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NRCS Natural Resources Conservation Service

2006
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 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 2006. For detailed information, contact us at the PMC or the Idaho-Utah Plant Materials Specialist.

South Bingham Soil Conservation District Purchases Farm for Plant Materials Research

In July 2005 The South Bingham Soil Conservation District purchased a 40 acre farm near Aberdeen to allow the PMC to expand plant testing research and seed production. The District installed a new irrigation system, windbreak and drip irrigation system, and gravel roads to meet the needs of the PMC.

The South Bingham Soil Conservation District has been an important partner with the PMC for many years. In 1955, the District purchased the “Home Farm” located 2 miles north of Aberdeen, where the PMC farming operations are headquartered.

Installing new Rocky Mountain juniper and Simon poplar windbreak

Foundation seed production fields of ‘Magnar’ basin wildrye, ‘Goldar’ bluebunch wheatgrass, and ‘Bannock’ thickspike wheatgrass were planted in 2006. In addition, a field of blue wildrye for Grand Teton National Park and an Initial Evaluation Planting of *Eriogonum* (buckwheat sp.) were also established in 2006 at the newly purchased Pearl Farm.

The PMC appreciates the support and cooperation provided by the South Bingham Soil Conservation District!

Native Plant Testing

The PMC is continuing to evaluate six native species for potential use in restoration of land in Idaho and Montana with the USDA Forest Service, Region 1. A total of 52 accessions of bluebunch wheatgrass, Idaho fescue, blue wildrye, tufted hairgrass, Sandberg bluegrass and western yarrow are being studied in replicated field trials. They were established at the PMC in 2004 to evaluate the collections and compare them with known industry releases.

Initial Evaluation plots of western yarrow with border rows of 'Appar' blue flax

The PMC is also continuing a similar evaluation in cooperation with Caribou-Targhee and Bridger-Teton National Forests to evaluate accessions of mountain brome and slender wheatgrass for potential release and use in eastern Idaho and western Wyoming.

The PMC began a cooperative effort with Grand Teton National Park in the spring of 2006 to increase seed of source collections from the Park to be used for restoration projects. Seed production fields of blue wildrye, Sandberg bluegrass, mountain brome and slender wheatgrass were planted in anticipation of seed harvest in 2007 and 2008.

In cooperation with the Great Basin Native Plant Selection and Increase Project, the PMC is evaluating propagation techniques and attempting to increase seed of native forbs that have been identified as high priority species. The species include: sulphurflower buckwheat, fernleaf biscuitroot, Gray's biscuitroot, nineleaf biscuitroot, sand penstemon, hotrock penstemon and sagebrush penstemon.

These native forbs were direct-seeded last fall into weed barrier fabric at the PMC and observations were made on seedling establishment and plant growth during 2006. We are expecting the plants to begin producing seed in 2007.

Off-Center Testing

The PMC is continuing its cooperation with the Great Basin Native Plant Selection and Increase Project, Brigham Young University and the Agricultural Research Service Eastern Oregon Agricultural Research Center to evaluate methods to determine effective ways to control crested wheatgrass and establish native species while minimizing weed invasion. A new Truax Roughrider range drill was delivered to the PMC and Technicians Boyd Simonson and Brent Cornforth modified the drill to improve seed flow and seed placement. A seed mixture developed by the cooperators was mixed with rice hulls at the PMC and plots were seeded near Tooele, UT and Burns OR in late October 2005. Treatments being evaluated include 1-way and 2-way disking and herbicide treatment (partial and full) to control crested wheatgrass. The studies were repeated again in the fall of 2006. In addition to this study, a drill comparison trial was also planted near Elko, NV in 2006.

Seeding crested wheatgrass diversification trial near Burns, OR

Breeder and Foundation Seed Production

The PMC is responsible for Breeder and Foundation seed production of 19 plant releases. During 2006, Foundation seed fields of 'Goldar' bluebunch wheatgrass, Anatone bluebunch wheatgrass, 'Paiute' orchardgrass, 'Bannock' thickspike wheatgrass, Maple Grove Selection Lewis flax, Richfield Selection firecracker penstemon, Clearwater Selection Venus penstemon, Northern Cold Desert Selection winterfat and Snake River Plains Selection fourwing saltbush were in production. New fields of Maple Grove Lewis flax, Bannock thickspike wheatgrass, 'Delar' small burnet, 'Magnar' basin wildrye and 'Goldar' bluebunch wheatgrass were also established.

The PMC is also cooperating with the Department of Defense in seed increase of test materials of western wheatgrass, Siberian wheatgrass and slender wheatgrass that will be used for further testing at military installations in the western United States.

