

## Jamie L. Whitten Plant Materials Center 2014 Annual Progress Report of Activities

January 2015

The Jamie L. Whitten Plant Materials Center in Coffeerville, Mississippi (MSPMC) uses training courses, publications, and demonstration plantings to further the effective planning of vegetative conservation practices. The following activities describe MSPMC activities in 2014.

### Using cover crops to improve soil health after land leveling

The Mississippi Plant Materials Center (MSPMC) collaborated with the Arkansas Plant Materials Center (ARPMC) to evaluate the use of several cover crops to restore or enhance levels of soil organic matter and soil nutrients after irrigation land leveling (Table 1; Figure 1). Precision land leveling is a conservation practice that may improve irrigation efficiency and limit the spread of sediment and chemicals to water bodies. Despite these net positive effects, land leveling severely disrupts soil microbial communities and alters soil physical structure. Topsoil removed from cut areas contains important crop nutrients, organic matter, and microbial communities vital for crop growth and water infiltration.



Figure 1: Radish cover crop grows in January.

Table 1: Cover crop species included in the study

Cover Crop Species	Description	Potential benefits
'Elbon' cereal rye	Annual cool-season grass	Winter-hardiness, large root system and biomass production
'Nitro' radish	Annual brassica/mustard	Soil aeration, penetration of compacted soil for crop root growth
'Dixie' crimson clover	Annual legume	Low carbon to nitrogen ratio in biomass (easily absorbed by the cash crop), nitrogen fixation, source of nectar and pollen for insects
Wheat (common)	Annual cool-season grass	Large root system and biomass production, affordable

Cover crop seed was broadcast-seeded in late October through early November 2013 and 2014 on working farms in Sunflower, Tippah, Tallahatchie, and Coahoma counties following soybean harvest. Winter cover crops should be planted as early as possible (ideal date in the Mississippi River Delta is late September for most rotations).

Results show that control plots (where no cover crops were planted) achieved only 6% plant canopy cover by the end of February. In contrast, cover was much greater in plots planted with cover crop species (68%). Increasing plant canopy cover on crop fields

protects topsoil from wind and water erosion, provides habitat to beneficial soil microbes, and builds soil organic matter over time. Cereal rye appeared to be more winter hardy than wheat and achieved an average of 6% more cover on both Mississippi and Arkansas sites. At termination in March, cover was greatest in cereal rye plots (Figure 2).

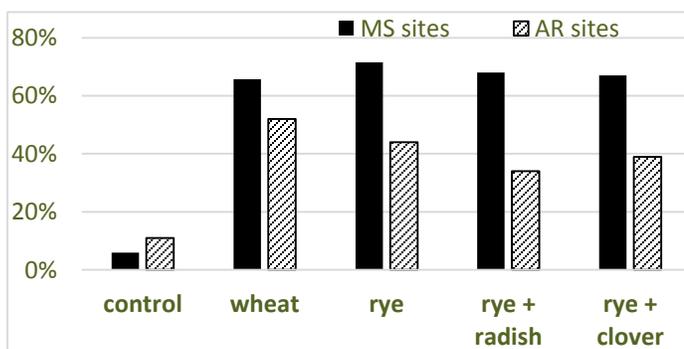


Figure 2: Average canopy cover of plots in February prior to termination in March.

Please contact the MSPMC if you are interested in learning more about how to choose a cover crop species to solve specific resource concerns, or if you work with landowners who may be interested in cover crops.

## PMC staff partner with Mississippi NRCS staff to publish soil health document

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MSPMC staff member Jon Allison and area engineer Paul Rodrigue and MLRA soil survey leader Rachel Stout Evans developed an information sheet that describes basic soil health conservation practices that promote soil health in the Mississippi Delta. The document, Delta Soil Health – A Delta Soil Management System Using Conservation Practices: Farm Bill Implementation, includes descriptions of crop rotations, cover crops, mulch tillage, and no-till systems to improve soil health on cropland. The information sheet provides guidance to NRCS staff about common conservation alternatives to improve soil health on cropland. Most of the practices mentioned are eligible for NRCS financial assistance.



**Figure 2: Planting soybeans in corn residue can improve soil health over time.**

Please contact Paul Rodrigue to obtain this information sheet ([paul.rodrigue@ms.usda.gov](mailto:paul.rodrigue@ms.usda.gov)) or watch for it on the [MSPMC website](#) soon!

## Plant materials for conservation plantings: preventing shoreline erosion on irrigation reservoirs with ‘Halifax’ maidencane

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In April, 2013, the MSPMC provided Arkansas NRCS with approximately 1,000 ‘Halifax’ maidencane plantlets to control erosion on irrigation reservoirs in Arkansas. Maidencane (*Panicum hemitomon* Schult.), is a native, warm season, perennial semi-aquatic grass that grows 2-3 feet tall. It spreads from numerous, creeping rhizomes which allows it to form a dense vegetative mat capable of protecting reservoir banks.



**Figure 3: Minimal maidencane growth in Arkansas 45 days after planting (left). Plantlets emerge from rhizomes of mother plant after one year (right).**

In Mississippi and Arkansas, maidencane must be established by planting vegetative rhizomes because it rarely produces fertile seed. The MSPMC released ‘Halifax’ as a cultivar. More information about using maidencane to prevent soil erosion is available in the [‘Halifax’ release brochure](#).

## Who We Are

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The Jamie L. Whitten Plant Materials Center (MSPMC) near Coffeerville, MS, is operated by the United States Department of Agriculture, Natural Resources Conservation Service and was established in 1960. The MSPMC is approximately 250 acres and land is leased from the US Forest Service (Holly Springs National Forest). Conservation plant technology began at the center (Soil Conservation Service Coffeerville Nursery) in the 1930s to produce seed and mulch to limit erosion during the Yazoo-Little Tallahatchie Sediment and Flood Prevention Project. The MSPMC is part of a national network of 25 centers dedicated to providing vegetative solutions for conservation problems, and focuses on addressing water quality in these areas: Mississippi (excluding the Gulf Coast), the Delta regions of Arkansas, Louisiana, western Tennessee, southeastern Missouri, southwestern Kentucky, and the blackland prairie of central Alabama.

## What We Do

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The mission of the Natural Resources Conservation Service Plant Materials Programs is to develop, test, and transfer effective plant science technology to meet NRCS field office staff plant materials needs. The MSPMC activities help accomplish the objectives of the United States Department of Agriculture (USDA) and NRCS Strategic Plan in providing timely and effective vegetative solutions for identified resource needs by developing studies and demonstrations for NRCS field staff on-site and on working farms in the service area.



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