

## 2023 Progress Report of Activities



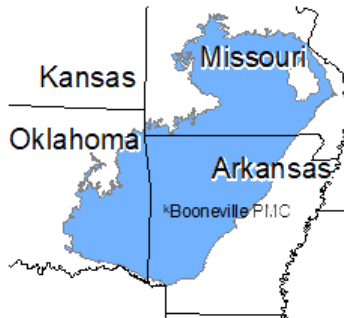
### ABOUT THE PMC

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

The Booneville Plant materials Center (ARPMC) is co-located with the Agricultural Research Service at the Dale Bumpers Small Farms Research Center 6 miles south of Booneville Arkansas on state highway 23. The ARPMC develops plants and plant science technologies to address conservation issues in areas from the rugged Ozarks to the western coastal plain.

The Center serves portions of Arkansas, Missouri, and Oklahoma. The area is characterized by small family farms. Forage, poultry, and timber production are the major land uses. The soils are most often shallow, stony, and erosive.

The Booneville Plant Materials Center has developed improved conservation plants, including Hampton Germplasm big bluestem, ‘Bumpers’ eastern gamagrass, and Wynia Germplasm Indiangrass.



Geographical Region of Focus

### PMC STAFF

**Stephen Haller**, Manager  
**Rajesh Chintala**, Study Leader  
**Benjamin Holleman**, Farm Manager  
**Eddie Pratt**, Biological Technician (CTS)  
**Christine Mezzaline**, Program Assistant (CTS)  
**Kalen Forst**, Biological Technician

**Mike Sullivan**, Arkansas State Conservationist  
**Helen Denniston**, Arkansas State Resource Conservationist

### LOCATION

USDA, NRCS Booneville Plant Materials Center  
 6883 S. State Hwy 23  
 Booneville, Arkansas 72927  
 Phone: (479) 675-5182  
 Fax: (479) 675-2940



# Training: Plant Identification in the Field for Planning Conservation Practices



Photo 1



Photo 2: Claire Whiteside (NRCS Grassland Specialist, Harrison Technical Service Center) helping attendees in the field with plant identification



Photo 3. Benjamin Holleman (PMC Technician) demonstrated the calibration of a herbicide sprayer

The one-day training on “Plant Identification in the Field for Planning Conservation Practices” was held at the Booneville Plant Materials Center (Arkansas) on March 1, 2023. Training participants were comprised of soil conservationists, district conservationists, resource conservationists, and conservation technicians.

Plant identification skills specifically help conservation planners in utilizing NRCS inventory and assessment tools to identify resource concerns, formulate alternatives for landowners, and guide their management decisions for implementing best management practices. The objective of this training was to provide hands-on approaches to identify plants in the field and how to utilize user-friendly tools/resources for plant identification.

Stephen Haller (PMC Manager) presented a PMC overview. Plant identification approaches were presented by Rajesh Chintala (PMC study leader) (Photo 1). Claire Whiteside (NRCS Grassland Specialist, Harrison Technical Service Center) led the on-the-ground plant identification training to attendees in the field (Photo 2). Benjamin Holleman (PMC Technician) demonstrated the calibration of a herbicide sprayer to meet the requirements of a specific recommended dose/application rate (Photo 3). At the closing of the training, participants obtained certificates for successfully completing the plant identification training.



# Current Project 1: Observational plantings of PMC germplasm (Project Duration: 2022-2026)

The objective of this five-year field study is to determine the potential area of adaptation of conservation plant releases and potential releases from other PMCs and compare performance to commercially available cultivars. Thirty entries including big bluestem, little bluestem, switchgrass, Indiangrass, swamp sunflower, eastern gamagrass, and Virginia wildrye were planted in 20-ft long rows in May 2022 in observational plots at the PMC.

Growth performance data was collected in September 2022, May 2023, and September 2023. Based on visual observations, 'Rountree' big bluestem, 'Highlander' eastern gamagrass and an eastern gamagrass collection from the Alderson, WVPMC, 'Excelso' Indiangrass, 'Espresso' and 'Alamo' switchgrass are exhibiting good persistence and plant vigor in Booneville. Kinchafoone Germplasm Virginia wildrye did not survive.



Eastern gamagrass (May 2023)



Data Collection (September 2023)



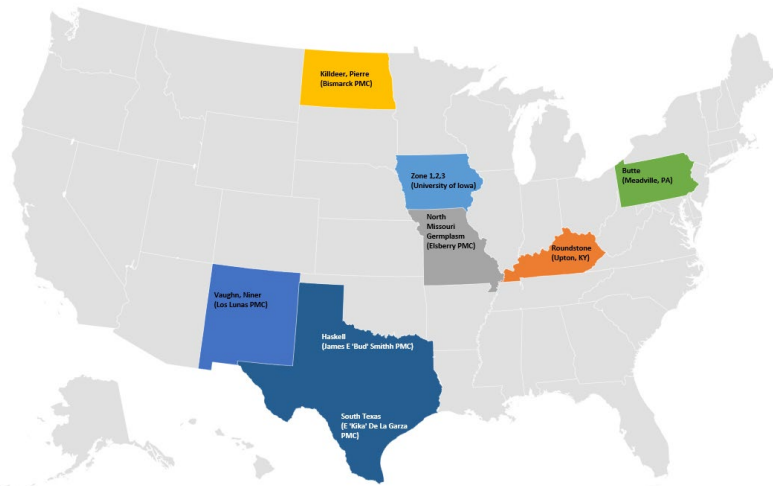
Observational study plots (October 2023)



