



United States Department of Agriculture

Los Lunas Plant Materials Center 2015 Progress Report of Activities

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National Cover Crop Adaptation Trial

In 2015, the Los Lunas Plant Materials Center began installation of the *NRCS Plant Materials Program National Cover Crop Adaptability Trial*. This trial is a two-year Plant Materials Program study in cooperation with the USDA-Agricultural Science Service at Beltsville, Maryland to examine the adaptability of eight important cover crop species in different geographical regions at PMC's across the country. Data collected from the trial includes: germination and field emergence, spring green-up, bloom and flowering period, plant height, disease and insect resistance, and winter hardiness. This data will be analyzed to determine recommendations in conservation plantings as well as for future soil health studies.

The potential benefits of cover crops are many that include: enhancing yields by improving soil health, prevention of soil erosion, providing habitat for beneficial insects, weed suppression and biomass production.



Precision sowing at the LLPMC

Table 1: Species and Cultivars Evaluated in the National Cover Crop Adaptation Trial at the LLPMC

Species	Cultivars
Balansa clover (annual legume)	Fixation, Frontier
Black oat (winter grass annual)	Cosaque, Soil Saver
Cereal Rye (annual grass) High biomass production.	Guardian 301, Maton, Aroostook, Maton II, Elbon, Guardian 308, Brasetto, FL401, Wrens Abruzzi, Prima, Merced, Hazlet, Oklon, Wintergrazer, Wheeler
Crimson clover (winter annual legume) Habitat and nectar source for beneficial insects.	AU Robin, AU Sunrise, AU Sunup, Cantea, Dixie, Kentucky Pride
Daikon Radish (annual radish) Long taproot that breaks up compaction and provides aeration.	Nitro, Sodbuster blend, Lunch, Eco-Till, Groundhog, Tillage, Driller, Defender
Hairy Vetch (cool-season biennial or annual legume)	Lana, Groff, Valana, Purple Prosperity, TNT
Red clover (biennial or short-lived perennial legume)	Cyclone II, Dynamite, Freedom, Kenland, Cinnamon Plus, Starfire, Starfire II, Wildcat
Austrian winter pea (annual legume)	Arvica 4010, Whistler, Frostmaster, Dunn, Lynx, Survivor, Windham, Maxum

Southwest Region Cover Crop Study

Selecting cover crops in the arid Southwest can be challenging due to water availability and identification of site adapted species, and the application of cultural practices for crop development. In 2015, the Los Lunas Plant Materials Center installed two cover crops to evaluate changes in soil properties, as well as biomass production. Cover crops have other benefits in addition to increasing organic matter and soil fertility that include: weed suppression, increasing soil water holding capacity, reducing wind erosion, and altering pest populations.

Cover crops can be grown following a commodity crop or during the cropping season as a green manure. The LLPMC chose two annual, summer cover crop species: a sorghum-sudangrass forage sorghum hybrid, variety Sordan Headless and a legume Cowpea (*Vigna unguiculata*), variety Iron and Clay. These two species have been identified as good cover crop species for providing excellent forage and increasing soil fertility.

The study was installed on July 2, 2015 using a Great Plains no-till drill in a former field of alfalfa that was terminated through multiple disking and plowing of the field. The study is replicated in a completed randomized block. The following data was collected and evaluated for: germination, plant height, canopy cover and biomass production. Forage quality will be assessed through laboratory analyses of protein, total digestible nutrients (TDN) and fiber composition.

Cover crop	Seeding Rate ^{1/}	Height ^{2/}	Canopy Cover ^{3/}	DM Yield ^{4/}
	-PLS/lb.-	--in--	--%--	--lb./ac--
'Iron' and 'Clay' Cowpea	46	28.8 a ^{5/}	42 a	4,474 a
'Sordan Headless' sorghum-sudangrass	44	49 b	48 b	8,259 a

1/ Pure live seed rate; 2/ height (9/8/15); 3/ Percent canopy cover; 4/ Dry matter yield (100 ft² plots on 9/17/105); 5/ means in columns followed by the same letters are not significantly different according to Tukey's HSD at P<0.05.

