

2015 Aberdeen Plant Materials Center Progress Report of Activities December 2015

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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.

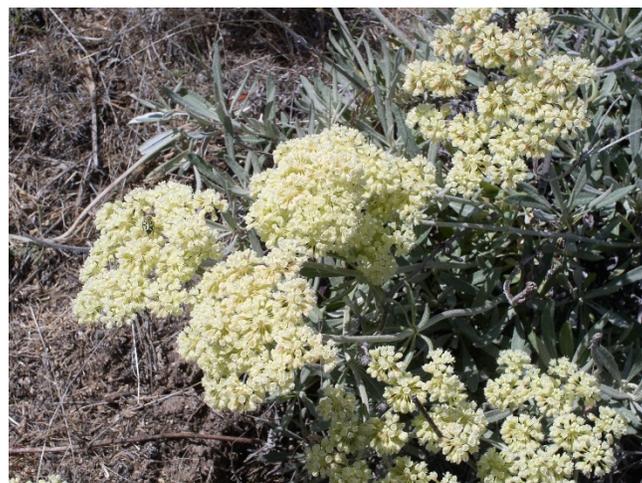
Aberdeen's primary areas of focus are improving habitat for at-risk wildlife species such as sage-grouse, improving range and pasture productivity, and increasing plant species diversity on Intermountain rangelands. We are also investigating plants and technologies for improving soil health in Intermountain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

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

Native Forbs

The PMC is continuing its work to develop native forb releases for use in pollinator and sage-grouse habitat plantings. We are currently working towards the release of

a whorled buckwheat (*Eriogonum heracleoides*) accession from southeast Idaho. 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 summer or fall.



Whorled buckwheat flowers attract numerous native pollinators in the spring and summer. This plant is common in sagebrush and bitterbrush communities within the 12 to 18 inch precipitation zone.

Staffing Changes

After 35 with the Aberdeen PMC, Boyd Simonson has decided to retire. Boyd started his NRCS career in 1980 as a Bio Science Technician and quickly became an invaluable member of the PMC team. In addition to having a fine attention to detail with regards to PMC seed production, Boyd has made a name for himself as a master fabricator and developer. He has a profound ability to look at a problem and develop a mechanical solution. Over the years, Boyd has designed or improved several pieces of equipment used at the PMC including a machine to lay weed fabric, a machine to quickly fill greenhouse containers with soil, modifications to the Truax Rough Rider range drill, and modifications to the Woodward Flail-Vac seed stripper for harvesting light, airborne seed.

In 2010, Boyd advanced to the position of PMC Farm Foreman. His leadership has been crucial to making

Aberdeen one of the top PMCs in the nation. He has a truly superior work ethic and routinely put in extra hours to complete off-center seeding projects or maintenance of seed production fields. Boyd strongly believes in conservation of the land, and his dedication to the PMC is a testament to that belief. It has been a pleasure to work with and associate with Boyd; he will truly be missed.

Pollinator Plantings

In 2011, the PMC established 5 acres of pollinator habitat at the Fish and Game farm to research management requirements involved in pollinator friendly plantings. Species planted included blue flax, small burnet, western yarrow, annual sunflower, hoary tansyaster, falcate alfalfa, and three native grasses. In 2012, the field provided excellent pollinator forage with all planted species present. Over the years, however, the planting has shown 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. We are planning to maintain this planting through 2021 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.

In 2013, 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. As it turns out, not all mixes are created equally. Some mixes have a variety of native and introduced annuals and perennials for a showy display. Others are designed to represent native western plant communities or to be highly drought tolerant. Clear objectives and an understanding of the species composition are vital to choosing the most appropriate mixture. The plots will be maintained for display and observation and as a food source for pollinators at the PMC.



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

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 2015, the PMC had seed production fields of Tegmar intermediate wheatgrass, Amethyst hoary tansyaster, Anatone bluebunch wheatgrass, Regar meadow brome, Vavilov II Siberian wheatgrass, Goldar bluebunch wheatgrass, and Maple Grove Lewis flax. 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.



'Regar' meadow brome seed production field.

