



United States
Department of
Agriculture

2023 PROGRESS REPORT OF ACTIVITIES

NATURAL RESOURCES CONSERVATION SERVICE BROOKSVILLE PLANT MATERIALS CENTER

THE BROOKSVILLE PLANT MATERIALS CENTER



"TOTO, I HAVE A FEELING WE ARE NOT IN FLORIDA ANYMORE."

DRY SEASON COVER CROP STUDY IN MOCA, PUERTO RICO, MARCH 6, 2023,
48 DAYS AFTER PLANTING. PHOTO: V. GUERRA.

The plant materials program operates under the USDA, Natural Resources Conservation Service (NRCS). The Brooksville Plant Materials Center (PMC) is one of 25 PMCs, strategically located throughout the nation, working to deliver state-of-the-art plant science technology to meet conservation needs.

The PMC is located 7 miles north of Brooksville, Florida, on US 41, 15 miles inland from the Gulf of Mexico. We have 53 acres of cleared fields to use for research and production and 116 acres of woodland on the property. This PMC, along with those in Georgia and Mississippi, address the plant materials needs of states in the Southeast and the Caribbean Area, and work with the PMC in Hawaii to provide vegetative solutions for the Pacific Basin.

Improving the health of soils used for cropland and grazing lands is the principal resource concern on which the Brooksville PMC is focusing its efforts. Other areas that we will continue to address are water quality, wildlife habitat, erosion control, and increased forage production. We are also expanding our plant materials training capabilities to meet the needs of NRCS personnel in our region.

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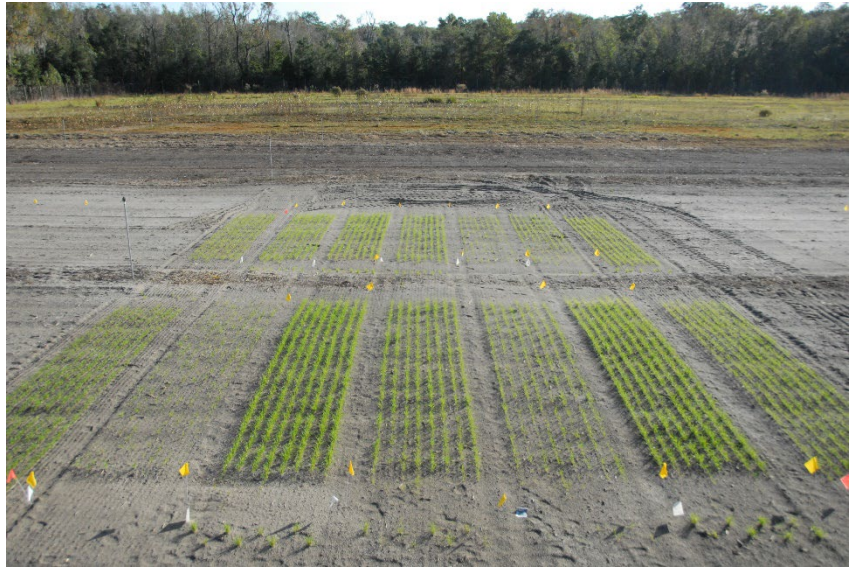
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Effect of Planting Date and Seeding Rate of Cereal Rye on Dry Matter

Production

At the request of field office staff in Area 1 working with cotton and peanut producers, Brooksville has been working with rye date of planting for the past three years. This year the National Plant Materials Program caught on to the importance to producers of knowing how late is too late. November 14, 2023, was the first planting date of three dates for Florida for the new national cereal rye (*Secale cereale*) date of planting and seeding rate study being conducted at 14 PMCs across the nation. The goal of this study is to determine if current cover crop planting rate recommendations are necessary to meet the Cover Crop (CPS 340) yield requirements, or can they be lowered, particularly in the southern US due to our longer growing period. Additionally, this study will determine if increased seeding rate will be necessary for producers to meet the Cover Crop (CPS 340) yield requirement for planting dates later than currently recommended. By participating in this national study, the planting date information learned with the Brooksville PMC study will be confirmed by 2 additional planting years and enhanced by information on seeding rate that might allow producers to reduce their cover crop seed costs.



EFFECT OF PLANTING RATE ON CEREAL RYE STAND AT BROOKSVILLE PMC 17 DAP IN NOVEMBER 2023. PHOTO: V. GUERRA

UPPER LEFT TO RIGHT FL401: BUFFER PLOT; 90 LB/AC PLS; 120 LB/AC PLS; 60 LB/AC PLS; 15 LB/AC PLS; 30 LB/AC PLS; BUFFER PLOT.

LOWER LEFT TO RIGHT PLOT WRENS ABRUZZI: BUFFER PLOT; 15 LB/AC PLS; 120 LB/AC PLS; 60 LB/AC PLS; 30 LB/AC PLS; 90 LB/AC PLS; BUFFER PLOT.

