



United States
Department of
Agriculture

Elsberry Plant Materials Center 2014 Progress Report of Activities



Ron Cordsiemon, PMC Manager, collecting both weed and cover crop biomass on April 22, 2014 from a plot planted with rye, crimson clover, hairy vetch, radish, oats and canola.

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

Study Leader: Ron Cordsiemon

On October 26th, the staff at the Elsberry Plant Materials Center planted cover crop plots as part of the national soil health study to evaluate seeding mixes and rates of selected cover crops. Due to a “funding gap” the government was shut down for 16 days. Planting was delayed almost a month due to the “funding gap” and weather. Cover crop plots were evaluated for percent cover and height at 32 days (11/26/2013) and 181 days (4/22/2014). The optimum time to plant most cover crops in the fall is between August and September according to Missouri Cover Crop Practice Standard 340. When the plots were evaluated for cover at 32 days, there was a slight difference in the seeding rates within each seeding mix. The higher rates provided more cover, but in all cases, the 2, 4, and 6 specie mixes provided less than 10 percent cover at 32 days, largely due to the late planting date. The evaluation performed at 181 days for percent canopy cover also shows a slightly higher amount of cover for the higher seeding rates. This was evident in all three seeding mixes. Looking at canopy height, there was no difference at any stage of the growing season among the seeding rates for each mix.

2014

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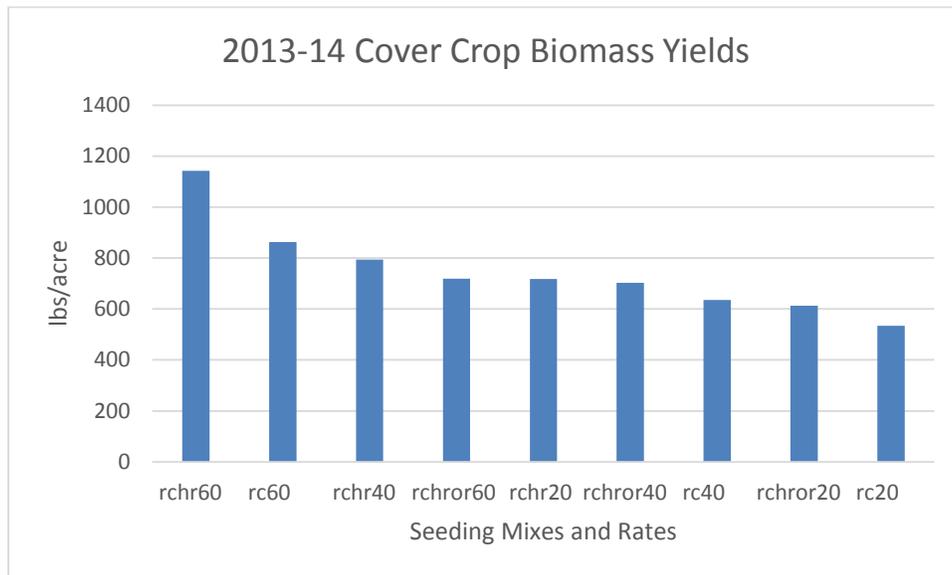
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<http://www.nrcs.usda.gov/wps/portal/nrcs/main/plantmaterials/pmc/central/mopmc/>



With regards to the above ground biomass yields across all of the cover crop treatments, the mixes which had the higher seeding rates generally produced more biomass. (Figure 1) Corn again was planted as a response crop to the cover crop treatments and like the previous year, no nitrogen was added. Corn yields were statistically the same among all cover crop treatments. The corn yields ranged from 122 to 159 bushels per acre. The poor cover crop biomass yields could attribute to no difference in corn yields, which is ultimately affected by the cover crop planting date. For most purposes for which cover crops are established, cover is at nearly 90 percent or greater, and the above ground (dry weight) biomass production is at least 4,000 lbs/acre. Cover crop treatment plots were far below the 4,000 lbs/acre.

Figure 1



Seeding Mixes:

rc – cereal rye and crimson clover, rchr – cereal rye, crimson clover, hairy vetch and radish, and rchror – cereal rye, crimson clover, hairy vetch, radish, oats and rapeseed (canola)

Seeding Rates: 20, 40 and 60 seeds per square foot

Northern Region Little Bluestem

Nick Adams

The Elsberry PMC is currently working on a new selected class release of little bluestem (*Schizachyrium scoparium*) that will service our northern region of the service area (Iowa, Northern Missouri, and Northern Illinois). In 2010 we released our Ozark Little Bluestem that services the southern service area (Southern Missouri and Southern Illinois). The new little bluestem along with Ozark were selected to improve on the grazing potential of little bluestem in the predetermined regions of our service area.

They were selected based on forage quality, late seed maturity, vigor, seedling emergence, and regrowth potential following defoliation.



Selected little bluestem plants from the northern part of the service region make-up this crossing block.

We are currently still working on expanding our seed production field of the northern region little bluestem here on the center. In 2014, the first generation production block was established. The PMC staff will be able to harvest seed in the fall of 2015. This seed will be offered to field offices for side by side field evaluation plantings in spring 2016. The field evaluations test our newly selected little bluestem for the northern region of our service area against little bluestem currently on the market such as Aldous and Ozark.

