2019 DAVIS-PURDUE AGRICULTURAL CENTER RESEARCH AND DEMONSTRATION PROJECTS

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Using Tilapia for Aquatic Weed Control
Purpose: Evaluate the use of Tilapia for Aquatic Weed Control in Ponds.
Contact: Jonathan Ferris, Wayne County Extension Educator

Using Climate Corporation's FieldView Software to Collect Planting Data
Purpose: Evaluate FieldView in the collection of plating data.
Contact: Mark Carter, Delaware County Extension Educator

Indigenous Soil Potassium (K) Supply, Fertilizer K Use-Efficiency, and K Budgets in Indiana Corn and Soybean Production
Purpose: Evaluate the agronomic efficiency of currently recommended K fertilizer rates; evaluate theoretically improved soil K tests for the ability to predict soil K supply.
Contact: Shaun Casteel and Jim Camberato; Agronomy

Corn Hybrid Performance Trial
Purpose: Test yield performance of corn hybrids in Indian.
Contact: Phil DeVillez, Agronomy

Non-GMO Corn Hybrid Performance Trial
Purpose: To evaluate non-GMO corn hybrids.
Contacts: Phil DeVillez, Bill Foster; Agronomy

Soybean Variety Performance
Purpose: Test yield performance of soybean varieties in Indiana
Contact: Phil DeVillez, Agronomy

Industry Soybean Performance Trial
Purpose: Industry soybean varietal yield trial.
Contacts: Phil DeVillez and Bill Foster; Agronomy

Non-Glyphosate Tolerant Soybean Varietal Performance Trial
Purpose: To evaluate non-Roundup Ready soybean varieties.
Contacts: Phil DeVillez and Bill Foster; Agronomy

Soybean Seeding Rate Trial
Purpose: Identify agronomically and economically optimum seeding rates for soybean production in Indiana.
Contact: Shaun Casteel; Agronomy

Long Term Impact of Cover Crops on Cash Crop Nutrient Uptake, Yield & Nitrogen Application Rate

Purpose: Evaluate barriers in cover crop inclusion; deepen our understanding of cover crop to affect the availability of manure and inorganic Nitrogen to cash crops in multiple cropping systems.

Contact: Shalamar Armstrong, Agronomy

Botany and Plant Pathology Projects

19-DPAC-MON-B7-01: Confidential, Soybean Safety with Dicamba Premix Formulations, Xtend Soybean

19-DPAC-MON-B7-02: Confidential, Roundup Xtend 2 Tank Mix Partners, Xtend Soybean

19-DPAC-MON-N8-01: Confidential and Stewarded, PPO-resistant Waterhemp Control In XtendFlex Soybean, XtendFlex Soybean

19-DPAC-MON-W3: Confidential, Experimental MON Herbicides – Experiment 1, non-crop

19-DPAC-MON-W8: Confidential, Experimental MON Herbicides – Experiment 2, non-crop

19-DPAC-Seedbank: Influence of Herbicides on the Weed Seedbank and Herbicide Resistance, Xtend Soybean

19-DPAC-SoySystems: Indiana Soybean Alliance and Purdue Soybean Demonstration Plots, multiple varieties

19-DPAC-SynPRE: Syngenta Programs for PPO-resistant Waterhemp in PPO-sensitive Soybean, RR soybean

19-DPAC-USB-CC: United Soybean Board Experiment – Influence of Cover Crops and Residual Herbicides on Waterhemp Control in Soybean, Liberty Link Soybean

19-DPAC-WCadj: Evaluation of West Central Adjuvants with Engenia, Xtend Soybean

19-DPAC-pHmodifiers: Influence of pH Modifying Adjuvants on Weed Control with Dicamba, Xtend Soybean

19-DPAC-BayerWMI: Residual Herbicide Programs in Corn

Contact: Bryan Young and Bill Johnson, Botany and Plant Pathology

Botany and Plant Pathology Student Projects

Influence of Cover Crops on Weed Control in Corn

Cover Crops in Corn (weed free)