National Park Service

The PMC has been working with Yellowstone National Park since 2009 to produce seed for restoration efforts in the park. In 2015 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 three native forbs: sulphur-flower buckwheat, showy

goldeneye and one-flower sunflower, for restoring lands that were previously in production agriculture.



Showy goldeneye seed production for Grand Teton National Park.

This 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.

Flail-Vac Modification for Forb Seed

Two obstacles to native forb seed production are the characteristics of indeterminate ripening and light airborne seed that evolved for easy wind dispersal. For optimum seed yields, indeterminately ripening species require multiple harvests to capture seed as it ripens and before it disarticulates from the flower and falls to the ground. Light seeded species such as hoary tansyaster are particularly difficult to harvest without losing significant amounts of seed to shatter and wind. This year, the PMC modified a Woodward Flail-Vac Seed Stripper by adding loops of heavy chain to the front that agitate ripe seed off of the flowers without damaging the plants or immature seed heads. This simple modification dramatically increased yields in our hoary tansyaster fields, and it should be applicable to a wide range of species with similar characteristics.



Drop chains added to the front of a Flail-Vac Seed Stripper release light airborne seed into the air and into the harvester. The plants remain undamaged for subsequent harvests.

Seeding Rate Study

In fall 2013, the PMC planted a seeding rate study at an off-center site in Skull Valley, Utah. The trial was designed to evaluate the use of higher seeding rates in arid conditions (less than 10" precipitation). Twelve native and introduced species were planted at the standard rate as well as a 2X rate in a side-by-side comparison. Early data indicate that doubling the seeding rate did not consistently result in significantly greater establishment; therefore the additional cost for the extra seed may not be justified by the results. However, this result may have been due to an exceptionally wet spring at Skull Valley. A replication of this planting was installed at Coffee Point, Idaho, 25 miles northwest of Aberdeen in the fall of 2015 to see if the results were repeatable.



Bozoiisky Russian wildrye planted at 6 lbs PLS/ac (left) and 12 lbs PLS/ac (right).

Forb Island Study

New technologies have become available that may improve establishment rates of native forbs by trapping available moisture. The Hollow Frame Fence System (HFFS)

incorporates two parallel, specially designed snow fences that trap snow in uniform, dense drifts that slowly melt and extend soil water availability. N-Sulate fabric is a medium-weight, permeable, UV-treated, and re-usable fabric designed to protect nursery ground beds and vegetable gardens from freezing temperatures and rapid drying of the soil surface. These technologies 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 the patented Hollow Frame Snow System or N-Sulate fabric in combination with seed enhancement technology can be used to successfully establish important Great Basin forbs in islands at three sites in Utah and Idaho.



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

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 the spring of 2015, and a second replication will be planted in 2016.

Cover Crop Herbicide Study

A major concern with the use of fall cover crops is whether it will overwinter and become a problem in the following crop. Species selected for their winter kill attributes can survive if temperatures don't drop sufficiently, or their cold tolerance is not adequately understood. This fall, the PMC planted several plots of cover crop species with potential to

overwinter in Aberdeen in order to conduct herbicide trials next spring. Pam Hutchinson (UI Extension) and Marlon Winger (NRCS Regional Soil Health Specialist) will be assisting with the trial.

Training

This past summer, the PMC cooperated with Utah State Rangeland Management Specialist Shane Greene, and Utah State Biologist Casey Burns to provide a training course regarding plantings in arid sites in Utah. The Arid Lands Course was held for five days at the USFS Desert Experimental Range in Millard County, Utah. Staff from NRCS field offices and other agencies participated in in-class training, brainstorming sessions, visited test plots, and developed seeding plans for various scenarios. A special thanks to Stan Kitchen of the USFS Shrub Science Lab for being such a gracious host.

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 64. Review of the Lawson Aerator for Brush Management

Plant Guides

- American Vetch

Journal Articles

- Seed production and field establishment of hoary tansyaster (*Machaeranthera canescens*). Native Plants Journal.
- Notice of release of Amethyst Germplasm Hoary Tansyaster: Selected Class of Natural Germplasm. Native Plants Journal.

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/>