Preliminary Evaluation of Flax and Phacelia as Cool Season Cover Crops in Florida

When NRCS State Agronomist Roberto Luciano arrived in Florida from his tenure with NRCS North Dakota, he arrived with some cool, cool-season cover crop ideas for the Sunshine State. Roberto was most eager to find out whether flax (*Linum usitatissimum*) and phacelia (*Phacelia tanacetifolia*), two forbs utilized as cover crops and pollinator habitat during the summer in the Dakotas, had any potential as cool season cover crops in Florida. A preliminary evaluation planting was started in early December 2022 and lasted until mid-March 2023. A hard freeze



A FIERY SKIPPER VISITING PHACELIA FLOWERS. FLAX AND PHACELIA FLOWERS ATTRACTED A DIVERSITY OF POLLINATORS. PHOTO: V. GUERRA

(25° F) occurring twenty days after planting and abnormally dry conditions persisting from late February to March provided excellent opportunity to evaluate performance under stress. Both species persisted, with flax reaching 50% flowering on March 2nd, 2023, and phacelia reaching 50% flowering one week later. It was noted that most flax flowers dropped their petals by afternoon each day, but both species attracted a range of pollinators in large numbers. Both species grew to about the same height (40 inches), but phacelia produced over 2.5 times greater biomass. The outcome of this preliminary evaluation has served as the impetus for a full study set for 2024 to assess the adaptation of novel cool season cover crops including flax and phacelia for Florida.

Brooksville PMC Assist NRCS Puerto Rico Staff Evaluate New Potential Dry Season Cover Crop Species

Puerto Rico NRCS currently recommends predominantly tropical or warm season cover crop species, such as sunnhemp (*Crotalaria juncea*), jack bean (*Canavalia ensiformis*), and pearl millet (*Pennisetum glaucum*). They do list radish (*Raphanus sativus*) and leaf mustard (*Brassica juncea*), which are considered cool season cover crop species in the Coastal Plain of the United States (Puerto Rico NRCS CPS 340 Specifications). This suggests other “cool season” cover crop species, particularly cereal crops such as southern lines of rye (*Secale cereale*) and triticale (*xTriticosecale*), also may be useful during the dry season. Another cool season cover crop that merits evaluation in Puerto Rico is black oat (*Avena strigosa*) which is widely used in Brazil.

In January 2023, the Brooksville PMC staff in collaboration with University of Florida plant breeders assisted NRCS Puerto Rico to plant a study at Hacienda Gosen looking at the adaptation of experimental black oat breeding lines and commercially available common oat (*A. sativa*), triticale, and cereal rye cultivars as cover crops for Puerto Rico. All rye and triticale lines flowered by early April, as did Legend 546, one of the common oat cultivars. The common oat cultivars, Horizon 306 and Horizon 720, remained vegetative until terminated in early May. Those oats may fit better in a dry season forage system than as a cover crop. In contrast to the planting in Brooksville where all black oat lines flowered, about half of the black oat breeding lines and Soil Saver, the US cultivar check, failed to flower in the PR planting. But black oat lines UF-10, UF-12, UF-17B, and UF-20B did flower and set seed by early April. Those lines may be useful for developing a Puerto Rico black oat cultivar if their biomass production merits it.



DRY SEASON COVER CROP EVALUATION ON APRIL 4, 2023. MOST LINES HAVE FLOWERED, BUT NOTE THE OAT LINE (THIRD FROM LEFT) THAT IS STILL VEGETATIVE. PHOTO: V. GUERRA.



DATA COLLECTION SELFIE! EDRICK MARRERO SOTO, PR STATE AGRONOMIST (LEFT); VICTOR GUERRA BROOKVILLE PMC STUDY LEADER (MIDDLE); AND FRANCISCO RIVERA, PR AGROFORESTER (RIGHT). PHOTO: F. RIVERA.

Publications and Presentations

- Guerra, V. 2023. Cover Crops & NRCS Presentation. Corpus Christi School Alumni Teach-In. Tampa, FL. January 2023.
- Guerra, V. 2023. Rainfall Simulator Demonstration. Florida Forests and Water Forum. Gainesville, FL. October 2023.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure 'Arbrook' rhizoma peanut (*Arachis glabrata* Benth.). Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure Brooksville 67 Germplasm rhizoma peanut (*Arachis hagenbeckii* Harms). Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure Brooksville 68 Germplasm rhizoma peanut (*Arachis glabrata* Benth). Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure Floral Passion Germplasm [*Liatris elegans* (Walt.) Michx. Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure 'Florigraze' rhizoma peanut (*Arachis glabrata* Benth). Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure Gator Germplasm [*Amphicarpum muehlenbergianum* (Schult.) Hitchc. Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure 'Northpa' and 'Southpa' bitter panicum (*Panicum amarum* Elliott var. *amarum*). Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- USDA, NRCS, Brooksville Plant Materials Center. 2023. Release brochure 'Sharp' saltmeadow cordgrass [*Spartina patens* (Aiton) Muhl.]. Brooksville PMC, Brooksville, FL. April 2023. 2 p.
- Williams, M.J. 2023. The Plant Materials Program: What have we done for you lately? East Region Grazing Specialists Meeting, Brooksville PMC. February 28-March 2, 2023.
- Williams, M.J. 2023. Forages in Florida Through the Lense of NRCS CPS 528 Prescribed Grazing. FL NRCS, Prescribed Grazing Training, Brooksville PMC, Brooksville, FL. June 20 – 22, 2023.
- Williams, M.J., and V. Guerra. 2023. 2023 Brooksville Plant Materials Center Report of Activities. Brooksville PMC, Brooksville, FL. December 2023. 3 p.

Brooksville PMC Information is available online at
<https://www.plant-materials.nrcs.usda.gov/flpmc>

or scan:

