

2016 Aberdeen Plant Materials Center Progress Report of Activities December 2016

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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 25 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.

Aberdeen's primary areas of focus are improving habitat for at-risk wildlife species such as sage-grouse, improving range and pasture productivity, and increasing plant species diversity on Intermountain rangelands. We are also investigating plants and technologies for improving soil health in Intermountain agricultural lands.

For more information on any PMC projects, please call or email the center with the information at the top of the page.

Staffing Changes

Terron Pickett, previously a Resource Conservationist in Price, UT, was selected for the PMC Agronomist position to take lead in our soil health and cover crop projects.

Terron has an excellent background coming from a field office as well as research experience with the ARS Forage and Range Research Lab in Logan, UT. He officially started working for the PMC in July when he helped install our multi-species cover crop variety trial. We expect great things from Terron and are excited to have him on board.

In addition to picking up an agronomist this year, the PMC also re-filled our farm foreman position following the retirement of Boyd Simonson last year. Charlie Bair was promoted to take over the PMC farming duties. Charlie has an excellent grasp on operations here at the PMC, and he has already begun implementing ideas to streamline us and make us more efficient.

Native Forbs

The PMC is continuing its work to develop native forb releases for use in habitat plantings for pollinators, sage-grouse and other wildlife. We will soon be releasing a selection of parsnipflower buckwheat (*Eriogonum heracleoides*) from southeast Idaho. It has been tested at the PMC as well as at off-center sites in Virginia, ID, and in Spanish Fork and Clarkston, UT. This will be a valuable forb/subshrub in the sagebrush steppe and for pollinator plantings in basin and mountain sagebrush and bitterbrush ecological sites. This year, the PMC produced a good quantity of seed which should be enough to supply initial demand when the release is made. Look for the official release this spring.



Whorled buckwheat seed production at the PMC.

Gumweed Initial Evaluation Planting

To many, curlycup gumweed (*Grindelia squarrosa*) is a common nuisance along roadsides and poorly managed rangeland, but we think it might just be an excellent resource. Curlycup gumweed is a short-lived native forb that flowers late in the growing season providing a tremendous resource to native bees. The leaves are also a preferred forage of sage-grouse chicks. Its ability to invade disturbed sites, even those occupied by cheatgrass, make it an excellent candidate for pollinator and wildlife plantings in arid to semi-arid sites throughout our range.

This summer we made seed collections from sites throughout the Great Basin in Oregon, Idaho, Wyoming, Nevada and Utah, and established an Initial Evaluation Planting at the PMC Home Farm. We'll be evaluating 25 accessions for establishment, seedling vigor, blooming period and seed production.



Curlycup gumweed is a native forb with potential for use in pollinator and wildlife habitat plantings in the Great Basin.

Cover Crop Variety Trial

Aberdeen is participating in a multi-PMC trial of several varieties of commonly used cover crop species in an effort to develop accurate recommendations for different regions. Species being tested at Aberdeen include hairy vetch, balansa clover, red clover, crimson clover, radish and black oat. The initial trial was established in 2015, and a second replication was planted in 2016. Terron has been recording data for establishment and production this summer and will get survival and other data in the spring.



The multi-species cover crop variety trial is being conducted at PMCs across the nation to help develop regional planting recommendations.

Using Cover Crops in Grass Seed Production

In addition to studying the effects of using cover crops to build soil health, the PMC is also trying to implement some of these practices on our own farms. Following seed harvest in late August, we planted daikon radish in our Anatone bluebunch wheatgrass fields by mixing the seed with a granular fertilizer and using a broadcast spreader. The result was a nice thick stand of radish growing in between our grass rows. We expect the radish will suppress winter annual and early spring weeds like shepherd's purse. The taproots should also help scavenge excess fertilizer and also create macro-pores after they winter kill to improve water infiltration.



Daikon radish broadcast in between rows of Anatone bluebunch wheatgrass suppress weeds with the thick cover.

