

2015 Progress Report of Activities

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This report highlights the major activities at the Tucson Plant Materials Center (PMC) during fiscal year 2015. For more detailed information, contact the PMC at 520-292-2999.

Studies

Technology and Pre-Release Development

Native Grass Species as Cover Crops in Orchards

Pecan production acreage in Arizona is on the rise. Pecans take an average 5-6 years to reach bearing age. During this development stage, pecan saplings are susceptible to damage from blowing dust and do not provide adequate ground cover to stop more blowing dust. Finding an adapted species that will establish and persist in the understory of Arizona's non-bearing age pecan orchards has the potential to reduce particulate matter emissions and reduce evapotranspiration from the soil surface for the years it takes the trees to develop a closed canopy. This technology could be applied to thousands of acres in southern Arizona.

In March, PMC personnel, with assistance from the Willcox Field Office, established a field trial using commercially available native grass species. Six treatments of 'Plains' buffalograss, 'Hachita' blue grama, Westwater germplasm scratchgrass, and Moapa germplasm scratchgrass were planted into replicated plots on a new orchard near Willcox, AZ. Blue grama (*Bouteloua gracilis*) is often used in mixtures with buffalograss (*Buchloe dactyloides*) for erosion control projects and/or as a low-maintenance turf planting. Buffalograss forms a dense sod that impedes soil erosion and is used in low traffic areas and as a possible substitute for non-native warm-season grasses, such as bermudagrass. Scratchgrass (*Muhlenbergia asperifolia*) can be found in moist meadows, sandy washes, grassy slopes, and around seeps and hot springs. It often occurs in pure, dense stands. Scratchgrass is well adapted to alkaline or neutral, fine to medium textured soils. All species can withstand mowing which is an important characteristic for pecan orchard management.



Figure 1: Establishing plots, March 2015



Figure 2: Native grass plots, September 2015

The plots were irrigated with sprinklers after the seeding and evaluated five times for establishment. Despite competition from weeds, by September, the blue grama and buffalo grass plots looked very promising. A full evaluation will be conducted in early March 2016.

Initial Evaluation Planting: Desert Panicgrass

The PMC collaborated with a member of the Mojave Desert Resource Conservation District (Victorville, CA) to conduct multi-site germination trials of desert panicgrass (*Panicum urvilleanum*). Desert panicgrass is a native, perennial, rhizomatous grass species found growing in unique Southwestern desert riparian environments, particularly in and around riparian and river channel sand dunes, in southern California and southwest Arizona.

Groundwater pumping and historic dam installation along the Mojave River in combination with drought and severe wind erosion events have triggered significant riparian plant mortality. Plant mortality has released sand trapped within coppice dunes. The migrating sand is quickly moving onto the land of nearby property owners. The District is attempting to successfully establish desert panicgrass on the moving sands to prevent further dune encroachment onto these properties.

The results of the trial will be presented at the Tamarisk Coalition's 2016 annual conference. Additionally, the results are being used at the PMC to establish an initial evaluation planting of desert panicgrass. Seed from five separate sites has been grown out and will be planted in May 2016 to evaluate the potential for the development of a conservation plant release of desert panicgrass for dune stabilization in the Mojave Desert.



Figure 3: Desert panicgrass germination trial, March 2015



Figure 4: Desert panicgrass plants, December 2015

National Cover Crop Trials

In early October, PMC personnel established a national cover crop trial. The purpose is to evaluate growth characteristics and production attributes of commercially available varieties/cultivars and local sources of selected cover crops identified by NRCS State Agronomists/Soil Health Contacts and PMC staff. This study will also provide cover crop adaptation and growth data for different geographical regions of the U.S., and inform local recommendations for cover crops as well as future soil health studies. The study is being conducted by all PMCs and will continue into 2016. There are 7 species and a total of 48 cultivars being evaluated this year. Data collection includes germination and field emergence, spring green up, bloom and flowering period, plant height, disease and insect resistance, and winter hardiness.



Figure 5: National cover crop trial, November 2015



Figure 6: National cover crop trial, December 2015

Technology Transfer

Technical Documents

During 2015, PMC personnel released the documents *Plant Materials and Techniques for Establishing and Improving Southwestern Willow Flycatcher Habitat*, *The Grama Phone Fall 2015*, and *Guide to Conservation Plants Released by the Tucson Plant Materials Center*. All documents can be found on our website.

Tours, Presentations, and Trainings

Several tours were given to PMC visitors over the course of the year. Some of the tour participants included the University of Arizona Vegetative Management class, the Plant Propagation class, and the Mojave Desert Land Trust. The PMC also gave two state wide training webinars on seeding. Additionally, PMC personnel presented during a training course titled: Nursery Management for Rural Development with a Focus on Milkweed Propagation for Monarch Recovery.



Figure 7: Blase, PMC farm foreman, at the PMC booth during the Southeastern Arizona Ag-Day

Outreach Activities

In February, PMC personnel participated in the Southeastern Arizona Ag-Day & Trade Show by presenting information on Soil Health efforts. In March, PMC personnel worked with Tucson Field Office staff during the annual Tohono O'odam Youth Range Day to present information about native plants to students.



Figure 8: Youth Range Day participants learning proper transplanting techniques

Personnel

In June, Heather Dial was selected as the PMC manager. On September 21, 2015 Cameron Randles, our new intermittent employee, reported for duty. Welcome Cameron!



Figure 9: Cameron Randles

The Tucson PMC: Who We Are

In 1934, one of the first USDA Plant Materials Centers was established in Tucson, Arizona. The Tucson Plant Materials Center was created to address the need for adapted plant material to revegetate eroded rangelands in the Southwest. Today, erosion continues to threaten Western rangelands in addition to other resource concerns including: drought, fire, invasive species, threatened and endangered species, and wildland-urban interface issues. As one of 25 Plant Materials Centers across the United States, the Tucson PMC continues to address these conservation issues within the Sonoran, Mojave, and Chihuahuan Desert regions.



Figure 10: The Tucson PMC continues to work out of the original adobe buildings built in the 1930s

...And What We Do

The goal of the Tucson PMC is to provide effective economical vegetative solutions and technology development for conservation problems. The conservation potential of native grasses, shrubs, forbs, and trees is evaluated at the federally owned 40-acre farm, as well as test locations throughout the service area. Plant materials become part of advanced trials designed to develop cultural and management practices that enhance seed production under agronomic conditions. The ease of establishment and persistence of plant materials in their native plant communities is also evaluated. The PMC conducts studies and plantings to address resource issues in the following areas:

- Rangelands
- Urban and urban-interface areas
- Croplands
- Riparian areas

The PMC works in partnership with the Natural Resources Conservation Service (NRCS) field offices, resource conservation and development groups, conservation districts, federal and state agencies, non-profit groups and private landowners. Cooperation with agencies other than the NRCS provides opportunities for the joint development of plant materials and management practices as well as for exchange of information, seed, and planting stock.

PMC Staff

Manager: Heather Dial (hired 6/15)

Assistant Manager: Heather Dial (left 6/15)

Farm Foreman: Blase Evancho (acting Assistant Manager 6/15-12/15)

Secretary/NPM Webmaster: Leslie Glass

Student Intern: Jonathan Walther (left 2/2015)

Intermittent: Cameron Randles (hired 09/2015)

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