Soil Health Demonstration Plots Compare Various Farming Practices

Soil health is a major resource concern. Farmers and ranchers are learning the importance of building a healthy soil. To help educate farmers in our service area, the PMC has established three new soil health demonstration plots. The demonstration plots will compare different farming techniques used throughout our service area. Two demonstration blocks will use cotton as a summer cash crop, and then compare the soil health between a winter cover mix, a monoculture cover, and conventional tillage. One block will be irrigated and the other will be dryland. The third demonstration will use wheat as a cash crop, and then compare a summer cover mix, monoculture cover and conventional tillage. The goal is to provide technical methods to improve soil health using the main crops grown in the service area. We also hope to conduct trainings to show the advantages of cover crop systems. Some of these advantages include:

- Added Organic Matter
- Reduce soil erosion
- Provide nitrogen
- Improve soil structure (Aggregation, Infiltration, Available Water Capacity)
- Provide weed control
- Manage nutrients
- Furnish moisture conserving mulch (lower surface temperatures)
- Provide habitat for beneficial organisms (soil food web)

Cover Crop Species Evaluated for Adaptability

Due to the increased emphasis in soil health, plant diversity and adaptability of cover crops need to be investigated before making recommendations on the best adapted cover crops for the service area. Species used in cover crop mixes can have different areas of adaptation based on where the plants originated. This study compares fifty individual cool and warm season species to determine which ones are adapted to the service area. The study includes grasses and legumes commonly used in mixes. Data collected will include: emergence, height, vigor, winter kill, and cover. The study gives field offices and the general public the opportunity to see what these species look like growing in the field under normal growing conditions. It also provides NRCS with data on the production potential of various cover crops in the PMC service area.

Do Differences in Growing Conditions Effect the Seed Production in Switchgrass?

Seed fill and production depends on a variety of environment conditions that affect the quality and quantity of seed production of any type of plant. Growing conditions such as precipitation, temperature, humidity, and growing seasons can all influence seed fill and seed production. In some areas, switchgrass struggles to produce viable seed. A study has been established to test if this is due to environmental conditions. 'Alamo', 'Kanlow' and 'Cimarron' switchgrass are three released cultivars being tested. After one year of data collection, no statistical difference was found between the germination of the three entries.

Newly Established Wind Barriers for Wind Erosion Prediction System (WEPS)

Conservation planning tools are critical to the success of conservation systems. These tools give field offices technical information for planning conservation practices for farmers and ranchers. For this model to be effective and efficiently predict soil loss from wind, plant growth parameters are required for a variety of plants and different management scenarios. The purpose of this study is to measure different plant characteristics, such as height, stem diameters, and yield per acre from different grasses representing short, medium and tall stature. Data from these plant measurements will be included in vegetation files applicable to the southern plains region. Data is taken on newly planted grass barriers as well as established grass barriers.

Trainings and Presentations

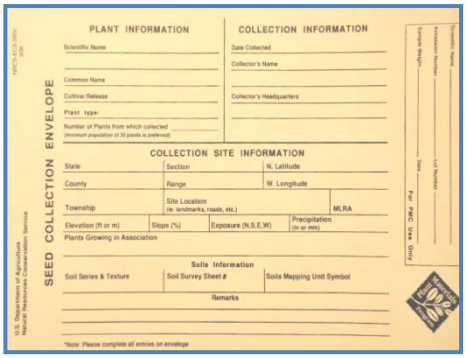
The plant materials center had the opportunity to conduct various trainings and presentations throughout the year. Local FFA chapters from surrounding high schools used the resources at the PMC to train range teams for competitions. A mock competition was set up in the native prairie for students to learn different range plants at various growth stages. The PMC staff gave presentations at the:

- 22nd Annual Baylor County Ag Appreciation Day
- West Texas Land Reclamation Seminar
- Knox County Chamber of Commerce Banquet
- Taylor County Farm, Ranch, and Wildlife Expo

Current Plant Collection List

The PMC is continuing to collect twelve native, perennial plant species for evaluation in various conservation uses. The species are:

- Plains lovegrass (*Eragrsostis* intermedia)
- Roundhead lespedeza (*Lespedeza* capitata)
- Three-flower melic (*Melica nitens)*
- Showy menodora (*Menodora longiflora*)
- Texas cupgrass (*Eriochloa sericea*)
- Prairie bundleflower (*Desmanthus leptolobus*)
- Hall's Panicum (*Panicum hallii*)
- Switchgrass (*Panicum virgatum*)
- Scurfpea (*Psoralea tenuiflora*)
- Narrowleaf globemallow (*Sphaeralcea angustifolia*),
- Knotgrass (*Paspalum distichum*)
- Smartweed (*Polygonum pensylvanicum*)



For more information on these plant species, see the website at http://www.tx.nrcs.usda.gov/technical/pmc/plant_collection_11.html and click on James E. "Bud" Smith PMC. These plant species will be evaluated for potential use in conservation practices such as Range Planting, Upland Wildlife Habitat Management, Conservation Cover Riparian Herbaceous Cover, and others.

Seed Production

The PMC is responsible for producing breeder seed of cultivar releases and G0 seed of germplasm releases which is distributed by the Texas Foundation Seed Service to area seed companies. A full list can be obtained from their website at http://tfss.tamu.edu or by calling them at (940) 552-6226. Currently, the PMC maintains and supplies seed for twenty-eight releases. These releases include grasses, legumes, forbs, and woody plants. A complete list of plant releases can be found at our website at http://Plant Materials.nrcs.usda.gov/txpmc/.

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

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 establish 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.

James E. “Bud” Smith PMC Personnel

- Dr. Gary Rea- Manager
- Brandon Carr- Soil Conservationist
- Randy Kuehler- Biological Science Technician (Plants)

Visit the PMC website for more information and publications:
http://Plant-Materials.nrcs.usda.gov/txpmc/