2020 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 planting 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

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

Weed Science Herbicide Evaluation

<table>
<thead>
<tr>
<th>Trial</th>
<th>Acreage</th>
<th>Title</th>
<th>Crop</th>
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<tbody>
<tr>
<td>20-DPAC-Bayer-B5</td>
<td>0.4</td>
<td>CONFIDENTIAL-Bayer HA20USAAB5</td>
<td>noncrop</td>
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<tr>
<td>20-DPAC-PL-AV1</td>
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<td>Sorbyx with soil applied herbicides</td>
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<tr>
<td>N/A</td>
<td>0.22</td>
<td>J. Haarmann noncrop/PPO trial</td>
<td>noncrop</td>
</tr>
<tr>
<td>N/A</td>
<td>0.45</td>
<td>T. Delucchi waterhemp density trial</td>
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<tr>
<td></td>
<td>1.52</td>
<td></td>
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<tr>
<td>N/A</td>
<td>0.22</td>
<td>J. Haarmann PPO soybean trial</td>
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<tr>
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<td>West Central adjuvants with Liberty</td>
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<tr>
<td>20-DPAC-HelmSoy</td>
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<td>CONFIDENTIAL Helm herbicides</td>
<td>soybean</td>
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</tbody>
</table>
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

1. Preemergence Experimental Herbicide and Tank Mixes Targeting Grass and Broadleaf Species in Corn – 18 treatments x 3 Reps
2. Preemergence Experimental Herbicide and Tank Mixes Targeting Grass and Broadleaf Species in Corn – 18 treatments x 3 Reps
3. Preemergence Experimental Herbicide Targeting Broadleaf Species in Corn – 11 Treatments x 3 Reps
4. Preemergence Experimental Herbicide and Tank Mixes Targeting Grass and Broadleaf Species in Soybeans – 18 treatments x 3 Reps
5. Postemergence Experimental Herbicide Targeting Applications at Different Times of day in Soybeans – 7 Treatments x 3 Reps
6. Postemergence Experimental Herbicide Targeting Soybeans at Different Stages of Growth – 7 Treatments x 3 reps
7. Pre-emergence Experimental Herbicide Targeting Grass and Broadleaf weeds in Corn and Soybeans – 9 Treatments x 3 Reps with split corn/soy plots
8. Postemergence Experimental Herbicide Targeting Grass and Broadleaf weeds in Corn and Soybeans – 10 Treatments x 3 Reps with split corn/soy plots
9. Preemergence Experimental Herbicide Targeting Grass and Broadleaf weeds in Corn and Soybeans – 9 Treatments x 3 Reps with split corn/soy plots
10. Early Silk Application of experimental Insecticides on Sweet Corn Targeting Corn Earworm – 9 Treatments x 3 reps

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

**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

**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](http://climate.agry.purdue.edu)  
Contacts: Beth Hall; 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

**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