Cover Crops for Weed Suppression in Buffer Areas, Xtend and Enlist Soybean

Confidential Soybean Trial 1

Confidential Soybean Trial 2

Contact: Bryan Young and Bill Johnson, Botany and Plant Pathology

Aerial Reconnaissance of the Effects of Disturbed Soil Due to Recent

Purpose: An opportunity to determine what can be detected using UAV cameras and sensors throughout the growing season

Contacts: Bob Nielsen & Jim Camberato; Agronomy

UAV Stand Assessments of Soybean (Seeding Rate x Plant Type)

Purpose: Use UAV imagery to assess stand establishment as well as standard protocol for scouting of soybean early to late season.

Contact: Shaun Casteel, Agronomy

FMC Agricultural Solutions Projects

Preemergence Experimental Herbicide Targeting Grass Species in corn
Preemergence Experimental Herbicide Targeting Amaranth Species in corn
Preemergence Experimental Herbicide Targeting Grass and Broadleaf Species in corn
Preemergence Experimental Herbicide Targeting Grass and Broadleaf species in corn
Preemergence Experimental Herbicide Targeting Grass and Broadleaf species in corn
Preemergence Experimental Herbicide Targeting Grass and Broadleaf species in corn
Post Emergence Experimental Treatment Targeting Broadleaf Species in Corn
Post Emergence Experimental Treatment Targeting Broadleaf Species in Soybeans
Preemergence Experimental Herbicide Targeting Grass and Broadleaf species in Soybeans
Preemergence experimental Compounds Targeting broadleaf species in corn and soybeans

Purpose: Evaluate Crop Response of Corn/Soy, overall efficacy of all weed species present (% control), and stalk or root lodging (corn only). In soybean trials, stand counts were evaluated to characterize the treatment effect of heavy rains after chemical application. Notes were taken on symptomology on both the crop and weed species. Soil samples were taken in order to compare results at DPAC with trials implemented at other sites around the Midwest with similar soil properties.

Contact: Scott Swanson, FMC Agricultural Solutions, Field Development Representative - Midwest

Controlled Drainage for Improvement of Water Quality

Purpose: Quantify environmental benefits of managed drainage and use of soil amendments under standard crop production.

Contact: Brenda Hofmann, Biological Science Technician and Javier Gonzalez, Soil Scientist with USDA-ARS National Soil Erosion Research Lab

Interaction of management practices on soil health and water quality

Purpose: Develop management techniques using cover crops and gypsum to increase soybean yield while maintaining soil health.

Contact: Brenda Hofmann, Biological Science Technician and Javier Gonzalez, Soil Scientist with USDA-ARS National Soil Erosion Research Lab

Cover crops, phosphorus and sulfur management on soil quality and grain yield

Purpose: Evaluate the effects of cover crops on soil phosphorus, sulfur and soil quality and grain yield

Contact: Brenda Hofmann, Biological Science Technician and Javier Gonzalez, Soil Scientist with USDA-ARS National Soil Erosion Research Lab

Legacy of Phosphorus

Purpose: Evaluate soil phosphorus drawdown rates, plant phosphorus uptake, and potential changes in corn and soybean yield with elimination of phosphorus fertilizer to long-term Fertility research plots.

Contact: Brenda Hofmann, Biological Science Technician and Javier Gonzalez, Soil Scientist with USDA-ARS National Soil Erosion Research Lab

Effect of Gypsum on Crop Yield and Soil Properties

Purpose: Evaluate the effect of gypsum on crop yields and soil properties.

