United States Department of Agriculture

NRCS Natural Resources Conservation Service

2011
Aberdeen Plant Materials Center
Progress Report of Activities

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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 2011. For more detailed information, contact the PMC or the Plant Materials Specialist in Boise.

Native Plant Testing

The PMC began increasing seed of three native forb species; hoary tansyaster (*Machaeranthera canescens*), Douglas' dustymaiden (*Chaenactis douglasii*) and Wyeth buckwheat (*Eriogonum heracleoides*). Once enough seed is available, these accessions will be named and officially released for commercial seed production. For more information on these and many other species, check out the Plant Guides available on our web-site at: http://www.id.nrcs.usda.gov/programs/plant.html.

Hoary tansyaster, a late blooming forb, for use in low-precipitation range and pollinator seedings. Photo by: Derek Tilley, Aberdeen PMC

A fourth forb species, Searls' prairie clover (*Dalea searlsiae*), is being produced and prepared for release in cooperation with the ARS Forage and Range Laboratory in Logan, Utah. Searls' prairie clover is a native legume chosen from collections made in eastern Nevada.

All of these forbs will be useful in future sage grouse and pollinator plantings as well as rangeland restoration plantings.

A European honeybee foraging for nectar on Searls' prairie clover. Photo by: Derek Tilley, Aberdeen PMC

In the spring of 2010 the PMC installed a common garden study of Nevada bluegrass (*Poa secunda* var. *nevadensis*) with an assembly of 34 accessions from Idaho, Utah, Montana and Nevada. Also included in the trial were collections of big bluegrass (*Poa ampla*). The study resulted in two promising accessions which compare favorably to 'Opportunity' Nevada bluegrass and 'Sherman' big bluegrass. In 2012, both of these accessions will be planted in an advanced evaluation planting with Sherman and Opportunity to gather additional detailed information on seed and production attributes.

This summer we made collections of lobeleaf groundsel (*Senecio multilobatus*) for evaluation. Other members of the genus were known to contain toxic compounds, so the PMC sent tissue samples of the collections to the ARS Poisonous Plant Research Laboratory in Logan, Utah for toxicity analysis. A total of 26 collections of 5 *Senecio* species were sent for analysis. All samples were found to contain toxic alkaloids. Based on these findings, we have decided to discontinue further evaluation of *Senecio* species. We believe that other species could be found which would fill the same ecological role without the associated toxicity risk to grazing animals.

In November 2011, we planted an initial evaluation of a wide range of native forbs. The goal of this trial is to find species which show promise for further evaluation and eventual release. Some of the species planted include one-flower sunflower (*Helianthella uniflora*), showy goldeneye (*Heliomeris multiflora*), tapertip hawksbeard (*Crepis acuminata*), cinquefoil (*Potentilla* sp.) and horsemint (*Agastache urticifolia*).

The PMC is beginning a cooperative project with the USDA-ARS Forage and Range Lab, the USDA Rocky Mountain Research Station Shrub Science Lab and the Utah Division of Wildlife Resources with the goal of identifying an accession of Lewis flax (*Linum lewisii*) with improved seedling vigor and seed production capabilities that may perform better than Maple Grove Selected Class Germplasm. Thirty-seven accessions will be planted in the PMC greenhouse and will be evaluated in common garden plantings at Logan and Fountain Green, Utah. Additionally, DNA testing will be used to identify ecotypes and help define appropriate planting zones.

Maple Grove Lewis flax. 37 accessions of Lewis flax will be evaluated to identify populations with better vigor and seed production traits. Photo by: Derek Tilley, Aberdeen PMC

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 this year resulted in excellent initial establishment of most species in the planting. This site will be a valuable resource for Conservation District cooperators, NRCS field staff, Forest Service, BLM and other land managers to get a firsthand look at the releases available for conservation seedings. Contact the PMC for further information.

A new off-center planting is being prepared in Skull Valley, Utah west of Tooele. The site was sprayed this season for weed control. We will spray again next spring and summer and hope to plant the site in the fall of 2012.

The PMC is continuing its cooperation with the Great Basin Native Plant Selection and Increase Project to evaluate methods to effectively control cheatgrass using introduced species such as crested wheatgrass and then controlling the

introduced grass to establish native species while minimizing weed invasion.

Breeder, Foundation, and Cooperative Seed/Plant Production

The PMC is responsible for the Breeder and Foundation seed production of 20 plant releases. In 2011, Foundation seed fields of Anatone bluebunch wheatgrass, Recovery western wheatgrass, Maple Grove Lewis flax, Snake River Plains fourwing saltbush, Northern Cold Desert winterfat and Goldar bluebunch wheatgrass were in production.

In 2009, the PMC began cooperative seed and plant increase work with Yellowstone National Park. In 2011 we produced seed of Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass and needleandthread (*Heterostipa comata*) as well as 15,000 wetland plants (*Carex, Juncus* and *Deschampsia*) for restoration projects in the Park. The dryland grasses are being used to restore lands within the Park that had previously been in production agriculture many years ago. The wetland species were used on the Gibbon River highway realignment project.

