

# Jamie L. Whitten Plant Materials Center 2015 Annual Progress Report of Activities

January 2016

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 2015.



Figure 2: MSPMC in 1962



Figure 1: Present-day MSPMC in 2015

## New study evaluates which warm-season cover crops are adapted to the Southeast

Warm-season or summer cover crops can fill niches for farmers who grow winter vegetable crops, as well as row-crop farmers interested in limiting weeds, especially in a year when only wheat is grown. The MSPMC is working with the Florida and Georgia PMCs to develop a list of recommended cultivars for the Southeast. Over 20 species and cultivars were evaluated for biomass production and disease in 2015, with the study continuing for another two years.

The legume species that produced the most biomass was Sunn Hemp, with an average of 3 tons dry matter per acre. There were no significant differences among Sunn Hemp cultivars ('AU Golden', 'Tropic Sunn', and common), indicating that either source would perform well given weather conditions in 2015 (Figure 4). Sunn hemp varieties did differ in flowering time. Common and AU Golden flowered three weeks before Tropic Sunn (Figure 3).

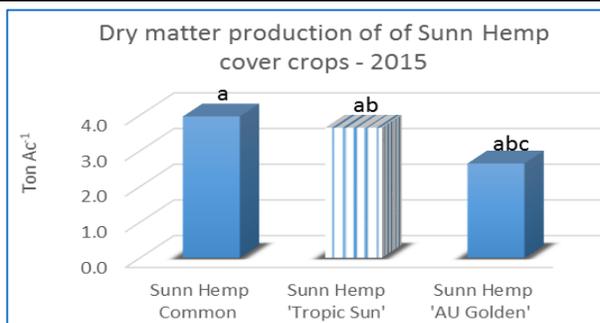


Figure 4: Sunn hemp biomass production. Bars that include the same letters indicate means are not significantly different at the 0.05 level.



Figure 3: Sunn hemp in July. Tropic Sunn (middle) is the only variety that hasn't flowered yet.

Cowpea performed well with an average dry matter production of two tons per acre and no differences among cultivars ('Red Ripper', 'Chinese Red', and 'Iron and Clay'; data not shown), though aphids attacked Iron and Clay more than the other cultivars. The lowest biomass yields were the forage soybeans (data not shown).



Figure 6: PMC staff evaluate browntop millet in July.

The grass species that produced the most biomass did not significantly differ and included common sterile sorghum, 'Chiwapa' Japanese millet, 'Honey Graze' BMR sorghum sudangrass, and common teosinte, with an average of one ton/acre (data not shown). In contrast to the sunn hemp, cultivar choice made a significant difference in Japanese millet biomass production. Common, or variety not stated (VNS) Japanese millet produced only 14% (268 lb ac<sup>-1</sup>) of the biomass that Chiwapa Japanese millet produced (1,935 lb ac<sup>-1</sup>; Figure 5). Named cultivars exhibit known characteristics, unlike common or VNS material, which may perform differently depending on each lot purchased.

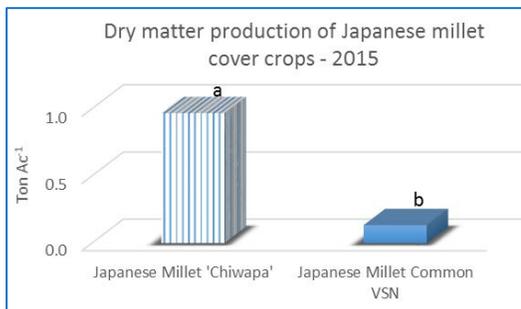


Figure 5: Chiwapa and common Japanese millet biomass. Different letters atop bars indicate that means are significantly different at the 0.05 level.

This study serves as a training site for NRCS field staff. The MSPMC held a Warm Season Cover Crop Workshop in June to familiarize staff with species characteristics and how to choose appropriate cover crops to address resource concerns.

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

Since 2014, the MSPMC has been evaluating the use of several cover crops to restore or enhance levels of soil organic matter and soil nutrients after irrigation land leveling (Table 1). Despite net positive effects, land leveling severely disrupts soil microbial communities and alters soil physical structure.

Cover crop seed was broadcast-seeded in late October 2015 on a working farm in Tallahatchie County following soybean harvest and fall tillage operations after leveling three years ago.

The mixes were evaluated by determining the species composition of plant canopy cover 45 (January) and 120 days (March) after planting. The rye (58%) and wheat (51%) monocultures had significantly greater cover after 45 days than the rye and radish (39%) and rye and crimson clover (37%; Figure 7). However, the mixes caught up to the monocultures at 120 days after planting, as all plots averaged 53% cover.



Figure 8: PMC staff and Tallahatchie soil conservation technician Hannah Rogers monitor plots

Freshly leveled land (even three years after leveling) achieves 0% average cover after 120 days, so planting any sort of cover crop can help improve soil organic matter over time.

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.

