Landscape Architecture (continued)

Evaluate Strawberry Cultivars for Plasticulture Production (2025-2027)
Purpose: This project aims to evaluate newly developed strawberry cultivars in a two-season plasticulture system. This trial will also serve as a demonstrate plot to detect and potentially address emerging issues of growing strawberries with the system
Contact: Wenjing Guan

Aphids and Spider-mites Management in High Tunnel Strawberry Production (2025-2026)
Purpose: This project test biological control strategies for aphids and spider-mites management in high tunnel strawberry production
Contact: Wenjing Guan and Laura Ingwell

Root-knot Nematode Management (Long-Term)
Purpose: We planted okra on a portion of the organic land to encourage natural root-knot nematode populations, providing a basis for future projects evaluating organic management strategies for their control.
Contact: Wenjing Guan and Lei Zhang

Tomato Root Stock Evaluation Trial (2025)
Purpose: Goal of the project is to evaluate different tomato rootstocks in supporting tomato production in high tunnel, as compared to non-grafted plants.
Contact: Wenjing Guan and Lei Wang

Cut Flower Research Initiative (2025)
Purpose: We initiated cut flower research at SWPAC. In the initial phase, we aim to understand production issues of growing cut flowers in high tunnels and open field, with the goal to develop specific research projects for the future.
Contact: Wenjing Guan

Pumpkin and Winter Squash Demonstration (2025)
Purpose: We planted multiple pumpkin and winter squash cultivars to support the SWPAC Pumpkin Field Day and to serve as an observational plot for researchers developing future pumpkin research projects.
Contact: Wenjing Guan

High Tunnel Onion Production (2024-2025)
Purpose: This demonstration project aims to evaluate the performance of different onion types grown under high tunnel conditions in the region, with the goal of exploring the potential for season extension for onion production.
Contact: Wenjing Guan

Pumpkin-Rye Termination/Fertilization Trial
Purpose: to determine suitability of combinations of cover crop termination, burndown and fertility on cover crop termination, weed control and pumpkin crop response
Contact: Steve Meyers & Helen Nocito

USDA AFRI Grant – Taking the Next Step as a Small and Medium-sized Farm: Understanding the Integration of Production, Food Safety, and Profitability.
Purpose: The goal is to improve the profitability of small and medium-sized vegetable farms.
Contact: Petrus Langenhoven & Nathan Shoaf

Department of Horticulture & Landscape Architecture (continued)

Sweet Potato Variety Trial
Purpose: A variety trail organized by the National Sweet Potato Collaborator Group that includes advanced lines and cultivars from three breeding programs in the US. This is a plant maintain, harvest trial to evaluate yield and quality of sweet potato varieties.
Contact: Stephen Meyers and Wenjing Guan

Zidua Carryover Trial in Watermelon
Purpose: To determine the effects of herbicide carryover on watermelons
Contact: Steve Meyers

Collaborations

Knox County CISMA Native Plant Propagation
Purpose: The Knox County CISMA hopes to continue to propagate a variety of native plant species in one of the SWPAC's greenhouses.
Contact: Ben Burke, Knox County Soil and Water & Larry Sutterer

Native Plant Restoration for the Pollinators at SWPAC
Purpose: Restore native plants for bee pollinators.
Contact: Ben Burke, Knox County Soil and Water

Invasive Species Control
Purpose: Remove and control of invasive species in woodlands at the Southwest Purdue Ag Center.
Contact: Ben Burke, Knox County Soil and Water

Monitoring and Visual Surveys for Silver Y Month & Spotted Lanternfly
Purpose: Maintaining pheromone trap for Silver Y Moth and doing visual surveys for the Spotted Lanternfly.
Contact: Bonnie Spindler, Indiana Department of Natural Resources

Collections & Sequencing of Weed Populations
Purpose: Data collection and sequencing of weed populations over the course of a growing season and across years to better understand the rate of weed adaptation to herbicides and other selective pressures.
Contact: Julia Kreiner - University of Chicago & Katie Wing

Evaluation of Conventional Hybrids for Disease Resistance in Indiana
Purpose: The evaluation of diverse corn germplasm in the US Midwest, given the onset of new fungal diseases such as Tar spot (Phyllachora maydis), is of vital economic performance to farmers. Four conventional corn hybrids were evaluated for pertinent agronomic characteristics at the Southwest Purdue Ag Center.
Contact: Brian Caldbeck, Caldbeck Consulting & Dennis Nowaskie