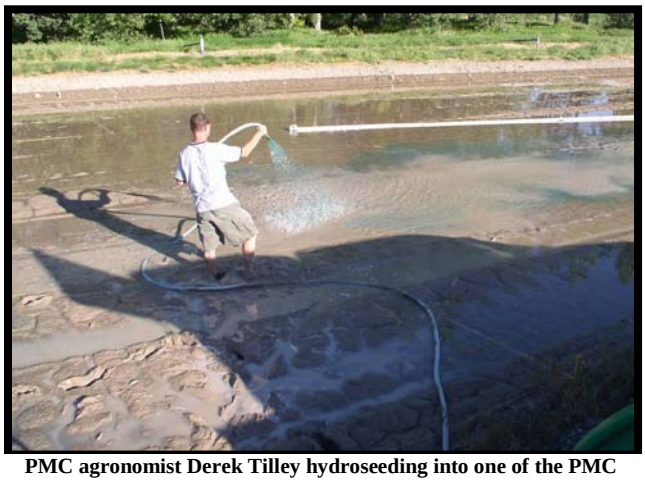
Swordleaf rush transplants at a revegetated area along the Gibbon River in Yellowstone National Park. Photo by: Loren St John, Aberdeen PMC

In 2006 the PMC began a cooperative effort 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 mountain brome (*Bromus marginatus*) and Idaho fescue (*Festuca idahoensis*) for Grand Teton National Park.

Technology Development

Wetland Seed Establishment

Direct establishment of wetland seed continues to vex wetland creation and restoration endeavors. The PMC is evaluating new techniques involving hydroseeding pre-germinated and stratified seed for establishment into wetlands. Our research has shown that using a hydroseeder to deliver pre-germinated or stratified seed yields significantly better plant establishment than using traditional seeding methods. Our data also indicate that a wet, soft and muddy seed bed provides a much better planting medium for wetland species than a traditionally prepared firm seed bed.



PMC agronomist Derek Tilley hydroseeding into one of the PMC ponds. Photo by: Loren St John, Aberdeen PMC.

Pollinator Plantings

Pollinator friendly plantings are becoming increasingly important in the Intermountain West. Some populations of native and introduced bees are declining across North America due to colony collapse and degradation of suitable habitat. Many of the plants currently under evaluation at the PMC are geared towards pollinators; however we are still learning how to establish and manage these plantings. Establishment of grass-dominant plantings including forbs and shrubs are common and largely successful; however, pollinator plantings consisting predominantly of forbs pose problems not typically encountered with grass plantings. Forbs, especially native forbs, are in many cases not competitive against weed species. Forb plantings also severely limit the herbicides available for controlling broadleaf weeds.

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. The site was planted this spring and we used mowing treatments to control weeds. We observed fair establishment of most of the forb species planted, but there was also significant weed problems. Witchgrass and other annuals dominated the site until late summer when annual sunflower (one of the seeded species) overtopped the planting. This experience highlights the need for excellent weed control prior to planting. The planting will be evaluated again next season to determine if the planted forbs established.

The PMC also assisted the South Bingham Soil Conservation District with the design and implementation of a pollinator planting in a raised bed on the east side of the District office. Seed was planted this fall, so some flowers (and hopefully pollinators) will be visible next summer and fall. Some of the species planted include firecracker penstemon, Venus penstemon, sulphurflower buckwheat, and Lewis flax.

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 2A. Plants for Pollinators in the Intermountain West
- Technical Note 2B. Plants for Pollinators in the Inland Northwest
- Technical Note 24. Conservation Plant Species for the Int. West
- Technical Note 26. Legume Inoculation
- Technical Note 28. Glossary of Plant Materials Terms
- Technical Note 33. Plant and Seed Vendors
- Technical Note 35. Quick Methods to Estimate Seed Quality.
- Technical Note 42. Willow Clump Plantings
- Technical Note 43. Tree and Shrub Plantings
- Technical Note 51. T&E Species of Idaho
- Technical Note 52. T&E Species of Utah
- Technical Note 54. Evaluation of Planting Time
- Technical Note 55. The Jet Harvester
- Technical Note 56. Cover Crops

Plant Guides
New or revised Plant Guides were completed for mammoth wildrye, last chance Townsendia, bear poppy, autumn buttercup, Kodachrome bladderpod, San Rafael cactus, Siler pincushion cactus, Douglas' dustymaiden, hoary tansyaster, fernleaf biscuitroot, nineleaf biscuitroot, Gray's biscuitroot, altai wildrye, tufted hairgrass, Jones' waxy dogbane, Maguire's primrose, Maguire daisy, Welsh's milkweed, deseret milkvetch, heliotrope milkvetch, Atwood's phacelia, Uinta Basin cactus, Navajo sedge, Barneby ridge-cress, Shivwitz milkvetch, Holmgren milkvetch, Winkler's pincushion cactus, Wright fishhook cactus, Barneby reed-mustard, Uinta Basin waxfruit, clay reed-mustard, White River penstemon, Gierisch mallow, slender wheatgrass, Goose Creek milkvetch, Packard's milkvetch, water sedge, Timothy, hardstem bulrush and Sandberg bluegrass.

Propagation Protocols
Several new or revised propagation protocols were entered on the protocol database located at the Native Plants Journal website: (http://nativeplants .for.uidaho.edu/).Watersedge, bluejoint, beaked sedge, tufted hairgrass, Nebraska sedge, Douglas' dustymaiden, swordleaf rush, hoary tansyaster, and multilobed groundsel.

Plant Materials Training

In June the PMC presented a three day training session to field office personnel. The theme of the training is "using plants to help solve resource problems". Topics covered included planning a seeding, plant identification and adaptation, windbreak design, seed quality, drill calibration, riparian and wetland planting and pasture, range and wildlife considerations. The training included tours and demonstrations at the PMC farms and at a couple of off-center sites.

Students touring PMC Home Farm. Photo by Dan Ogle, Idaho State Office.

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/

www.plant-materials.nrcs.usda.gov/idpmc/riparian.html