Table 1: Cover crop mixes for land-leveled sites

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
'Dixie' crimson clover	Annual legume	Low carbon to nitrogen ratio in biomass (easily absorbed by the cash crop), nitrogen fixation
Wheat (common)	Annual cool-season grass	Large root system and biomass production, affordable

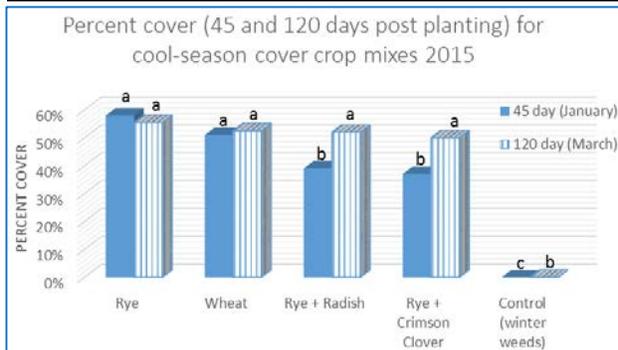


Figure 7: Percent canopy cover of seed mixes 45 and 120 days after planting. Different letters atop bars indicate that means are significantly different at the 0.05 level.

## Cover crop workshops help field staff use 9-step planning process

The PMC hosted two cover crop workshops for over 40 field office personnel this year. The events focused on properly using the 9-step planning process to help landowners integrate cover crops into their operations.

The June single-day workshop provided information about warm-season or summer cover crop species. Excessively wet spring conditions prevented some farmers in the area from planting corn or soybeans, which led to an opportunity to plant a summer cover crop. This workshop gave field staff from Mississippi and Arkansas the basics of warm-season cover crop species selection and planting techniques to share with landowners. Participants designed alternatives in teams and helped plant a PMC field in cowpeas.

The December two-day workshop provided information about cool-season or winter cover crop species. This workshop provided detailed information to Mississippi and Arkansas field staff about a number of topics by NRCS-MS planning staff, PMC staff, and Mississippi and Arkansas State University specialists. Topics included identifying resource concerns that cover crops can address, using RUSLE2 to evaluate alternatives, and basic contract management for Farm Bill programs. Contact the PMC if you are interested in attending a future workshop.



Figure 9: NRCS staff learn how to calibrate a seed drill and plant cowpea in June 2015



Figure 11: A Calhoun County sweet potato farmer shares his cover crop experiences with NRCS staff in December



Figure 10: Soil scientist Rachel Stout-Evans explains to field staff how cover crops affect soil pore space at the PMC in December

## Demonstration plantings at Alcorn State University sites target small farmers

Mississippi NRCS and PMC staff planted winter cover crops at two Alcorn State University research sites at Mound Bayou and Preston. Both sites function as extension/research farms to transfer technology to small farmers.

The PMC provided technical assistance to Alcorn staff in cover crop species selection, drill calibration, and termination timing for a mix of crimson clover, cereal rye, and daikon radish between crops of peas and sweet corn. PMC staff and NRCS-MS state staff also presented information on-site to small farmers who attended Alcorn field days.



Figure 13: Alcorn and MSPMC staff monitor a winter cover crop mixture at Mound Bayou



Figure 12: MS state agronomist Walter Jackson and PMC staff measure cover crop seed at the Preston site

## PMC helps USFS and local communities establish milkweed for pollinator habitat

The United States Forest Service (USFS) in Mississippi requested assistance in establishing Monarch butterfly habitat on national forests within the state. Staff at the MSPMC grew over 3,000 live milkweed plants and prepared over 10,000 seeds for delivery to USFS personnel and their local partners. In addition, the MSPMC, USFS, and Yalobusha County Extension Service helped Coffeerville Elementary School establish a butterfly garden on campus to celebrate Earth Day on April 22 (Figure 12).



Figure 14: Tommy Moss shows fifth graders how to plant milkweed for Earth Day

Tommy Moss, MSPMC agronomist, developed informational sheets about establishing milkweed from seed or planting live plants. These sheets could be useful for field office staff who routinely answer pollinator questions from the public and small farmers. The sheets are posted on the [MSPMC website](#), or please contact the MSPMC for more information.

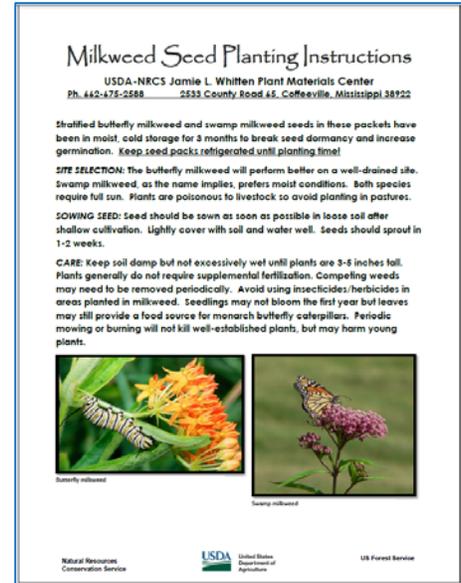


Figure 15: Milkweed establishment sheets

### Who We Are

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. The MSPMC focuses on helping NRCS staff in the southeastern US plan vegetative practices that protect and enhance water quality in the lower Mississippi River Basin.

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### What We Do

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.

**Jamie L. Whitten PMC Staff**  
Left to right: Jon Allison, Gardener (ext. 118)  
Delon "Dock" Price, WAE Gardener (ext. 120)  
Tommy Moss, Agronomist (ext. 123)  
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