Interagency Riparian/Wetland Plant Development Project

The Interagency Riparian/Wetland Plant Development Project was established in 1991. NRCS and several federal, state, local, and private organizations decided more information was needed on how to propagate and plant riparian and wetland plants, how to establish and maintain wetland and riparian vegetation in artificial situations, and other uses related to water quality improvement.

Streambank Soil Bioengineering Technical Training

Workshop participants install a rooted willow using the waterjet on the Hopi Reservation near Tuba City, AZ

As part of our technology transfer program, a three-day Streambank Soil Bioengineering Technical Training Workshop was developed. This workshop was formally a two day workshop, but based on additional technology, it was expanded to a three day course. The first day and a half of the workshop is devoted to the classroom where basic riparian dynamics, riparian zone vegetation, plant acquisition, bioengineering techniques, woody plant propagation, case studies, and project planning are discussed. The afternoon of the second day is held in the field discussing a proposed restoration site. The participants utilize the knowledge gained in the classroom to develop restoration plan alternatives. The plan alternatives are then discussed and the selected plan for the project site is discussed with the group. The third day is spent at the project site where participants install a series of bioengineering treatments on an eroding section of streambank based on the selected project plan.

This year, Streambank Soil Bioengineering Technical Training workshops were held in St. George UT in a continuing effort to help treat flood damaged areas. Workshops were also held in San Antonio, TX, Bismarck, ND, Salmon, ID and on the Hopi Reservation near Tuba City, AZ. A total of 215 people were trained in 2006.

Technical Assistance to Afghanistan

In May 2006, Chris Hoag, Wetland Plant Ecologist, traveled to Kabul, Afghanistan to provide advanced training to employees of the Ministry of Agriculture, Animal Husbandry, and Forestry. Chris and Jon Fripp, NRCS National Design, Construction and Soil Mechanics Center developed a 10 day class in Watershed Assessment, Management, and Rehabilitation and presented the course to 62 Ministry employees who have positions similar to Cooperative Extension Agents in the US. The Watershed training included classroom presentations and field trips to demonstrate watershed assessment techniques.

Watershed Assessment, Management, and Rehabilitation class in Kabul, Afghanistan in 2006. Class in the field discussing how to asses a small watershed. The second photo shows the Afghans using a small seed drill that was shipped to Afghanistan.

Wetland/Riparian Research

In 2006, one of the most interesting and useable tools that was developed at the PMC is the pot planter attachment for the Waterjet Stinger.

The Waterjet Stinger is a tool for outplanting dormant unrooted cuttings of willows (*Salix spp.*), cottonwoods (*Populus spp.*]), and dogwoods (*Cornus sericea).* The Waterjet Stinger uses water to hydrodrill a hole in the soil large enough to insert a 2- to 4-cm (0.75- to 1.5-in) diameter, dormant, unrooted cutting. This hole, after it is hydrodrilled, is actually full of a water–soil slurry. When the cutting is pushed into the hole, the water in the slurry percolates into the surrounding soil profile while the soil portion of the slurry settles around the cutting. This results in good soil-to-cutting contact, preventing air pockets near the stem, and allowing for better rooting potential. In addition, the water from the slurry creates a zone of moisture around the cutting that keeps the cutting hydrated for a longer period of time.

The original concept worked so well that we adapted a probe that allows the waterjet to be used to plant larger rooted container plants. We think this will increase the survival of container stock, especially in dry areas of the US, because: plants would be outplanted into a wet hole rather than a dry hole- mitigating loss of moisture from the container medium to the soil. Plants would have fewer air pockets around their roots, yielding better root-to-soil contact. A slurry would create a zone of moisture, a "water bulb," around the roots that would extend the time the root system has contact with favorable soil moisture.

The pot planter probe is similar to the original waterjet probe but includes larger vanes on the sides of the probe to create the larger hole needed for container plants. The vanes are 7.5 cm (3 in) wide, taper toward the nozzle, and are welded to the probe pipe at right angles to each other. In addition, because the nozzle tip did not have to be stainless steel, a standard pipe cap was used. Three holes were drilled into the cap similar to the original design. The outside holes are drilled at a slight angle so that the water sprays out in more of a fan arrangement, allowing the waterjet to drill a hole faster and wider.

A recent workshop on the Hopi Reservation in AZ was conducted to demonstrate the usability of the pot planter to establish riparian woody plants into a riparian area where poor grazing management had all but eliminated the woody riparian plants. There was no useable water on the site, so a 300 gal water tank in the back of a pickup was used as the water source. Several Hopi high school students helped plant a number of potted willows. The ease of use and the high success rate demonstrated that this technique can help reestablish riparian plant communities in very arid areas.