

# BOONEVILLE PLANT PRESS

Newsletter from the Booneville Plant Materials Center  
Booneville, Arkansas  
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## Cover Crops Planted to Improve Soil Quality

Growing cover crops (i.e. crops that are not harvested) may have many benefits, such as boosting soil organic matter levels and loosening compacted soil. In October, staff at the Booneville Plant Materials Center (BPMC) planted a new cover crop study designed to improve soil quality after irrigation land leveling on cropland in eastern Arkansas. The new study will evaluate changes in soil organic matter, soil test nutrient levels, and soil temperature over time. This project is a joint effort between the BPMC, Jamie L. Whitten Plant Materials Center in Coffeeville, Miss., and the East and Central NRCS National Technical Centers.



Figure 1: NRCS technician Jimmy Flanagan stands next to a deep cut in the leveled field.

NRCS offers cost-sharing assistance for land leveling to facilitate more efficient irrigation water use and to decrease erosion on cropland. Even though this conservation practice is widely



Figure 2: Landowner John Larkan (left) and BPMC technician Eddie Pratt collect soil samples prior to planting.

used and can improve irrigation water use efficiency, large areas of productive topsoil may be disturbed. Cutting topsoil from some areas and filling other areas disrupts soil microbial communities, alters soil structure and nutrient availability, and could negatively affect crop yield. One common practice that is recommended to restore soil microbial communities is the application of organic matter (usually as poultry litter or other manure source). However, poultry litter must be transported from western Arkansas to the eastern part of the state. Local sources of organic

## Cover Crops Planted to Improve Soil Quality (continued)

matter, which can come from growing cover crops during the winter, could further enhance soil quality.

BPMC staff cooperated with the Hazen NRCS Field Office staff and local landowner John Larkan to set up a study on a field that was land leveled in 2013. On October 23, different cover crop species were planted following the application of poultry litter. The cover crop species were planted in an area of the field where more than two feet of soil was cut during the land leveling process (Figure 1). The cover crop species that were planted include: 'Elbon' annual rye, pasture wheat, a mixture of 'Elbon' rye and 'Nitro' oilseed radish, and a mixture of 'Elbon' rye and 'Dixie' crimson clover.

Soil temperature, soil nutrient availability, and soil moisture will be taken at crop termination in the spring. In addition, cover crop biomass will be measured prior to termination. The staff at the BPMC wishes to extend thanks to John Larkan, Kennard Williams, Jimmy Flanagan, Doug Bush, Amanda Carrell, and Thomas Weatherspoon for their assistance.



Figure 3: Cover crop plant species germinated after two weeks in study field.

## BPMC Holds Annual Plant Materials Training for NRCS Field Office Personnel

The BPMC was proud to hold the annual plant materials training for Arkansas field office personnel in Booneville on July 18<sup>th</sup> and 19<sup>th</sup>. The theme of this year's training was 'Using Plant Materials to Solve Drought-Related Resource Concerns.' Arkansas was hit hard by drought conditions in 2012, as an estimated 81% of the state was classified as being in extreme drought. USDA released over \$3.7 million of cost-sharing assistance to help Arkansas producers cope with drought effects.

A variety of presentations at the training provided field office personnel with a diverse foundation to better assist landowners who have suffered the effects of recent drought conditions. BPMC staff also gave a tour of the farm and current studies, which included Eddie Pratt demonstrating proper methods for seed rate calculations and seed drill calibration. BPMC Manager Randy King presented information about



Figure 4: NRCS state forester George Rheinhardt outlines the specifications for planting hardwood trees for restoration during the farm tour.



Figure 5: NRCS technician Julie Osborne (left) and NRCS district conservationist Monica Paskewitz identify flowering plants.

using switchgrass for hay production, while assistant BPMC manager Alayna Jacobs presented information about integrating native warm season grasses into rotational grazing systems.

Since drought affects both cropland and pastureland, a variety of topics were covered. Dr. John Jennings (Univ. of Arkansas Extension Service) explained how it is possible to get 300 days of grazing from Arkansas forages to avoid reliance on hay. Bob Harper (Univ. of Arkansas Extension Service) explained how to treat weeds that have invaded drought-stricken pastures. Dr. Philip Moore and Dr. Dan Pote (both of USDA Agricultural Research Service) underscored the importance of rotational grazing to prevent soil compaction in pastures. Compacted soils have less pore space for water storage and decrease the amount of plant available water, which is significant especially during drought.

Walt Delp (NRCS state engineer) outlined basic planning considerations for designing surface water irrigation reservoirs on cropland.

