



Elsberry Plant Materials Center 2013 Progress Report of Activities



Purple top turnip demonstration plot that was planted on August 1, 2013. This photograph was taken 56 days after planting -- on September 26, 2013

Demonstration Plots of 36 Different Cover Crops *Demonstration Leader: Ron Cordsiemon*

Beginning August 1, 2013, the staff of the Elsberry PMC planted 36 different species of cover crops. Each species was planted again every 14 days for five more planting dates. The six different plantings demonstrated the optimum time to plant each cover crop to achieve both above and below ground biomass.

The demonstration plot was established to educate the PMC staff and visitors of the different plant characteristics of the 36 selected cover crops. Many different plant species are being explored to see what beneficial characteristics they possess and how they might be incorporated into a cover crop mixture that would be beneficial to farmers and landowners today.

The plots at the PMC were divided into three sections; legumes/broadleaves, grasses, and Brassica species. Each week starting the week of the first planting, the plots were photo documented and height was measured. The plots were also evaluated for biomass after the first killing frost. The demonstration plots were a highlight during the Soil Health/Cover Crop Workshop held at the PMC on Nov. 7, 2013.

2013

• • •

Plant Materials Center Staff
Ron Cordsiemon – PMC Manager
Allen Casey – Soil Conservationist
Nick Adams – Biological Technician
Ronnie Vaughn – Biological Aid WAE
Benjamin Bruckerhoff – Summer WAE

J.R. Flores
Missouri State Conservationist

Dwaine Gelnar
Missouri State Resource Conservationist

Jerry Kaiser
Plant Materials Specialist

Earth Team Volunteer
Jimmy Henry

Elsberry Plant Materials Center
United States Department of Agriculture
Natural Resources Conservation Service
2803 N. Hwy. 79
Elsberry, Missouri 63343
Phone: 573-898-2012
Fax: 573-898-5019
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/plantmaterials/PMC/central/mopmc/>



Plant Materials Center Release and Potential Release

Ron Cordsiemon

Refuge Germplasm big bluestem (*Andropogon gerardii*, L.) was officially released in 2006, but due to limited quantities, seed was not made available to commercial growers. Following the release, limited quantities of breeder seed was used to establish a foundation field planting at the PMC. The breeder and foundation plantings, both located in a bottomland field, were destroyed in the flood of 2008. There were limited quantities of vegetative material from the breeder plot that was salvaged prior to inundation of the flood waters. This vegetative material was moved to an upland site on two different occasions as isolation from other big bluestem plots became an issue. Seed has been harvested from the breeder plots and will be planted on the PMC to establish a foundation plot in this spring.

Refuge Germplasm seed that will be harvested from the newly established foundation planting will be made available to commercial growers. Three collections were selected from 370 different collections of big bluestem to make the selected class release. Refuge big bluestem was selected for its short stature, growing 4.5 – 5.5 feet tall, and its ability to resist lodging throughout the winter. In the near future, this release will make an excellent selection as part of a wildlife habitat planting. Field plantings of the tall stature big bluestem, known by the unofficial release name “Epic”, were started in 2013. This selection of big bluestem has the potential to be used in field borders and as herbaceous windbreak. There has been a selection of plants made for the northern region little bluestem, and seed collected from this plot will be used to establish a foundation planting. Following the foundation planting establishment, seed from this plot will be used in side-by-side field evaluations with another variety of little bluestem.

In 2010, Ozark Germplasm little bluestem was released as a selected class release to supply the southern part of the PMC service area (southern Illinois and southern Missouri) with a high-quality and heavy forage producing warm-season grass component. The northern region little bluestem release will supply the northern region of the PMC service (Iowa, northern Illinois, and northern Missouri) when it is released.



Jerry Kaiser, PM Specialist, stands next to a “selection plot” of Refuge Germplasm big bluestem

Collection of Plant Attributes from Plantings of Giant Miscanthus for RUSLE2

Study Leader: Allen Casey

This study was continued in 2013. Data was collected from the second year plantings and will be compiled with the last data collection in March 2014. All data from this study will be compiled and submitted in 2014 for inclusion into the RUSLE2 models. The PMC is working with Seth Dabney, research leader from USDA-ARS in Oxford, Mississippi, to compile the data.