Contact: Jim Camberato; Agronomy

Cover Crop Management with Roller Crimper in Soybean Production System
Purpose: Compare weed management, soybean yield and soil temperature and moisture in cereal rye plots.
Contact: Michael O'Donnell; Purdue Extension-Delaware County

Influence of the rate and frequency of FGD gypsum applications and cover crops on soil health and water quality
Purpose: Determine the effects of gypsum on grain yield and soil and water quality.
Contact: Brenda Hofmann, Biological Science Technician and Javier Gonzalez, Soil Scientist with USDA-ARS National Soil Erosion Research Lab

ISOBlue2.0 for CAN message capture
Purpose: Use ISOBlue2.0 units to capture CAN messages and track vehicle information and performance to provide contextual data for other studies
Contact: Dennis Buckmaster, Ag and Biological Engineering

Topography Influences on Crop Yield
Purpose: Use high resolution LIDAR topography data to evaluate water flow and moisture
Contact: Dennis Buckmaster, Ag and Biological Engineering

Soybean Aphid Suction Trap Network
Purpose: Monitor flight of soybean aphids.
Contact: Christian Krupke; Entomology

Insect Pest Monitoring Network
Purpose: Monitor insect pest levels of corn, soybeans and wheat.
Contact: John Obermeyer; Entomology

Cooperative Ag Pest Survey
Purpose: DPAC is used as a monitoring site for a statewide trap grid for the early detection of exotic, invasive insect pests of soybean and vegetables.
Contact: Larry Bledsoe; Entomology

Heliothine Research Survey
Purpose: Use DNA samples from Heliothine moths (Corn earworm) collected weekly throughout the United States to determine the phenology and distribution of a group of viruses known to infect those moths and determine how to use those viruses in IPM strategies.
Contact: Paul Baker, Bruce Webb UKY and John Obermeyer; Entomology

Indiana and Ohio Sampling for Phytophthora
Purpose: Determine the level of Phytophthora levels in Indiana and Ohio Soils.
Contact: Anne Dorrance, The Ohio State University and Shaun Casteel, Agronomy

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
Contacts: Ken Scheeringa; Agronomy

National Weather Service Weather Station (NWS)

Purpose: Record weather data on a daily basis and maintain weather record data base.

Contact: Brad Herald, National Weather Service

Corn and Soybean Herbicide Demonstration Plots

Purpose: Evaluate different herbicide treatments in corn and soybeans

Contact: Jeff Boyer; Davis-PAC and Bill Johnson; Botany and Plant Pathology

Native Grass, Wildflower and Constructed Wetland Demonstration Project

Purpose: Demonstrate the growth and value of native grasses, wildflowers and constructed wetlands.

Contact: Rob Chapman; Forestry and Natural Resources

Understanding Habitat Needs of Northern Long-Eared Bats

Purpose: Monitor activity of Northern Long-eared bats through various collection methods.

Contact: Cheyenne Gerdes, Dr. Patrick Zollner, Forest and Natural Resources

Mixed Hardwood Demonstration Tree Planting

Purpose: Demonstrate mixed hardwoods trees planted in Indiana and the effects deer have on growth and survival of the planted and voluntary trees.

Contact: Don Carlson; Forestry and Natural Resources

Wildlife Shrub Demonstration Plantings

Purpose: Demonstrate several commonly planted wildlife species and the effects deer have on growth and survival.

Contact: Don Carlson; Forestry and Natural Resources

Forest Regeneration Demonstration Area

Purpose: Demonstrate how a forest regenerates following the removal of the woody material. Supplemental tree planting of both standard and select nursery stock occurred on the sites along with fencing of half of the site to exclude impacts of deer on regeneration.

Contact: Don Carlson; Forestry and Natural Resources

Long Term Continuous Forest Inventory

Purpose: Permanent forest inventory plots have been established and maintained on most of the woodlands at Davis PAC to monitor changes in species abundance, growth, survival, and timber quality over time.

Contact: Mike Jenkins and Don Carlson; Forestry and Natural Resources

80+ years of Central Hardwood Forest Dynamics

Contacts: Mike Jenkins and Robert Morrissey, Hardwood Tree Improvement and Regeneration Center, Department of Forestry and Natural Resources