Milkweed Establishment and Management

Monarch butterflies are one of the most iconic species of western North America, and in 1992 the monarch was officially made the Idaho state insect. Monarchs will only lay eggs on milkweed plants where the baby caterpillars accumulate toxins from the plant tissues making them unpalatable to birds and other predators. Without milkweeds, monarchs wouldn't be able to complete their

life cycle. However milkweed abundance has dramatically decreased over the past several decades as herbicide use has increased. The PMC has initiated a study looking at techniques to establish and manage milkweed habitat for monarch conservation. We'll be comparing direct seeding in the fall and spring with using greenhouse grown materials as well as transplanting freshly harvested rhizomes. We're also looking at ways to reduce competition and encourage milkweed growth with mowing and disking treatments.



A monarch caterpillar chomps on a showy milkweed leaf.

Forb Establishment Study (The Forb Island Snow Fence Project)

New technologies have become available that may improve establishment rates of native forbs by trapping available moisture. Snow fences and floating row cover fabric that trap moisture have the potential to be used to establish forb islands (distinct focal areas where forbs are established). These forb islands could be sources of seed for the colonization of adjacent rangeland areas in subsequent years. The PMC is cooperating in a study with the FS Shrub Science Lab, ARS Forage and Range Research Lab, Utah State University and Brigham Young University to determine if these techniques, in combination with seed treatments such as hydrophobic coatings and fungicide applications, can be used to successfully establish important Great Basin forbs in islands at three sites in Utah and Idaho.

In 2016 we collected data from all three sites and saw some encouraging preliminary data. This fall we installed new seedlings for an additional replication of the study. Data compiling and statistical analysis are underway, and a summary report should be available soon.



Hollow Frame Snow Fence and N-Sulate fabric are designed to trap moisture and enhance seed establishment.

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 14 plant releases. In 2016, the PMC had seed production fields of Tegmar intermediate wheatgrass, Amethyst hoary tansyaster, Anatone bluebunch wheatgrass, Regar meadow brome, Sodar streambank wheatgrass, Vavilov II Siberian wheatgrass, Goldar bluebunch wheatgrass, Maple Grove Lewis flax, Magnar basin wildrye, Delar small burnet, Bannock thickspike wheatgrass, Recovery western wheatgrass, Ephraim crested wheatgrass, and Rush intermediate wheatgrass. 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.



A seed production field of Bannock thickspike wheatgrass.

National Park Service

The PMC has been working with Yellowstone National Park since 2009 to produce seed for restoration efforts in the park. In 2016 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, blue wildrye, mountain brome and two native forbs: sulphur-flower buckwheat, and showy goldeneye, for restoring lands that were previously in production agriculture.

In 2016 we tried a different technique and instead of growing a seed production field of slender wheatgrass at the PMC, we decided to try harvesting at the park in fields that had been planted to restoration mixes just a few years ago. In three days we harvested approximately 14 acres using a flail-vac harvester and collected over 1,100 lbs of uncleaned seed. We estimate that this should clean down to around 600 lbs of pure seed for the park.



Slender wheatgrass seed from Grand Teton National Park brought back to the PMC for processing.

Last year, the PMC began a new project growing containerized rushes and sedges for Yosemite National Park. The park is relocating a parking lot currently located in the floodplain of the Merced River. Approximately 4 acres of former parking lot site area is to be restored to black oak woodland and palustrine wetland within the riparian buffer. In September we delivered approximately 11,000 wetland plants to the Park, including milkweed, goldenrod, penstemon, and several species of sedges. In 2017 we'll be growing a completely different suite of plants for additional restoration projects.



Greenhouse grown wetland plants almost ready for delivery to Yosemite National Park.

Training

- 3-day Plant Materials Training
- Wetland Plant Identification

Technology Transfer - New Publications

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

Technical Notes

- WNTSC Plant Materials TN 1. What to do with Pivot Corners
- WNTSC Plant Materials TN 2. Cover Crop selection tool
- ID Plant Materials TN 66. Fuel breaks to reduce large wildfire impacts in sagebrush ecosystems

Plant Guides

- curlycup gumweed
- Showy milkweed
- Utah trefoil
- Meadow brome

Journal Articles

- A low-cost modification to a flail-vac harvester for collecting lightweight, wind-dispersed seed. *Native Plants Journal* 17(2).

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/>