

2013 Aberdeen Plant Materials Center Progress Report of Activities January 2014

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Aberdeen Plant Materials Center Home Farm

Who We Are

The mission of the USDA NRCS Plant Materials Program is to develop and transfer effective state-of-the-art plant science technology to meet customer and resource needs. The Aberdeen Plant Materials Center (PMC) was established in 1939 to evaluate and select plant materials and techniques for establishment and management of plants for use in resource conservation activities in the Western United States.

There are 27 PMCs nationwide, each serving a specific geographic and ecological area. The Aberdeen PMC serves portions of the Intermountain West including southern Idaho, western Utah, northern Nevada, western Wyoming and eastern Oregon.

Program Emphasis

The activities of the Aberdeen PMC are guided by a Long-Range Plan (2011-2020). The priority work areas are:

- Range and forest lands in poor ecological condition
- Wildlife habitat in poor ecological condition
- Riparian and wetland degradation
- Plant releases, seed and plant production
- Technology transfer and education

This report highlights many of the major activities at the PMC during 2013. For more detailed information, contact the PMC.

Technology Development

Pollinator Plantings

Commercially produced wildflower seed mixes are commonly available, and broadly used for attracting pollinators and adding beauty to small gardens and landscapes. These mixtures are popular with landowners because they are pre-mixed and eliminate the guess work of designing custom mixtures. They also eliminate the need to search for and purchase individual species from multiple vendors to create a seed mix.



One of the wildflower mixes planted in 2013. Several native and introduced species can be seen.

Despite these advantages, suitability of many of the species in the mixes to pollinator plantings for CRP or other NRCS programs is largely unknown. Many species are from North America outside of the Intermountain West; still others are of Eurasian or African origin. These mixtures may contain plant species that can become invasive or the mix may contain plant species that are attractive to humans but provide little forage to pollinators.

We planted six commercially available wildflower seed mixes designed for use in western North America into non-replicated plots to determine which species are well adapted to conditions in the PMC service area and contribute to

pollinator foraging. The plots established well and initial evaluations have been conducted.

In 2011, the PMC established 5 acres of pollinator habitat at the Fish and Game farm for display and to research management requirements involved in pollinator friendly plantings. We observed fair establishment of most of the forb species planted, but there was also significant weed pressure. In 2012 the field provided excellent pollinator forage with all planted species present. In 2013 the planting showed an increase in the presence of invasive weeds. The lack of herbicides available for use in pollinator plantings to control broadleaf weeds is a major concern. The planting will be evaluated again next season to follow trends in species composition.



Blue flax, sainfoin, yarrow and small burnet can be seen in this photo of the PMC pollinator planting in 2012.



Prickly lettuce dominates the pollinator planting in mid-summer, 2013.

Willow Cutting Storage

In 2012 The PMC started a study evaluating storage longevity of native willows to determine the maximum length of storage time before cutting survival and growth start to decline. We also looked at ways to extend cutting viability by decreasing moisture loss in the cuttings during storage. Our results indicate that cuttings stored under refrigerated conditions will retain good vigor for at least

four months. Increasing humidity and maintaining cutting moisture levels by bagging the cuttings in plastic extends vigor with no loss of survival for up to 6 months. Bagging the cuttings also appears to stimulate root and shoot growth compared to non-bagged and fresh cuttings.

Soil Health

The PMC is working closely with Marlon Winger, Idaho State Agronomist, to evaluate cover crop species suitable for use in Idaho farming systems. Cover crops can prevent wind erosion and help improve soil health. In 2013 the PMC installed a multi-species trial to generate data for updating WEPS (Wind Erosion Prediction System). Current data in WEPS uses small grains as the standard for cover crops, but our trial indicates that alternate species and cocktail mixtures provide significantly greater cover values and increased soil protection.



A "cocktail" (multi-species) cover crop mixture of mustards, legumes and small grains provides excellent cover and soil protection and promotes increased soil health.

Breeder, Foundation, and Cooperative Seed Production

The Aberdeen PMC produces the highest quality conservation seed available, and is responsible for the production of Breeder and Foundation seed of 18 plant releases. In 2013 the PMC had seed production fields of Anatone Select and 'Goldar' bluebunch wheatgrass, 'Regar' meadow brome, 'Appar' blue flax, 'Vavilov II' Siberian wheatgrass, and Maple Grove Lewis flax. The PMC shipped 7,870 pounds of seed to commercial seed growers in 2013. Seed growers should contact the University of Idaho Foundation Seed program or the Utah Crop Improvement Association to request Foundation or early generation Certified seed.

The PMC has been working with Yellowstone National Park since 2009 to produce seed for restoration in the Park. In 2013 we produced seed of Sandberg bluegrass and bluebunch wheatgrass. The grasses are being used to restore lands within the Park that had previously been in production agriculture many years ago.

The PMC is similarly working with Grand Teton National Park to increase seed of source collections from the Park to be used for restoration projects. The PMC is currently growing Idaho fescue for the Park for restoring lands that were previously in production agriculture.

In 2011 the PMC entered into an agreement with the Idaho Army National Guard to produce globemallow seed for revegetating army training grounds in southern Idaho. Five hundred feet of weed barrier fabric was seeded in the fall of 2011 and spring 2012. Seed harvests have taken place in 2012 and 2013.



