



2018 Progress Report of Activities

Golden Meadow Plant Materials Center

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<http://plant-materials.nrcs.usda.gov/lapmc>

This report highlights the major activities at the Golden Meadow Plant Materials Center (PMC) during calendar year 2018. For more detailed information, contact the PMC Manager at 985.475.5280.

Inland Saltgrass for Critical Area Concerns

Inland saltgrass (*Distichlis spicata*) is being evaluated for commercial vegetative release. It is another species that has captured the interest for federal, state, local and public restoration projects. Inland saltgrass performs well in brackish to saline coastal marshes and barrier islands. The objective for this study is to select elite inland saltgrass germplasm and make it available for licensed grower distribution.

The study is being conducted at the Golden Meadow Plant Materials Center in Galliano, LA. Twenty-five accessions are planted in a randomized complete block design consisting of 3 replications.



Inland Saltgrass initial evaluation plot

Statistical analysis performed on the study has distinguished significant differences ($LSD=P<0.05$) for mean plant height, percent canopy cover and plant vigor among accessions. To summarize, 2 of the 25 accessions out-performed others when these plant factors were analyzed. For the overall mean plant height, percent canopy cover and plant vigor, these top 2 accessions performed either equal to or greater than average when data was collected across all 5 data collection periods. The study is in its 3rd year and will soon move forward to advanced evaluation. For more details on this study please

visit our website at

https://www.nrcs.usda.gov/Internet/FSE_PLANTMATER_IALS/publications/lapmcpo13375.pdf

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***Crotalaria juncea* & *Crotalaria ochroleuca* Cover Crop Adaptability Trial**

There has been a growing interest for alternative cover crops such as Sunn Hemp in Louisiana, however not much is known about how the different cultivars/varieties of *Crotalaria* are adapted to south Louisiana. Factors such as soil type, rainfall, day length and temperature play a huge part on how each species will perform. Sunn Hemp has been taunted to produce 5,000 to 6,000 pounds of biomass per acre. It is a leguminous plant that can produce up to 120 to 140 pounds of nitrogen per acre in 60 to 90 days (Rotar and Joy, 1983) and serve as a great cover crop for sugarcane operations here in Louisiana.



PMC staff drilling Sunn Hemp

This study was conducted to evaluate growth characteristics and production attributes of commercially available cultivars/varieties and local sources of Sunn Hemp genus (*Crotalaria*). Results from this study are intended to identify which *Crotalaria* species is better adapted to south Louisiana climates for cover crop uses.

Three cultivars of *Crotalaria juncea* (Tropic Sunn (HIPMC), AU Golden, Hancock) and 1 variety of *Crotalaria ochroleuca* (Red Mini) were planted in a randomized complete block design consisting of 4 replications for 4 consecutive years at the Golden Meadow Plant Materials Center. Excessive amount of rainfall during the 2018 growing season hindered the study due to standing water. However, it was observed that one variety, Red Mini, as in 2016 and 2017, tolerated water saturating conditions very well.

Under ideal soil conditions (adequate moisture and temperature), all cultivars/varieties, with the exception of ‘Red Mini’, fully emerged within 7 days of planting. ‘Red Mini’ had delayed emergence (14 to 21 days) for all 4 years of the study. Literature reviewed from available seed sources support the delayed time it takes for ‘Red Mini’ to become established relative to the other cultivars.

