

the

Tucson Plant Materials Center

2010 Progress Report of Activities



3241 N. Romero Rd

Tucson, AZ

Phone: 520-292-2999

Fax: 520-292-9099

<http://plant-materials.nrcs.gov/azpmc/>

This report highlights the major activities at the Tucson Plant Materials Center (PMC) during 2010. For more detailed information, contact the PMC or the state Plant Materials Specialist.

Studies

Pollinator Conservation

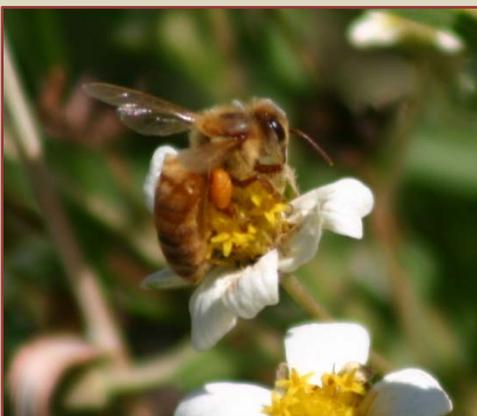


Figure 1: A bee gathers pollen from *Melampodium leucanthum*.

In support of the Plant Materials Program National Action Plan for Pollinator Conservation, the center recently established a pollinator planting in collaboration with the Pollinator Partnership (www.pollinator.org). Native pollinators provide pollination services estimated to be worth about \$3 billion dollars/year. However, many agricultural areas today lack sufficient habitat to support native pollinators. The need for this habitat is well documented as are the ways to increase it: increase foraging habitat, create nesting sites, and reduce risk to pollinators from the use of insecticides and herbicides. The knowledge that is lacking is that of native plants that will be conducive to providing pollinator habitat in agricultural areas of the desert Southwest. The demonstration planting will provide data on potentially suitable native plants for pollinator habitat and a visual reference for those landowners looking for ways to increase pollinator habitat.

Native forbs, shrubs and grasses were planted into a 0.13 acre border during a groundbreaking ceremony and field day on the center. Dr. Stephen Buchmann, International Coordinator for the Pollinator Partnership, was

onsite and addressed participants about the value of pollination and the need to plant for pollinators of the Sonoran Desert. Participants helped put the finishing touches on the planting before touring the rest of the farm facilities. The planting has established well over the course of the year and is a popular stop for both pollinators and visitors to the center.



Figure 2: The pollinator planting in late March 2010.

Energy conservation



Figure 3: Sunn Hemp flower

In early September, approximately 0.3 acres were planted to Sunn Hemp (*Crotalaria juncea*) at the center in support of the Plant Materials Program National Action Plan for energy conservation. Sunn Hemp has been touted as a great green manure and cover crop since the 1930s, when it was reported to be an excellent soil-improving crop. Sunn hemp produces high organic matter yields while fixing large amounts of nitrogen. However, the difficulty in acquiring seed and cheap fertilizer prices caused many farmers to abandon the use of this crop. Energy costs have brought leguminous cover crops back to the forefront for sustainable agriculture production and have led to efforts to increase production of sunn hemp seed.

The planting consisted of three different planting rates (20, 40 and 60 pounds/acre) and the resulting plants were clipped at 45 and 60 day increments. Wet and dry weights of the clippings were taken and will be analyzed to determine the most efficient seeding rate.



Figure 4: Sunn Hemp field in late October 2010.

Transitioning to Organic Production

Transitioning to organic production from conventional farming or ranching systems is a mammoth undertaking for most producers. As farms and ranches choose to begin the transition to organic systems there is a need for science-based field research to provide guidance on several topics including weed management, cover crop rotations and conservation tillage systems, to name a few. At the center, two one acre plantings of alfalfa have been established in support of the Plant Materials Program Transitioning to Organic Production National Action Plan. One acre of alfalfa has been established and maintained using conventional cropping systems while the other has been grown using organic methods. Yields will be compared at the end of each growing season to compare the production systems.



Figure 5: Center personnel establishing an alfalfa planting.

Technology Transfer

Releases

In September, Bonita Germplasm Plains lovegrass (*Eragrostis intermedia*) was officially released as a selected class of certified seed. Bonita Germplasm is a composite of 30 accessions collected from mixed grasslands of southeastern Arizona, Major Land Resource Area 41 (MLRA) 41, the Southeast Arizona Basin and Range, located in Arizona and southwest New Mexico. Bonita Germplasm has undergone no purposeful selection.

The potential uses of Bonita Germplasm Plains lovegrass include restoration of disturbed areas, wildlife habitat improvement and increasing plant diversity on lands in southeast Arizona and southwest New Mexico. Seed production will be maintained by the Tucson Plant Materials Center. Limited quantities of G2 seed are available to seed producers for increase and to other interested parties, as available.



Figure 6: A field of Bonita Germplasm Plains lovegrass.

Field Plantings

In April, a five acre field of Vegas Alkali sacaton (*Sporobolus airoides*) was established on a farm near Laughlin, Nevada. The planting is part of a collaborative agreement between the PMC and the Bureau of Land Management (BLM) developed to address the need for locally adapted native plant materials for rehabilitation and restoration projects for the BLM Southern Nevada District. Limited seed availability, coupled with the need for large quantities, has forced the BLM to rely on non-native species, cultivar varieties, seed from outside of the Mojave Desert, or do nothing at all for restoration projects.

Five PMC personnel in addition to personnel from the Las Vegas BLM, Las Vegas High Desert Resource Conservation and Development (RC&D) and NRCS Kingman Field Office were on hand to plant the approximately 35,000 alkali sacaton plants that were grown for this project. The expected result of this grow out will be native grass seed and native grass straw bales that will be used on BLM restoration projects. In addition, we hope the fields can be used as demonstration plots to recruit new growers to expand native plant materials availability.



Figure 7: Kingman Field Office personnel, Meghan Curry and Alan McBee, planting alkali sacaton.



Figure 8: Harter farms alkali sacaton field in September 2010.

In mid-July, we traveled to Montezuma Well National Monument to plant approximately six acres of native grasses. The planting was conducted as part of an agreement with Montezuma Castle National Monument to help restore riparian desert bosque and grassland habitats around the well. Historically, the waters of Montezuma Well were used for irrigated agriculture. Active farming was discontinued with the transfer of the property to the National Park Service in 1947. Since that time, the fallow fields had been invaded by a variety of invasive and non-native plant species.

Park service staff prepared the pasture by spot spraying and mowing to treat invasive weeds. Species planted with our Truax FLXII86 grass drill include: Western wheatgrass (*Pascopyrum smithii*), sideoats grama (*Bouteloua curtipendula*), green sprangletop (*Leptochloa dubia*), alkali sacaton (*Sporobolus airoides*), sand dropseed (*Sporobolus cryptandrus*), and cane beardgrass (*Bothriochloa barbinodis*). Monsoon storms brought rain both afternoons we planted, providing excellent conditions for germination.



Figure 9: The Montezuma Well pasture planting in early August 2010.



Figure 10: The pasture planting in mid-September 2010.

Cover Crop Plantings

Cover crops include grasses, legumes, and forbs that are planted for use as seasonal cover and to address ten conservation purposes. Some of the major conservation purposes include; reducing soil erosion, increasing soil organic matter, weed suppression, and recycling nutrients in the soil profile. Cover crops are not new to Arizona but the types of species used have generally been limited to small grains. Over the last three years, several trials have been planted in southeastern Arizona with the primary objective of evaluating the performance of several non-traditional species. Information from these trials (seeding rates, seeding dates, and species performance) has been incorporated into the current cover crop standards and specifications.

As a result of the promising performance of some of the non-traditional species, the NRCS has just entered into a long term evaluation of cover crops in conjunction with the University of Arizona and producers in Pima, Graham, and Cochise counties. These trials will include six cover crop species and their relationship to yield on succeeding cash crops.



Figure 11: Manuel Rosales, PMC Manager, and Art Meen, Douglas Field Office Soil Conservationist, during the planting of Crimson clover (*Trifolium incarnatum*) between orchard rows in Elfrida, AZ.



Figure 12: Crimson clover emerging between rows in a pecan orchard.

Field Production

Foundation seed



Figure 13: Cane beardgrass seed head.

Two new plantings of Saltillo Germplasm Cane beardgrass (*Bothriochloa barbinodis*) and 'Loetta' Arizona cottontop (*Digitaria californica*) were established this year at the center. The previous fields were removed due to senescence. Limited quantities of seed of both species are available to seed producers for increase and to other interested parties, as available.

Seed production

Seed production continued unabated at the center through the year. Over 600 bulk pounds of sand dropseed (*Sporobolus cryptandrus*) were produced in addition to approximately 150 bulk pounds of foundation seed production. Another 30 pounds were produced in support of technology studies ongoing at the center.



Figure 14: Harvest of Purple three-awn (*Aristida purpurea*) using the Woodward flail-vac.

Marketing

Tours



Figure 15: Saguaro National Park personnel participating in a tour of PMC fields.

A total of 20 tours and presentations were given by Plant Materials staff over the year. Some participants in tours include staff from Saguaro National Park, The Nature Conservancy and West Region Agronomy meeting attendees. Additionally, PMC staff traveled to locations such as Window Rock and Kayenta, Arizona to present at local farm board meetings on topics such as reading seed labels and soil quality.

The Tucson PMC: Who We Are

In 1934, the first USDA Plant Materials Center was established in Tucson, Arizona. The center was created to address the need for adapted plant material to revegetate eroded rangelands in the American southwest. Today, erosion continues to threaten western rangelands in addition to other resource concerns including: drought, fire, invasive species, and wildland-urban interface issues. As one of 27 Plant Materials Centers across the United States, the Tucson PMC continues to address these conservation issues within its service area, which encompasses areas within the Sonoran, Mojave, and Chihuahuan Desert regions.



Figure 16: 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 for conservation problems. The conservation potential of native grasses, shrubs, forbs and trees is evaluated at the federally owned 45-acre farm in addition to 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 Tucson PMC conducts studies and plantings to address resource issues in the following areas:

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

The Tucson PMC works in partnership with NRCS field offices, resource conservation and development (RC&D) 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: Manuel Rosales
Plant Materials Specialist: Bruce Munda
Assistant Manager: Heather Dial
Farm Foreman: David Forestieri

Biological Technician: Jason Allen
Biological Technician: Brandon Gottung
Student Intern: Carrie Joseph
Student Intern: Corey Picraux

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