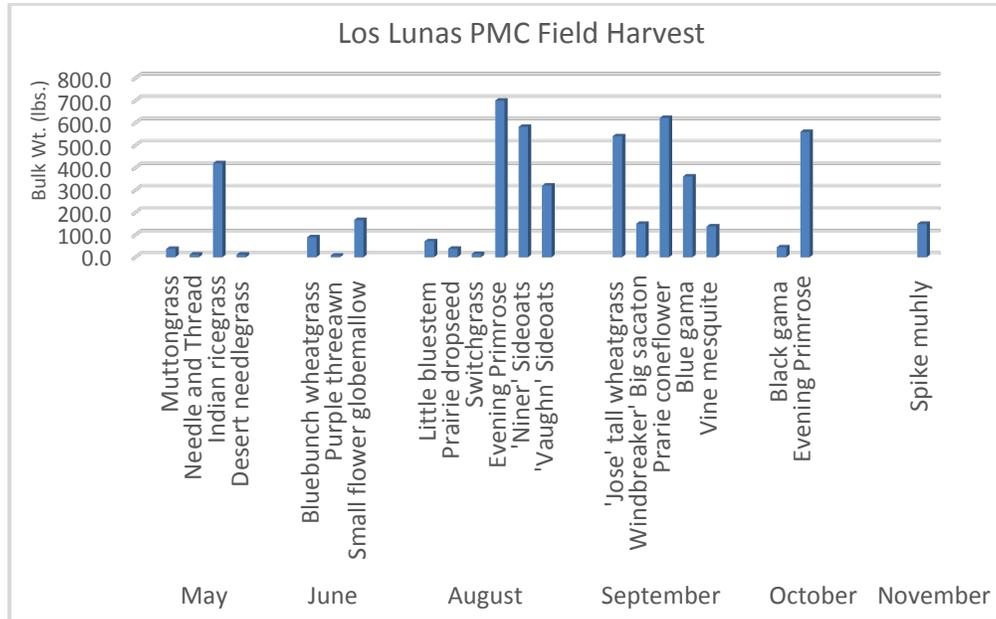


LLPMC Cover Crop Evaluation 2015 Sorghum Plot

Seed Production

The New Mexico Plant Materials Center delivers products to our customers that solve conservation concerns within the Los Lunas Plant Materials Center (LLPMC) service area. To facilitate better conservation methodologies, the LLPMC develops improved species and conservation techniques to mitigate gully erosion, revegetate disturbed lands, reduce erosion, increase rangeland and cropland productivity, and establish shelterbelts. Species currently propagated include: warm- and cool-season grasses, forbs, shrubs and tree species.

Figure 1. Bulk seed weights by species produced at the NRCS-LLPMC in 2014



'Arriba' Western Wheatgrass Evaluation

A total of 40 accessions of western wheatgrass were grown and evaluated from 1957 through 1973 resulting in the release 'Arriba' western wheatgrass (*Agropyron smithii* Rydb.). Arriba is a cool-season, perennial grass that is a valuable conservation plant because of its sod-forming characteristic for soil stabilization.



'Arriba' western wheatgrass field on 9/9/15 at the LLPMC

Currently, a morphological evaluation of eight different seedlots from commercial seed producers is being conducted in order to determine whether there has been a migration of traits from the original release of

'Arriba.' Twenty-five seedlings were propagated from each seedlot for this determination. A one-way ANOVA for both inflorescent height and bloom period of each seedlot will be compared to the seed obtained from the Germplasm Repository Inventory Network, designated as the standard, in which variance levels will be compared.

Notice to Technical and Field Staff

The New Mexico State Plant Materials Committee is responsible for identifying and prioritizing plant materials needs in the plant materials needs assessment. The needs assessments are used to update the Southwest Regional assessment which will, in turn, be used to guide the work at the LLPMC.

Some of the types of plant materials needs may include testing and evaluating native plant species for use in NRCS conservation practices, providing training to field offices and/or producers, testing the efficacy of commercially available plants for adaptation and use in conservation programs, and developing other plant technology to address an identified conservation need. The Los Lunas Plant Materials Center needs your input in order for us to provide our internal customers the best possible information to assist and support our field offices with conservation delivery.

If you have plant materials needs, please send them to me, the Chairperson of the State Plant Materials Committee and LLPMC Manager at Bernadette.Cooney@nm.usda.gov. Thank you and we value our partnerships with you.

Technology Transfer

Tours

The National Native Seed Conference has participants from all over the world who attend the conference. This year we provided an informative field tour to 50 participants of innovative seed harvest and cleaning equipment, along with providing a tour of the production fields.



National Seed Conference Touring the LLPMC in April 2015

Workshops

Milkweed Workshop

An interagency Seed and Plant Milkweed Workshop was held at the LLPMC in collaboration with the National Park Service, Institute of Applied Ecology, and the Santa Ana Pueblo. Instruction was provided by speakers of several different agencies regarding identification, cultivation, potential markets, traditional uses and integrated pest management practices of milkweed species.