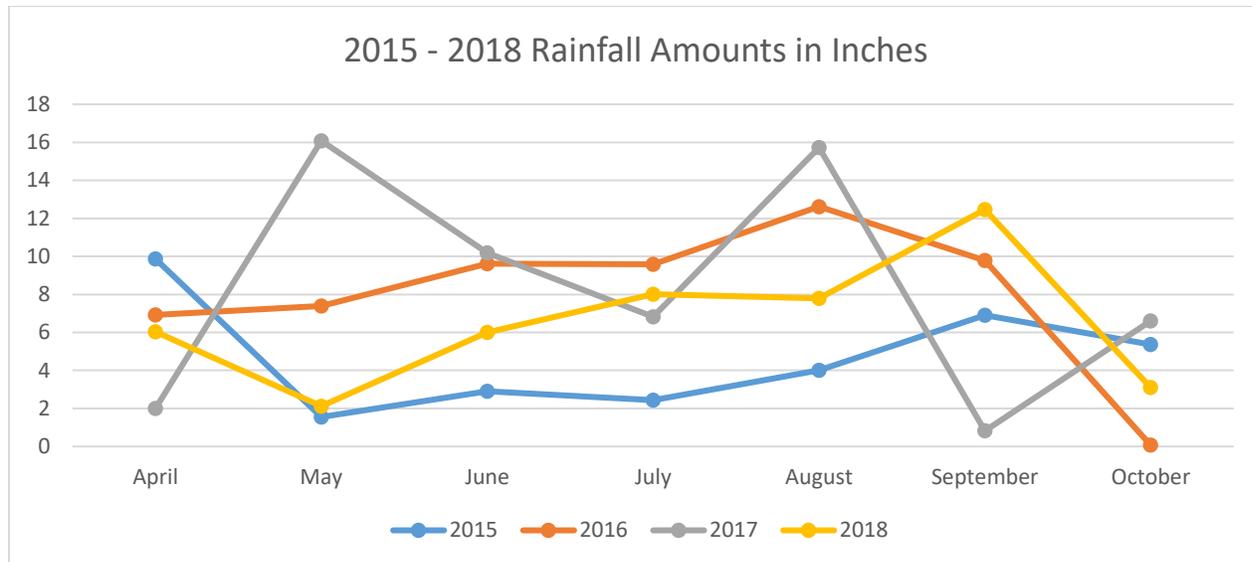
The number of days after planting (DAP) that it took to reach 50% bloom, or the transition time between vegetative and reproductive growth differed greatly amongst cultivars/varieties. 2015 was considered a normal year in terms of air temperature and rainfall amounts during the growing season. For 2016, 2017 & 2018, greater than normal rainfall amounts occurred during the growing season which negatively affected the study. Rainfall amounts vary for the months of April through October for all 4 years of the study as represented in Table 1. Tropic Sunn and Hancock performed nearly identical in all aspects of growth. Phenotypically, they were difficult to distinguish between one another at all stages of growth for all 4 years of the study. Both cultivars reached 50% bloom at approximately 140 to 150 DAP. AU Golden repeatedly was the first to go to reproduction (within

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55 to 70 days) and ‘Red Mini’ the last (150 to 175 days). Due to the differences in timing of growth that these 4 varieties possess, they can serve as beneficial cover crops to fit multiple farm operations across the state.

Table 1.



Seed was collected from the plant at maturity and germination was performed in temperature-controlled growth chambers using standard petri dishes, blotter paper and distilled water. Germinator settings ranged from 30 to 35 degrees C. Percent germination was calculated on 100 seed per dish with 4 replications. Germination counts were completed 24 hours after dishes were placed in chambers. Percent nitrogen (% N) accumulations were derived from Louisiana State University’s soil and plant analysis laboratory. The analysis concluded an average % N accumulation for each cultivar/variety of Sunn Hemp. See Table 2 below.

Table 2.

Cultivar/Variety	% Germination	*Average % Nitrogen
Tropic Sunn	36	3.21
Hancock	18	2.04
AU Golden	86	2.37
‘Red Mini’	95	3.16

*For % N ppm is equivalent to mg/Kg for soil and plant samples. For a description of methods used, please visit <http://www.stpal.lsu.edu>



Curt J. Riche' measuring plant height

Plant heights were taken in September and ranged from 70 to 140 inches. This is also when biomass samples were taken and wet and dry weights were recorded to obtain yield data in pounds of biomass per acre. This study revealed very similar to actually higher (3 to 4 tons) pounds of biomass per acre than Rotar and Joy's 1983 findings at 60 to 90 DAP. Lower biomass weights in the following years were solely due to wetter than normal weather conditions in the growing season of April through October. For 2017 and 2018 plants had terminated early in the growing season due to excess rainfall, hence there was no data to collect for analysis.

***Crotalaria juncea* & *Crotalaria ochroleuca* Cover Crop Timing Trial**

Two cultivars of *Crotalaria juncea* (Tropic Sunn (HIPMC) and AU Golden) and 1 variety of *Crotalaria ochroleuca* (Red Mini) were used for the timing trial. Planting began in October and was performed every 2 weeks thereafter, ending in late November. Due to large amounts of



Crotalaria sp. Timing Trial

rainfall, only two plantings were feasible for 2018. The objective of the trial is to identify which cultivar/variety and which planting date provides optimal for soil coverage to avoid the plant from developing woody stems and allowing winter frost to terminate the crop. This information can benefit sugarcane operations and provide answers on best time to plant *Crotalaria* as a cover crop to reduce soil erosion, provide maximum health to soil, and minimize or eliminate the need for mechanical or chemical termination.

