

## **Missouri- MCCC State Report 2014 & NCCC 211 Report**

### **Hundley-Whaley Research Center:**

Dr. Bruce Burdick continued research plots on establishment of cover crops into standing corn by use of over seeding row units in comparison to drilling post crop harvest. Currently constructing a Conservation Innovation Grant submission in conjunction with Tim Reinbott for continued work on equipment.

### **Bradford Research Center:**

Superintendent, Tim Reinbott, is in the third year of a Conservation Incentive Grant (CIG) exploring using cover crops in organic row crop production systems with mechanical termination.

Missouri Department of Agriculture grant concerning using fall covers to reduce herbicide movement off of clay pan soils.

### **Graves-Chapple Research Center:**

MUEXT Agronomy Specialist, Wayne Flanary (CCA), is the PI on a CIG researching the use of covers in reclamation of flood damaged soils (2011) flood of Missouri River valley.

### **Goodwater Creek Experimental Watershed:**

Cover crop work on soil erosion, water runoff, seeding methods, warm season grasses for fragile ecosystems, herbicide runoff, soil profile and productivity and biological changes.

### **Lincoln University:**

Dr. Todd Higgins is conducting canola variety evaluations for use as covers in Missouri cropping systems.

### **MU Soil Health & Characterization Laboratory:**

Dr. Randy Miles was named to be the next director of the University of Missouri Soil Health & Characterization laboratory, under CAFNR.

### **Mizzou Advantage Grant:**

MUEXT Agronomy Specialist is working on a Mizzou Advantage Grant to develop soil health sampling protocols for Missouri farmers and training MUEXT teams to conduct soil health sampling. The sampling protocols includes capturing standard crop systems characteristics and accelerate the development of a soil health data base across the states cropping regions.

### **Mid MO Soil Health & Cover Crop Seminar:**

The Cooper County Soil & Water Conservation District annually sponsors a seminar targeting farmers (300+ attendees) with national speakers, in conjunction with numerous business.

### **Chariton County SWCD-Associated Electric Cooperative Inc. Research Farm:**

Dr. Ranjith Udawatta, associate research professor CAFNR, continues research from a 2013 CIG at the Chariton County Cover Crop Research Farm, which is sponsored by numerous industry and state agencies.

## **Evaluation of Cover Crops for Summer Annual Weed Suppression in Corn and Soybean Systems:**

Dr. Kevin Bradly, MUEXT Weed Specialist is entering the third year of evaluation of fall seed covers for suppression of herbicide resistant summer annual weed species. Early results indicate cereal rye has a significant suppression.

## **Willott Farm Cover Crop Plots**

The original field size replicated covers works is continuing into the seventh year. Selected treatments were sampled in May 2014 for analysis of biological, chemical and physical properties by the director of the MU Soil Health & Characterization Laboratory. Current plans are to repeat the sampling each May of the next five years. The analysis had few significant differences in parameters measured, indicating that the soil association is not responding on the temporal time line reported in other states.

**The Willott Farm site has been made available to other researchers and continues to grow in the number of researchers using the site and in diversity of study of the site. Selected studies are listed below.**

## **Corn Nitrogen Utilization following Covers:**

Charles Ellis, Kent Shannon both MUEXT Natural Resources Engineers are working with Dr. Peter Scharf on evaluation of corn crop nitrogen requirements at the V7-V17 stage of growth using near infrared sensor technology. 2015 will be the third year of data collection.

## **Missouri Department of Agriculture Reduction of Herbicides using Covers**

The Willott Farm Cover Plots are being evaluated for winter and summer annual weed suppression in order to evaluate species for suppression of summer annual weed control and use in place of fall herbicide application programs. Digital photography and processing using off the shelf processing software will measure ground cover and hand evaluation with determine plant species in known area. Charles Ellis, Rich Hoormann and MUEXT Water Quality Specialist Bob Broz are the team doing the work.

## **Evaluation of Covers Impact on Beneficial Insects:**

Dr. Wayne Bailey, MUEXT Entomology Specialist, is beginning a multiple year study of predacious ground beetles populations over a cropping season. He will be using the site to develop and test evaluation protocols as he monitors the site.

## **Evaluation of Cereal Rye Suppression of Corn Yields (CSCAP):**

Charles Ellis, Rich Hoormann and Dr. Peter Scharf establish a new study looking at the use of winter oats, and cereal rye effect on corn yields following two cereals. CSCAP studies to date indicate a yield penalty for corn following rye. This study is evaluating rye specifically with comparison to a different cereal crop being used in the region.

## **Evaluation of Covers in conjunction with Knifed in Swine Manure:**

Evaluation of the impact of every other year use of swine manure to the changes in soil properties versus covers only is being evaluated. 2015 will be the third year of the study. Rich

Hoormann, Charles Ellis and Kent Shannon are the PI team.

**Program Integration Grant:**

MUEXT has selected Cover Crops as a topic for its Water Quality Initiative Team. In 2015 a complete education training package is being developed for extension educators for use with farmers and other target audiences. The PI team consists of Rich Hoormann, Charles Ellis, Kent Shannon and other MUEXT and partners in an advisory capacity.