National Study: Effect of Mixed Species Cover Crops on Soil Health

Study Leader: Allen Casey

In March 2013 the cover crops for each treatment in this study were harvested for estimates of biomass and species composition. Samples of the soil from each of the 40 treatment plots were taken for analysis of soil dynamic properties and biological assessment. The cover crops were terminated on March 22, 2013, and corn was planted on May 14, 2013.

The corn was used as a response crop and harvested for yield on October 17, 2013. Soil samples were taken again before the cover crop treatments were planted on October 25, 2013. This study will continue into 2014. A webinar presentation that summarized part of the Year 1 data was presented by the participating Plant Materials Centers on September 11, 2013. You can see the recorded webinar at this web link: <http://www.conservationwebinars.net/webinars/pmc-soil-health-study-year1>.



Nick Adams (right), PMC technician, and Ronnie Vaughn, PMC technician aid, shell the corn from the Effect of Mixed Species Cover Crops on Soil Health Study in order determine a yield from each treatment.

Using Biological Approach (Sheep/Goats) to Control Invasive Species with Emphasis on Bush Honeysuckle, *Lonicera maackii*, and Buckthorn, *Rhamnus cathartica*

Study Leader: Ron Cordsiemon

The PMC began its third year using small ruminants on the PMC to control invasive woody understory. Lincoln University provided Spanish and Boar goats the past two years.. As the goats overwintered on the PMC and honeysuckle trees finally

dropped their leaves, the goats began to debark much of the small tender-barked trees. Unfortunately, honeysuckle wasn't the main species that the goats targeted. The goats did chew the bark of honeysuckle and buckthorn, but concentrated on locust and redbud trees, among other species.

The staff at the PMC was interested in how the goats would react after all leafy browse had dropped. Using goats to debark trees in the winter could potentially be used to control woody understory. The problem exists on how to control unwanted species and how to protect beneficial species.

The PMC has partnered with Dr. Charlotte Clifford-Rathert, research veterinarian with Lincoln University Research and Extension, for the ongoing study to use small ruminant animals to control invasive brush species in forested areas. Over the past year, portions of selected paddocks have had mechanical treatment in addition to the biological treatment (goats). The PMC staff has hinge-cut blocks of the honeysuckle population in some of the paddocks. This, provides additional, unreachable food to the goats and also forces the honeysuckle plant to use root reserves to survive. Subsequently, any new growth from the plant is easily accessible to the goats and control of the plant achievable.

The PMC staff also used a Fecon Bullhog, which is an implement that attaches to the front end of a skid loader. The bullhog can cut through woody material up to 10 inches in diameter. This type of mechanical treatment is less labor extensive, but still doesn't cover 100 percent of the area and doesn't discriminate among different species in the treatment area. Using a bullhog speeds the process of controlling the understory and once the goats are back on the treated area, and maintenance is very easy. The goats were grazed during the summer and into the fall of 2013, and then were taken off of the PMC for the winter of 2013-2014. They will be bred during the time that they are away and will be back at the PMC in the spring.

Cool Season Cover Crop Evaluations and Demo: Cover Crop Field Trials

Field Study Leader: Jerry Kaiser

In Missouri a three-year field trial on cool season cover crops was started in fall 2012. These on-farm field trials consisted of cool season cover crop mixtures being demonstrated and evaluated at eight locations across the state. It targeted MLRAs 107, 109, 112, 113, 115, 116, 131 and 134 in areas of cropland located in Jackson, Saline Caldwell, Worth, Ralls, St. Charles, Perry, and Cape Girardeau counties.

Mixtures of cover crop species were planted in 2012 and 2013 following either corn or soybean crops. Each field trial is 10 acres, subdivided into four 2.5-acre plots. This allowed three different cover crop species/mixtures per farm, and one unplanted check plot. I worked directly with the field office personnel for 2013 data collection and field days with producers.