Tropic Sunn (HIPMC) and AU Golden germinated uniformly for the late October plantings, largely due to adequate weather conditions. The first freeze was in mid-November, which terminated the two cultivars naturally at a height of 2 to 3 inches. Red Mini had about 1 % emergence for the 2018 timing trial. The PMC will continue to work with NRCS's Louisiana State Agronomist in an attempt to recommend best planting dates for *Crotalaria* as an alternative cover crop for sugarcane operations. The trial will be planted at earlier dates in the 2019 growing season, and with a little luck, will receive less rainfall amounts than previous years.

Educational Tours

On March 28th, Congressional staffers from DC toured different areas of coastal Louisiana to enhance their understanding for the need of restoring our coast. The tour was hosted by The Greater Lafourche Port Commission, Restore or Retreat and the Restore the Mississippi River Delta Coalition to allow ways in which congressional action can aid the restoration initiatives in both the Coastal Master Plan and through other programs such as the Coastal Wetland Planning and Protection Act. During this tour they visited the Golden Meadow Plant Materials Center, to see the work that USDA/NRCS Plant Materials Program is performing to address coastal erosion and marsh restoration, and how imperative it is to continue to advance the science and research in achievements for coastal restoration.



Garret Thomassie hosting a tour to Congressional staffers

The tour included congressional staffers from Congressman Garret Graves, Senator John Kennedy, U.S. House of Representatives Majority Whip Steve Scalise, and a Sea Grant staffer for Senator Roger Wicker of Mississippi.

2018 Publications and Presentations

- Progress Report of Activities
- Release Brochure Caminada Germplasm sea oats
- Release Brochure Bayou Lafourche Germplasm California bulrush
- Release Brochure 'Gulf Coast' marshhay cordgrass
- Louisiana State University Ocean Commotion Exhibit
- ARS New Orleans Presentation
- Congressional Members Tour
- Larose Civic Center Children's Plant Education Day
- Three technical poster presentations at State of the Coast Conference, New Orleans, LA
- Two technical poster presentations at The National Conference on Ecosystem Restoration, New Orleans, LA

Plant and Seed Distribution

The PMC provides seed and vegetative material to more than 40 licensed commercial nursery growers. In 2018, the PMC provided more than 7,000 bare root stems and vegetative plugs, and approximately 40 pounds of seed to eligible growers across the nation. The nurseries propagate and increase the PMC's release material each year in order for the material to be available in needed quantities for restoration projects.

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THE GOLDEN MEADOW PMC: WHO WE ARE

The PMC selects conservation plants and develops innovative planting technology to solve the nation's most important resource concerns. Our mission is to develop, test, and transfer effective state-of-the art plant science technology to meet customer and resource needs.

The USDA - Natural Resource Conservation Service Golden Meadow PMC was founded in the early 90's on 85 acres of land, which was established to provide a solution to aid in the incessant battle of coastal restoration. The PMC conducts numerous technical research strategies to better understand how different plant species are able to thrive and reproduce in the coastal marshes. The PMC also provides pertinent information on coastal marsh plants to the community in the promotion of taking a stand towards coastal restoration.

...AND WHAT WE DO

The activities of the PMC are guided by a long-range plan. The priority work areas are:

- Plant Materials for Marsh Re-Vegetation
- Plant Establishment Techniques
- Seed Technology for Selected Wetland Species
- Technology Development and Transfer

Electronic Documentation and Information

All Golden Meadow PMC publications can be downloaded from the following website:

<http://www.nrcs.usda.gov/wps/portal/nrcs/publications/plantmaterials/PMC/southeast/lapmc/pub/>

Golden Meadow Plant Materials Center Staff

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Visit our website with
your smartphone...



References:

Rotar, P. P. and R. J. Joy. 1983. 'Tropic Sun' sunnhemp (*Crotalaria juncea* L.) Res. Ext. Ser. 36. Hawaii Inst. Trop. Agric. and Human Resour., Univ. of Hawaii, Honolulu.

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