

2010 Aberdeen Plant Materials Center Progress Report of Activities December 2010

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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. The priority work areas are:

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

This report highlights some of the major activities at the PMC during 2010. For more detailed information, contact the PMC or the Plant Materials Specialist in Boise.

Native Plant Testing

In 2007 and 2008 the PMC planted common garden studies to evaluate collections of native buckwheat species (*Eriogonum umbellatum* and *E. heracleoides*), Douglas' dusty maiden (*Chaenactis douglasii*) and hoary tansy aster (*Machaeranthera canescens*). These forbs can be used to enhance vegetation diversity in rangeland plantings and are excellent attractors of pollinators, which also means they may be very valuable tools in sage grouse habitat recovery. The three studies are in the final stages of evaluation now, and we are beginning to bulk up seed of the top performing accessions. Stay tuned for official release notices.



A promising accession of hoary tansy aster

The PMC is also cooperating with the ARS Forage and Range Laboratory in Logan, Utah to increase and release a collection of Searls' prairie clover (*Dalea searlsiae*), a native legume chosen from collections made in Nevada.

In the spring of 2010 we installed a common garden study of Nevada bluegrass (*Poa secunda* var. *nevadensis*) with an assemblage of 34 accessions from Idaho, Utah, Montana and Nevada. Data are currently being analyzed from the

first year of evaluation. The trial will continue to be evaluated the next several years to determine if any of the collections perform significantly better than already released materials available on the market.

Collection Requests for 2011

Three new forb species are slated for collection in 2011 for establishing new common garden studies for release development. Next year we will be making collections of lobeleaf groundsel (*Packera multilobata*), tapertip hawksbeard (*Crepis accuminata*), and sand scurfpea (*Psoralidium lanceolatum*). Once the seed collections are processed, new plantings could be installed as early as next fall or spring 2012. Please help out by making seed collections or by sending stand location information to PMC Agronomist, Derek Tilley.



Lobeleaf groundsel (*Packera multilobata*) is a beautiful, short-lived perennial forb native to the Intermountain West

Off-Center Testing

The PMC currently has off-center evaluations at the Coffee Point test site, 20 miles northwest of Aberdeen, Idaho and in Skull Valley 25 miles west of Tooele, Utah. These replicated plantings include forbs, shrubs, and native and introduced grasses. Evaluations will take place at each site for 10 years to determine long-term performance of the test species.

In mid November of this year PMC staff installed our newest off-center trial at 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. Evaluations at the site will begin next spring. This planting 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 different releases available for conservation seedings. Contact the PMC for further information.

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. Treatments being evaluated include disking and herbicide treatments to control crested wheatgrass. Additional plots located near Elko, Nevada and Mountain Home, Idaho were planted in early November.

Breeder, Foundation, and Cooperative Seed/Plant Production

The PMC is responsible for the Breeder and Foundation seed production of 20 plant releases. In 2010, Foundation seed fields of 'Goldar' bluebunch wheatgrass, Anatone Selection bluebunch wheatgrass, 'Nezpar' Indian ricegrass, 'Recovery' western wheatgrass, 'Rush' intermediate wheatgrass, 'Sodar' streambank wheatgrass, Clearwater Selection Venus penstemon, Northern Cold Desert Selection winterfat, Snake River Plains Selection fourwing saltbush, and Maple Grove Selection Lewis flax were in production.

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, bluebunch wheatgrass and Idaho fescue for Grand Teton National Park.