Training and Tours

Training for New Employees by Field Technical Service and Plant Materials Staff

Three-day training was offered in August 2013 to new SWCD, NRCS, and Missouri Department of Conservation personnel from Iowa, Missouri, and Illinois. Participants were given hands-on training for grazing management and fencing techniques, basic soils and soil health characteristics, plant materials program processes and functions, tree and plant identification, and an introduction to tillage equipment, spray equipment, planters, drills, and harvesting equipment. The training also included a tour of the fields and facilities of the PMC. The new employee basic field training is planned to be offered again.

Technology Transfer

Presentations

- Casey, A. 2013. Help for Declining Native Pollinators – Bees, Bats, and Butterflies, Among Others. Smoky Hills Chapter Audubon Society at Kansas Wesleyan University. 17 Jan 2013. Salina, KS.
- Casey, A. 2013. Effect of Mixed Species Cover Crops on Soil Health. Soil and Water Conservation District. 12 Feb 2013. Anna, IL.
- Cordsiemon, R. and J. Kaiser. Small Ruminant Biological Control. Lincoln University Research and Extension, Small Ruminant Workshop. 1 Mar 2013. Elsberry, MO
- Kaiser, J. 2013. Cover Crop Field Day: Field Trials with Cover Crops. Caldwell County, Missouri Cover Crop Field Day. 20 Mar 2013. Caldwell County, MO.
- Kaiser, J. 2013. Cover Crop Field Day: Field Trials for Cover Crops. Saline County, Missouri Cover Crop Field Day. 21 Mar 2013. Saline County, MO.
- Casey, A. 2013. Pollinators and the Plants They Use. Missouri Native Plant Society and the St. Louis Chapter of the North American Butterfly Association. 27 Mar 2013. St. Louis, MO.
- Kaiser, J. 2013. Plant Materials Update. D.C. Meeting, Illinois Area 1. 28 Mar 2013.
- Cordsiemon, R., J. Kaiser, and A. Casey. 2013. The Elsberry Plant Materials Center. Clopton, MO Elementary School. 3 May 2013. Elsberry, MO.
- Kaiser, J. 2013. Webinar: How to participate with the Plant Materials Program for Missouri Conservation Planning. 12 Jun 2013. Columbia, MO.
- Kaiser, J. 2013. Cover Crop Study Update. 23 Oct 2013. Elsberry, MO.
- Kaiser, J. 2013. Introduction to the Plant Materials Program. Illinois Conservation Planning for New Employees. 24 Oct 2013. Champaign, IL.
- Casey, A. Soil Erosion: Dust Bowl to Today. Kansas Native Plant Society Annual Wildflower Weekend. 14 Sep 2013. Salina, KS.

Casey, A. 2013. Pollinators and the Plants They Use. St. Louis Community College Continuing Education Class. 17 Sep 2013. St. Louis, MO.
Kaiser, J. 2013. Update on Cover Crop Studies and other Iowa Plant Materials. Iowa Plant Materials Committee. 20 Nov 2013. Des Moines, IA.
Kaiser, J. 2013. Cover Crops for Cropland. Union County Illinois SWCD. 12 Dec 2013. Anna, IL.

Publications

Borders, B., A. Casey, J. Row, R. Wynia, A. Jacobs, C. Taylor, E. Mader. 2013. Pollinator Plants of the Central United States: Native Milkweeds (*Asclepias* spp.). Portland, OR.
Kaiser, J., A. Casey, R. Cordsiemon. 2013. Plants for Conservation Spring Newsletter. Vol. 14 No. 1. Elsberry, MO.
Kaiser, J. 2013. Guidelines for Herbaceous Stand Evaluation. Missouri Technical Note 40. Columbia, MO.

These and other publications can be accessed by going to the Plant Materials Website at <http://www.nrcs.usda.gov/wps/portal/nrcs/site/plantmaterials/home/>.