Globemallow plants grown in weed barrier fabric for the Idaho Army National Guard.

Plant Testing

Native Forbs

The PMC is increasing early generation seed of three native forb species; hoary tansyaster (*Machaeranthera canescens*), Douglas' dustymaiden (*Chaenactis douglasii*) and Wyeth buckwheat (*Eriogonum heracleoides*). All of these forbs will be useful in sage grouse and pollinator plantings as well as rangeland restoration plantings. Once enough seed is produced, these accessions will be named and officially released for commercial seed production. Hoary tansyaster is scheduled for release later this year. Seed should hopefully be commercially available within 2 to 3 years.

The PMC borrowed a flail-vac seed harvester from the Forest Service Lucky Peak Nursery in 2013 to test its performance in harvesting hoary tansyaster. We were very impressed with its ability to harvest the seed. Special thanks go to the Lucky Peak Nursery folks for lending the machine to us for the 2013 seed harvest!



Harvesting hoary tansyaster with a Flail Vac. Once released, this seed will be allocated to commercial seed growers for production and sale.

In the spring of 2010, the PMC installed a common garden study of Nevada bluegrass with an assembly of 34 accessions from Idaho, Utah, Montana and Nevada. The study resulted in a promising accession of Nevada bluegrass which compares favorably to 'Opportunity' Nevada bluegrass. In 2013, we planted this accession in an advanced evaluation planting with Opportunity to gather additional detailed information on seed and production attributes.



Maple Grove Lewis flax. 37 accessions of Lewis flax are being evaluated to identify populations with better vigor and seed production traits.

The PMC initiated a cooperative project with the USDA-ARS Forage and Range Lab, the USDA Rocky Mountain Research Station (RMRS) Shrub Science Lab and the Utah Division of Wildlife Resources (UTDWR), with the goal of identifying an accession of Lewis flax with improved seedling vigor and seed production capabilities that may perform better than Maple Grove Selected Class Germplasm. Thirty-seven accessions were collected and propagated in the PMC greenhouse and transplanted to common garden plantings at Logan and Fountain Green,

Utah for evaluation. Establishment was excellent and evaluations are underway by ARS, RMRS and UTDWR personnel.

Forage kochia

Rangeland wildfires are an ever growing problem in the Intermountain West. The PMC recently installed a study to demonstrate and evaluate accessions of forage kochia (*Bassia prostrata*) in an alternate row seeding with Hycrest II crested wheatgrass in a simulated green stripping or fire break planting. 'Snowstorm' forage kochia was released in 2012 by the USDA Agricultural Research Service in Logan, Utah based on improved stature (taller), productivity, and nutritional content compared to 'Immigrant'. Five accessions including Snowstorm and Immigrant were planted in replicated plots in May, 2012 at the PMC Fish and Game Farm. Evaluations are being made measuring plant vigor, density and height.



'Snowstorm' forage kochia.

Off-Center Testing

In November, 2010 the PMC planted a new off-center trial on the Curlew National Grassland in Southeastern Idaho in cooperation with the USDA Forest Service. The trial includes 63 accessions of native and introduced grasses, forbs, and shrubs adapted to the 12 to 16 inch precipitation zone in Southern Idaho and Northern Utah. Above average precipitation in 2011 resulted in excellent initial establishment of most species in the planting, but the dry 2012 growing season was a struggle for some plants. This site is a valuable resource for Conservation District cooperators, NRCS field staff, Forest Service, BLM and other land managers to get a firsthand look at the plant releases available for conservation seedings on the eastern Idaho Plateaus. Contact the PMC for further information.



Fish Creek bottlebrush squirreltail at the Curlew Off-Center Test site.

In the fall of 2013 the PMC planted a seeding rate study at an off-center site at Skull Valley, Utah. The trial will evaluate the use of higher seeding rates in extreme arid (less than 8" precipitation) conditions. Twelve native and introduced species were planted at the standard rate and a 2X rate in a side-by-side comparison. Evaluations will begin in 2014.

Technology Transfer - New Publications

A number of new or revised publications were completed during the past year – a few are mentioned below:

Technical Notes

- Technical Note 2C. Plant Materials for Pollinators and other Beneficial Insects in Eastern Utah and Western Colorado
- Technical Note 52. Threatened, Endangered and Candidate Plant Species of Utah
- Technical Note 51. Threatened, Endangered and Candidate Plant Species of Idaho

Plant Guides

New or revised Plant Guides were completed in 2013 for the following: Columbia needlegrass, bigflower Agoseris, Las Vegas buckwheat, mountain goldenbanner, western aster, showy goldeneye, limestone hawksbeard, Siberian wheatgrass, small burnet, Indian ricegrass, Palmer's penstemon, thicketleaf penstemon, Rydberg's penstemon, thickspike wheatgrass and streambank wheatgrass.

Website

All Aberdeen PMC publications can be downloaded from the following web-sites:

<http://www.id.nrcs.usda.gov/programs/plant.html>
<http://www.plant-materials.nrcs.usda.gov/idpmc/>