Wetland sedges being produced in the PMC greenhouse for Yellowstone National Park

In 2009, the PMC began a seed and plant increase project with Yellowstone National Park. In 2010 we produced seed of Sandberg bluegrass and needleandthread as well as a number of wetland plants (*Carex*, *Juncus* and *Deschampsia*) for restoration projects in the Park. The dryland grasses are being used to restore lands within the

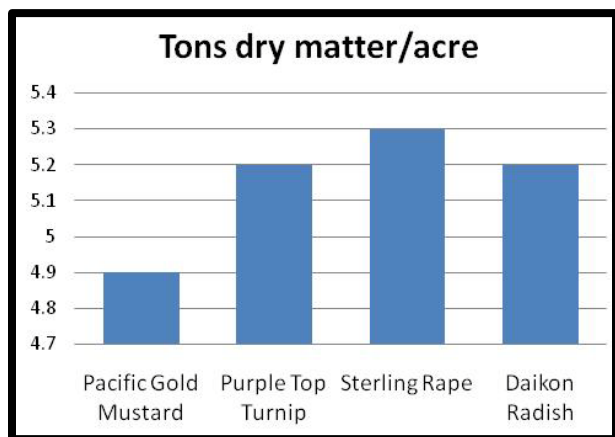
Park that had previously been in production agriculture many years ago. The wetland species were used on the Gibbon River highway realignment project.

This year, the PMC wrapped up a multi-year agreement with the Great Basin Native Plant Selection and Increase Project increasing seed of native forbs that have been identified as high priority species. These included: sulphurflower buckwheat, fernleaf biscuitroot, Gray's biscuitroot and nineleaf biscuitroot. Seed harvested from these plots were allocated to a number of regional growers for further production development and ultimately used in restoration seedings throughout the Great Basin.

Technology Development

Cover Crops

In mid-August, the PMC planted a cover crop demonstration trial in collaboration with Marlon Winger, State Agronomist. The purpose of the demonstration was to determine how a few promising cover crop species would perform from a late summer seeding. Pacific Gold mustard, Purple Top turnip, sweet clover, Sterling rape, Dixie crimson clover, Daikon radish, Austrian winter pea, and Purple Bounty hairy vetch were planted on August 19 and were harvested and evaluated for forage production in early November. The four legumes (sweetclover, Austrian winter pea, Dixon crimson clover and Purple Bounty hairy vetch) showed negligible growth, while the remaining crucifers (Pacific Gold mustard, purple top turnip, Sterling rape, and Daikon forage radish) had the best production.



Cruciferous cover crops produced 4.9 to 5.3 tons of dry biomass per acre at the PMC cover crop evaluation trial

The top four forage producers in the cover crop trial, shown in the graph above, ranged from 4.9 to 5.3 tons of above ground dry matter/acre. A significant amount of additional biomass was also gained by the turnip and radish roots. Using these plants as cover crops can help decrease weed pressure, fight nematode infestations, and improve soil quality. Contact Idaho State Agronomist, Marlon Winger,

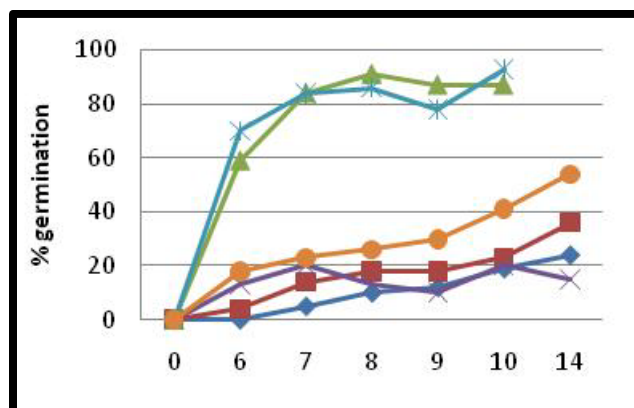
for additional information on these and other cover crop options available in your area.

Floating Row Cover for Wetland Establishment

In 2010, the PMC conducted research using floating row cover following broadcast seeding of sedges and rushes. The trial differed from previous evaluations in that we established our plots in flood irrigated ponds instead of using overhead mist irrigation. We observed significantly greater establishment of Nebraska sedge under light floating row cover compared to non-covered treatments. However, overall establishment under floating row cover was still lower than we feel is acceptable. We will continue working in this arena to try to determine successful ways of direct seeding these difficult species.