# Current Project 2: Evaluation of Sideoats grama cultivars and sources in Arkansas Agro-Climatic Conditions

2023

## Geo-origins of sideoats grama



Plant Material Centers provided 12 sideoats grama cultivars, prevarietal releases and other germplasms for an evaluation study including: South Texas Germplasm, 'Killdeer', Northern Iowa, Central Iowa, Southern Iowa, 'Haskell', North Missouri Germplasm, 'Butte', 'Roundstone', 'Vaughn', 'Niner', and 'Pierre'. Seeds were sown in trays and grown in the greenhouse, and later transferred to cones to allow better growth. Seedlings were transplanted in the field in late May 2023.

South Texas, 'Haskell', 'Vaughn', and 'Niner' performed well for survival, vigor, drought tolerance with low pest incidence. 'Pierre', 'Killdeer', and 'Butte' cultivars performed poor in Booneville's environmental conditions.





# Current Project 3:

## Native Pollinator Mix Establishment Study (Project Duration: 2023-2027)



Monticello biochar



Soil sample collection



Soil bulk density measurement

It's a five-year field research project in collaboration with 'Quail Forever' and USDA-ARS (Dale Bumpers Small Farms Research Center). The objective of this project is to evaluate a variety of establishment methods of diverse pollinator mixes (seeding of native prairie seed mixes with a diversity of wildflowers and grasses) to establish a pollinator habitat and determine the impact on carbon sequestration and soil health. This field study consists of nine treatments (biochar – 5 tons/acre, disk vs no-disk, no-till drill vs broadcast, chemical vs disk-tillage, burn vs no-burn) and three replications.

Progress: Plots (20 ft x 20 ft) were laid out in April 2023; Baseline soil samples were collected in May 2023 for analysis of soil health parameters. Biochar treatment plots were established by incorporating biochar into the soil at 86 lbs/plot on 25 October 2023.

Expected Deliverable: Overall goal of this project is to provide information to NRCS field offices that is relevant to Arkansas agro-climatic conditions when providing the best establishment and management recommendations for cost-share best management practices such as Conservation Cover- (Code 327), and Wildlife Habitat Planting- (Code 420).

## Current Project 4

# Effects of Seeding Rate, Date and Termination Timing on Biomass and other Attributes of Cool Season Legume and Grass Cover Crops for Production Agriculture

The objective of this field study is to evaluate the effect of seeding dates, rates, and timing of termination on adapted varieties of cool season legume and grass species across a range of climatic conditions.

Progress: Surface soil samples were collected from the experimental field and analyzed for baseline soil parameters prior to the establishment of treatments. The baseline soil analytical report was used to determine the soil nutrient (N, P, & K) requirements and need for pH adjustment to near neutral. Glyphosate was applied at 2 qts/acre to control weeds and a conventional seedbed was prepared by disking, harrowing, and firming prior to planting. Lime (2 ton/acre) and P & K fertilizers (60 lb/acre) were applied prior to planting to correct nutrient deficiencies and soil pH. Nitrogen was applied at 30 lb N/acre on the day of planting. Split plot design was arranged as a randomized complete block design with 4 replications. Main plot is planting dates and subplot seeding rates. 'Elbon' (cereal rye) was planted at five seeding rates consisting of 15, 30, 60, 90, and 120 PLS lb/acre. The three planting dates were September 29, 2023; October 16, 2023; November 6, 2023. Fall and spring canopy cover and biomass will be measured using photo imagery and Plant Map 3D.



Lime application



Planting cereal rye

### Publications in 2023

- Chintala, R., S. Haller, and B. Holleman. 2023. Plant Guide for Hairy vetch (*Vicia villosa* Roth). USDA-Natural Resources Conservation Service, Booneville Plant Materials Center. Booneville, Arkansas 72927. <https://www.nrcs.usda.gov/plantmaterials/arpmpcpg14020.pdf>
- Chintala, R., S. Haller, and B. Holleman. 2023. Plant Guide for Bahia grass (*Paspalum notatum*). USDA-Natural Resources Conservation Service, Booneville Plant Materials Center. Booneville, Arkansas 72927. <https://www.nrcs.usda.gov/plantmaterials/arpmpcpg14045.pdf>
- Haller, S., R. Chintala, and B. Holleman. 2023. PMC 2023 Report of Activities. USDA-Natural Resources Conservation Service, Booneville Plant Materials Center. Booneville, Arkansas 72927.