



USDA-NRCS James E. “Bud” Smith Plant Materials Center

2018 Progress Report of Activities

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National Cover Crop Species Adaptability Study

The Knox City Plant Materials Center participated in a national adaptability study to evaluate growth characteristics of commercially available cover crop species. The two-year trial compared plant emergence, winter hardiness, spring regrowth, blooming period, plant height, and disease and insect resistance between commercial cultivars of hairy vetch (*Vicia villosa*), cereal rye (*Secale cereal*), crimson clover (*Trifolium incarnatum*), oilseed radish (*Raphanus sativus*), balansa clover (*Trifolium michelianum*), Austrian winter pea (*Pisum sativum*), black oats (*Avena strigose*), and red clover (*Trifolium pretense*). Results from the study indicate that the cultivars of crimson clover, hairy vetch, cereal rye, and red clover are adapted to the Rolling Red Plains. Balansa clover, Austrian winter pea, and black oats showed significant differences in survival between the different cultivars. Although in both years, the oilseed radish was completely winterkilled, more testing is needed to determine the benefits of inclusion in cover crop mixes.

Data from other growth characteristics showed significant differences in the emergence, spring regrowth, blooming periods and plant height of the different commercial varieties. This information will be beneficial to help producers make management decisions based on specific conservation goals in their individual operations.



Training and Outreach

The PMC hosted a three-day training on the importance of pollinators in May 2018. Over seventy NRCS field staff, master gardeners, local teachers and landowners gathered to learn the value of pollinators in food and fiber production, planting and maintaining pollinator habitats, identification of pollinators and pollinator plants, and NRCS programs available for improving pollinator habitat. The groups were able to explore pollinator demonstration plots and planting equipment.



The plant materials center also had the opportunity to conduct various presentations and tours throughout the year for local groups and conferences such as the America's Grassland Conference, National Conference on Ecosystem Restoration, and Texas Plant Conservation Conference.

ARS Crimson Clover Breeding Project



New cultivar research and development of cover crop species is necessary to provide producers proven products to use in their operations. These new products add alternatives to assist in management decisions to meet specific resource concerns.

The Plant Materials Center had the opportunity to cooperate with the Agriculture Research Service (ARS) in a crimson clover breeding project. The purpose of the project was to increase seed production of two breeding populations to be used for advanced adaptation testing and evaluation. Knox City was selected due to the growing environment.

Plant Collections and Evaluations

Plant development continues to be an emphasis of the plant materials program. The PMC is currently collecting four native, perennial plant species for evaluation in various conservation uses. The species are:

- Showy menodora (*Menodora longiflora*)
- Blue salvia (*Salvia azurea*)
- Willowleaf sunflower (*Helianthus salicifolius*)
- Narrowleaf globemallow (*Sphaeralcea angustifolia*)

The PMC relies heavily on zone and field staff for obtaining the plant collections used in our evaluations. These materials ensure that future plant releases represent a broad area of adaptation.

For more information on these plant species, see the website at <https://www.nrcs.usda.gov/wps/portal/nrcs/main/tx/plantsanimals/> and click on Texas Plant Materials Center, then James E. "Bud" Smith PMC.



James E. "Bud" Smith Plant Materials Center

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) James E. "Bud" Smith Plant Materials Center (PMC) located near Knox City, Texas, was established in 1965. It is one of the 27 Centers located throughout the United States. The Center is responsible for developing conservation plants and cultural techniques for use within targeted Major Land Resource Areas (MLRA) in Texas, Oklahoma, Kansas, Colorado, and New Mexico. The Center is also responsible for producing Breeder and Foundation seed of plant releases and assisting in commercial development and promoting their use in natural resource conservation. The PMC serves all or portions of 136 counties in Texas that comprises parts of 25 MLRAs, and the areas served in all or portions of 39 counties in southwestern Oklahoma comprising parts of thirteen MLRAs. The PMC also serves a portion of seven counties in southwestern Kansas including parts of four MLRAs, a portion of one county in the southeastern corner of Colorado comprising parts of three MLRAs, and a portion of seven counties in eastern New Mexico comprising parts of seven MLRAs. The PMC is located approximately four and a half miles northwest of Knox City, Texas, in the Rolling Red Plains MLRA.

Seed Production

The PMC is responsible for producing breeder seed of cultivar releases and G0 seed of germplasm. Currently, the PMC maintains and supplies seed for twenty-seven releases.

- ‘Haskell’ sideoats grama (*Bouteloua curtipendula*)
- ‘Lometa’ Indiangrass (*Sorghastrum nutans*)
- ‘Alamo’ switchgrass (*Panicum virgatum*)
- ‘Mason’ sandhill lovegrass (*Eragrostis trichodes*)
- ‘Van Horn’ green sprangletop (*Leptochloa dubiada*)
- ‘Earl’ big bluestem (*Andropogon gerardii*)
- ‘Saltalk’ alkali sacaton (*Sporobolus airoides*)
- ‘San Marocs’ eastern gamagrass (*Tripscaum dactyloides*)
- Potter County germplasm spike dropseed (*Sporobolus contractus*)
- Borden County germplasm sand dropseed (*Sporobolus cryptandrus*)
- Cottle County germplasm sand bluestem (*Andropogon halli*)
- OK select germplasm little bluestem (*Schizachyrium scoparium*)
- Duck Creek germplasm Texas dropseed (*Sporobolus texanus*)
- ‘Selection 75’ kleingrass (*Panicum coloratum*)
- ‘Shoreline’ common reed (*Phragmites australis*)
- ‘Sabine’ Illinois bundleflower (*Desmanthus illinoensis*)
- ‘Comanche’ partridge pea (*Chamaecrista fasciculata*)
- Hondo germplasm velvet bundleflower (*Desmanthus velutinus*)
- Cuero germplasm purple prairie clover (*Dalea purpurea*)
- Plains germplasm prairie acacia (*Acacia angustissima*)
- ‘Aztec’ maximilian sunflower (*Helianthus maximiliani*)
- ‘Plateau’ awnless bushsunflower (*Simsia calva*)
- Kerr germplasm Wright pavonia (*Pavonia lasiopetala*)
- ‘Eldorado’ engelmann’s daisy (*Engelmannia peristenia*)
- Rainbow germplasm wild plum (*Prunus* sp.)
- Yellowpuff germplasm littleleaf leadtree (*Leucaena retusa*)
- ‘Boomer’ bur oak (*Quercus macroparpa*)



Program Emphasis

The mission of the James E. “Bud” Smith PMC is to develop and transfer effective state-of-the-art plant science technology to meet customer and resource needs. The PMC conducts plantings and studies at the Center and off center with cooperating partners. Plant and technology development objectives of the PMC include:

- Soil Health
- Erosion Control - wind and water
- Range and Pasture Improvement
- Wildlife Habitat Improvement
- Water Quality Improvement on Agricultural Land
- Biofuels
- Saline Site Restoration

PMC Staff

- Brandon Carr- Manager
- Randy Kuehler- Biological Science Technician (Plants)