Interagency Milkweed Seed and Plant Workshop

Planting Methodologies Workshop

The Upper Pecos Watershed Association, the Las Vegas Soil Water Conservation District, and the LLPMC held a workshop that provided field instruction of planting methodologies and species selection to producers living in the Cow Creek Watershed area.



Participants learn planting methodologies at the Cow Creek Watershed Workshop

Outreach Activities

The Los Lunas Plant Materials Center shares this facility with the New Mexico State University Agricultural Science Center, and bi-annually in partnership we provide an overview of the current studies and innovative technological advances. The LLPMC staff along with the USDA-NRCS State Office Staff provided a total of seven presentations. Four trolley-driven tours were given to the approximately 250 attendees of this year's Field Day.



Tours of the research fields provided at the 2015 Field Day

Presentations

Accomplishments of seven Plant Material Centers collaborative work with Native Americans in eight states was presented at the National Native Seed Conference held in Santa Fe, New Mexico in April.

Los Lunas Plant Materials Center

The NRCS Los Lunas Plant Materials Center (LLPMC) is one of 25 federally funded Centers nationwide. The LLPMC is operated under a cooperative agreement with New Mexico State University in which we share approximately 200 acres. The acreage we operate includes production of foundation seed, testing and selection of potential releases, evaluation studies in support of field and technical staff, as well as production fields for partners that do not have the infrastructure for seed production. The LLPMC also operates a containerized nursery, primarily of longstem and tall-pot containers of species developed for installation via an auger for proper placement into the capillary fringe.



Aerial view of the Los Lunas Plant Materials Center

Originally, the LLPMC was located north of Albuquerque by the Sandia Indian Reservation from 1937 to 1952. In 1957, the center was relocated to its present location. The LLPMC serves several major land resource areas that have in common characteristics of climate, topography, soil and water resources. Our region includes southeast Colorado, New Mexico, southeast Utah, southwest Texas, and northeast Arizona. Our mission is to develop, test, and transfer plant science technology to meet customer and natural resource needs. We also provide trainings that facilitate best management practices of conservation.

We strive to increase and strengthen our current collaborative partnerships with NRCS field offices, public agencies, universities, conservation organizations, tribes, commercial seed producers and nurseries. Together we can determine the best conservation plants and techniques that will enable optimal success.



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Technical Documents

The following release brochures have been updated and this website provides the link to zip bundle:

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/plantmaterials/pmc/west/nmpmc>

- 'Grant' cane bluestem (*Bothriochloa barbinoides*)
- 'Llano' Indian ricegrass (*Sorghastrum nutans*)
- 'Lovington' blue grama (*Bouteloua gracilis*)
- 'Niner' sideoats grama (*Bouteloua curtipendula*)
- 'Nogal' black grama (*Bouteloua eriopoda*)
- 'Redondo' Arizona fescue (*Festuca arizonica*)
- 'Salado' alkali sacaton (*Sporobolus airoides*)
- 'Tusas Germplasm' bottlebrush squirreltail (*Elymus elymoides*)
- 'Elida' sand bluestem (*Andropogon hallii*)
- 'Pastura' little bluestem (*Schizachyrium scoparium*)
- 'Vaughn' sideoats grama (*Bouteloua curtipendula*)

In addition, the following publications also are available from the website:

- *Establishment of Pollinator Plants by Direct Seeding in Flood Irrigation Fields at the Los Lunas Plant Materials Center*, Final Study Report
- *Milkweed Seed Production Trials for the Xerces Society*, Final Study Report
- *Pollinator Plant Recommendations for New Mexico*, Technical Note No. 71 (Final Revision)
- *New Mexico Seed Laws and Regulations*, Technical Note No. 74
- *'Windbreaker' Big Sacaton for Use in Herbaceous Barriers and as Vegetative Mulch*, Technical Note No. 73
- *'Windbreaker' Big Sacaton: A Bio-Energy Forage Source*, Technical Note No. 72

Los Lunas Plant Materials Center Staff

- Bernadette Cooney, LLPMC Manager (ext.105)
- Danny Goodson, Agronomist (ext. 113)
- Keith White, Bio-Technician (ext. 111)
- Dennis Price, Term (ext. 119)
- Deborah Sandoval, Administrative Assistant (ext. 102)

2015 Retirees

Horticulturalist, David R. Dreesen, Ph.D., and Gardener, John Lopez, Ph.D., retired from the USDA-NRCS Plant Materials Program.