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

Field Study Leader: Jerry Kaiser

This project is in the final year of the three-years of evaluating cool season cover crops mixtures on farm field trials in Missouri. These five locations for on-farm field trials consist of data collected on percent canopy cover, amount of dry matter produced/acre,

termination rating on cover crops, and visual rating of cash crop. The locations in 2014 were Caldwell, St. Charles, Perry, and two locations in Cape Girardeau counties.

Mixtures of cover crop species were planted in 2012, 2013, 2014 following either corn or soybean crops. Each field trial was 10 acres, subdivided into four 2.5-acre plots. This allowed three different cover crop species/mixtures per farm, and one unplanted check plot. 2014 data was collected see website link below for field data pages 277-287. The PM program appreciates the support of the local field offices and landowners in assistance with data collection and field days to show the local producers about the cover crop field trials.

http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/mopmctr12230.pdf



Field 1- Annual ryegrass, Crimson clover and Oilseed radish Caldwell County



Drilled on 9-27; 7 weeks later

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

Study Leader: Ron Cordsiemon

This project is entering its fifth year of having livestock at the Elsberry PMC. The small ruminants have been evaluated for their ability to control the vast amount of invasive understory which has inundated most of the woodlands at the PMC. In 2011, sheep were brought to the center as a biological control primarily targeting bush honeysuckle (*Lonicera maackii*) and common buckthorn (*Rhamnus cathartica*). It was determined that the browse line of the sheep was not adequate and that goats could potentially be more aggressive of the invasive vegetation. Over the course of the next 3 growing seasons goats were browsed in all five paddocks at the PMC. The browse line of the goats was approximately 12 inches higher and their ability to bring weaker vegetation down was greater. The problem still exists as to how to control the more mature vegetation without relying mechanical tools. Mechanical tools such as rotary cutters and chainsaws are very beneficial, but the regrowth can be as bad if not worse than the established vegetation. The silver lining is that small ruminants such as sheep and goats will control any and all regrowth material.



Prior to this project starting in 2011, NRCS staff evaluated the diversity of the vegetation at random locations within the treatment areas. At each point, a 30 foot radius as established and the vegetation within that circle was documented. In the first 11 points from separate paddocks, not one point had less than 60% cover a honeysuckle for the understory. These points will again be evaluated in 2015 to

determine in the plant diversity has changed with the open understory and document the return of any native vegetation.

Training and Tours

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

Three-day training was offered in September 2014 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

Cordsiemon, R.L., Kaiser, J.U. November 7, 2013. Soil Health/Cover Crop Workshop. Elsberry Plant Materials Center/Elsberry American Legion.

Kaiser J.U. November 15, 2013 Cover Crop Workshop, Cape Girardeau County

Casey, P.A. February 25, 2014. Pollinators and the Plants They Use. St. Louis Community College.

Kaiser J.U. March 11, 2014 Cover Crop Workshop, Perry County Missouri

Kaiser J.U. March 18, 2014 Cover Crop Workshop, Ste. Genevieve Missouri.

Kaiser J.U. March 31, 2014 Cover Crop workshop, Caldwell County Missouri.

Cordsiemon, R.L., Kaiser, J.U. March 21, 2014. Ecotype Production Workshop. Lincoln University, Jefferson City, MO.

Kaiser J.U. Cordsiemon R.L. April 2nd, 2014, Soil Health and Cover Crop Workshop, Plant Materials Center, Elsberry Missouri.

Cordsiemon, R.L., Kaiser, J.U. April 9, 2014. Illinois Conservation Planning-Introduction to the Plant Materials Program and the Elsberry PMC. USDA-NRCS Illinois State Office, Champaign, IL.

Kaiser, J.U., Cordsiemon, R.L. June 10, 2014. Missouri Conservation Planning. University of Missouri-Bradford Research Farm

Casey, P.A. August 6, 2014. Pike County Missouri – Ask the Experts Panel. Bowling Green, MO.

Kaiser J.U. August 13th, 2014, Characteristics of Cover Crops, University of Missouri-Bradford Research Farm.

Casey, P.A. August 22, 2014. Considerations for Pollinators and the Plants They Use. Clay Co Construction Company, St. Louis, MO.

Cordsiemon, R.L., Casey, P.A, Kaiser, J U. September 16, 2014. New Employee Field Training. Elsberry Plant Materials Center.

Kaiser, J.U., Casey, P.A. September 22, 2014. Missouri Conservation Planning for SWCD Employees – Plant ID. University of Missouri-Bradford Farm

Publications

Casey, A., R. Cordsiemon, J. Kaiser, N Adams 2014. Plants for Conservation: Winter Newsletter.

Elsberry, MO. Vol. 15, No. 1. 2p.

Casey, A., R. Cordsiemon, and N. Adams 2014. Elsberry Plant Materials Center 2013 Progress Report of Activities. Elsberry, Missouri. 2013. 6p.

Casey, A., R. Cordsiemon, and N. Adams 2014. Elsberry, Missouri National Study Progress Report: Effect of Mixed Species Cover Crops on Soil Health - Year 1. Elsberry, Missouri. March 2014. 6p.

Cordsiemon, R. L., A. Casey, N. Adams, and J. Kaiser 2014. 2011-2013 Technical Report: Elsberry, Missouri Plant Materials Center. Elsberry, Missouri. 2011-2013. 296p.

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/>.