Dr. Leo Espinoza explained how droughts can limit crop nutrient uptake and decrease crop yield. The majority of plant nutrients are dissolved in soil solution, and nutrient uptake is reduced when soils are dry.

Planning ahead of time may decrease losses when droughty conditions occur. There are many options for producers to prepare for drought, including practices that recover irrigation water from the edge of crop fields for reuse, and using grazing rotations to maximize forage use efficiency. Pastures that have been overgrazed or crop fields that have compaction problems are not able to store as much soil water for plants. Planning is worth it, though, as one University of Arkansas study estimates that the drought of 2012 cost Arkansas producers over \$128 million in damages.

The BPMC staff wishes to thank all presenters for sharing their expertise!



Figure 6: Dr. Philip Moore (left) and Dr. Dan Pote with the Agricultural Research Service explain the effects of overgrazing on runoff.

## 'Tis the Season for Pumpkin Pies and Pollinators

The holiday season brings family activities like picking pumpkins for carving, decoration, or making homemade pumpkin pie. Though most pumpkins are commercially produced in Illinois, California, Michigan and Ohio, small farmers in Arkansas may produce pumpkins to sell in local markets for carving or decoration. Pumpkins have separate male and female flowers that grow on the same plant; however, pollinators are needed to transfer pollen from the male flowers to the female flowers. Pumpkins, squash, watermelon, and other plants from the squash (Cucurbitaceae) family are native to the Americas, and they evolved with native pollinators called squash bees (*Peponapis prunosa*). Squash bees rely on squash plants as their sole food source, and are only found where squash plants are grown.

Some pumpkin and squash producers use managed populations of European honeybees to ensure a good pumpkin crop. Recent declines in European honeybee populations around the United States have caused some farmers to purchase expensive colonies of European honeybees. Encouraging native squash bee pollination using could be an alternative to purchasing commercial bee colonies.



Figure 7: Pumpkins ready for harvest. (USDA photo)



Figure 8: Squash bees pollinate a flower. (Photo by Nancy Adamson and the Xerces Society for Invertebrate Conservation, used with permission)

Squash bees are specifically adapted for visiting squash flowers. They start collecting pollen earlier in the day than honeybees. Since flowers are only open for a few hours in the morning and in the evening, an early start is important to ensure the flower gets pollinated before it closes.

Squash bees are solitary bees that nest in the ground and only produce one offspring per year. Male and female squash bees even court each other inside squash flowers. To encourage squash bee populations, Penn State Cooperative

Extension recommends leaving a portion of pumpkin-producing fields fallow after harvest until summer. Planting a strip of summer squash near the area where pumpkins will be grown in the fall may also encourage squash bees to nest in the ground.



## Administrative Assistant Transfers to Fort Smith Office

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BMPC administrative assistant Debbie Orick has accepted a new position as the new NRCS administrative assistant for the northwest area. Debbie has been providing excellent customer service at the BPMC for nearly a decade. She is famous for her hospitality toward all who visit the PMC or call the office.

Debbie is a reminder that the mission of NRCS is not only to provide technical information to the American public, but also to provide superior customer service. Debbie always took care of the details associated with PMC events and her friendly demeanor always made visitors feel welcome.

Though Debbie will be missed, the staff at the BPMC would like to congratulate her on her new position. In addition, BPMC staff would also like to congratulate NRCS staff in the northwest area, as Debbie will surely bring her great attitude and thoughtful nature to her new duties.



### **About Us:**

The Dale Bumpers Small Farm Research Center is home to the USDA, Natural Resources Conservation Service-Booneville Plant Materials Center and the USDA Agricultural Research Service. The primary service area of the Center encompasses 53 million acres of Arkansas, Oklahoma and Missouri. We are located at: 6883 South State Hwy 23, Booneville, Arkansas 72927. You may contact us at (479) 675-5182, Fax: (479) 675-5466. Our hours are from 8:00 A.M. to 4:30 P.M., Monday - Friday.

**If you would like a tour of the PMC, please call to schedule an appointment.**

Our staff members are: Randy King—Manager, Alayna Jacobs—Assistant Manager, Debbie Orick—Office Assistant, and Eddie Pratt and Dale Goff—Biological Science Technicians.

### **Our Mission Statement:**

The mission of the Natural Resources Conservation Service, Plant Materials (PM) Programs is to develop, test, and transfer effective state-of-the-art plant science technology to meet customer and resource needs. NRCS PMC activities are consistent with the objectives of the current United States Department of Agriculture (USDA) and NRCS Strategic Plan namely to provide timely and effective vegetative solutions for identified resource needs.



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