Pre-germinating Seed

In 2010 we also began investigating germination techniques for wetland sedges and rushes. One method which is showing good potential is the use of aquarium aerators while soaking seed in warm water. Nebraska sedge seed germinated in aerated water significantly faster than under any other treatment investigated. We observed nearly 100% germination of Nebraska sedge with this technique within 7 days, and no stratification was necessary. This technique has the potential to speed up greenhouse plant production. It also has potential to be used for hydroseeding applications. In 2011 we will test additional species and also evaluate hydroseeding application.



Nebraska sedge placed in aerated water (aqua and green) germinated significantly faster than non-aerated treatments

The chart above shows germination of two aerated treatments versus four non-aerated treatments of Nebraska sedge from 0 to 14 days. Once germinated, the seed can be planted into greenhouse cones, or placed into hydroseeding equipment for direct seeding.

The Jet Harvester

Last year, the PMC invented a new type of seed harvester for use on plant species which are not easily combined. The Jet Harvester uses a PTO driven fan and vortex dust

collector to suck seed directly off of the plant. This year we put the Jet Harvester to the test by using it to harvest seed of fourwing saltbush, Douglas' dustymaiden, hoary tansyaster, fernleaf biscuitroot, Gray's biscuitroot, nineleaf biscuitroot and winterfat. The machine performed wonderfully, providing high quality seed from these difficult to harvest species. For more information on the Jet Harvester, check out Idaho Plant Materials Technical Note 55.



Eric Eldredge, Fallon, Nevada PMC manager, tries out the Jet Harvester on Douglas' dustymaiden

Brent Cornforth Retires

After 37 years of Federal service, Brent Cornforth, Aberdeen PMC Farm Manager is retiring. Brent started his career at the Aberdeen PMC as a summer worker in 1971 and worked his way up the ladder to Farm Manager in August, 1979. He has been involved with and seen many changes to the facilities and program over the years. Brent played a major role in developing the Fish and Game Farm; construction of the shop, seed cleaning buildings and the equipment storage facility at the Home Farm. He played a key role in development of the Pearl Farm that was acquired in 2005. Brent was at the forefront when the Home Farm was converted from furrow irrigation to sprinkler in the early 1990's. Brent was awarded the National PMC Employee of the Year in 1992. He is well known and respected by the commercial seed industry for his knowledge and ability in the processing of conservation plant seed. He was even around when the PMC converted from binders and thrashers and started using combines to harvest grass seed. Brent will be missed, but we know

where he lives, and we hope to see him often in the coming years.

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 (rev.)
- Technical Note 3. Estimating Initial Stocking Rates
- Technical Note 9A. Plants for Saline to Sodic Conditions (rev.)
- Technical Note 9B. Plant Materials Salinity Trials
- Technical Note 11. Pasture Species and Grazing Management Guidelines
- Technical Note 24. Grass, Grass-Like, Forb, Legume and Woody Species for the Int. West (rev)
- Technical Note 26. Legume Inoculation
- Technical Note 28. Glossary of Plant Materials Terms (rev.)
- Technical Note 33. Plant and Seed Vendors (rev.)
- Technical Note 35. Quick Methods to Estimate Seed Quality.
- Technical Note 42. Willow Clump Plantings (rev.)
- Technical Note 51. T&E Species of Idaho
- Technical Note 53. Vertical Bundles
- Technical Note 56. Cover Crops

Plant Guides

- Plant Guides were completed for MacFarlane's four-o'clock, redtop, Spalding's catchfly, sand dropseed, timothy, strawberry clover, sheep fescue, rubber rabbitbrush, water howellia, Christ's paintbrush, slickspot peppergrass, RS-Hybrid wheatgrass, Ute ladies' tresses, bluebunch wheatgrass, blue flax and Lewis flax.

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