

Aberdeen Plant Materials Center



2018 Progress Report of Activities

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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.

Native Forbs

A broader selection of native forb releases is needed for use in habitat plantings for pollinators, sage-grouse and other wildlife. Currently we are working on curlycup gumweed, 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. We are evaluating 25 accessions from sites throughout the Great Basin in Oregon, Idaho, Wyoming, Nevada and Utah for establishment, seedling vigor, blooming period and seed production. Our goal is to have a selected class release out by 2021.



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

Aberdeen recently released Soda Springs Germplasm whorled buckwheat (*Eriogonum heracleoides*) from southeast Idaho after being 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. Seed allocations will be available through Utah Crop Improvement and the Idaho Foundation Seed Program.



Soda Springs Germplasm whorled buckwheat seed production at the PMC.

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 recently conducted a study in cooperation with the Forest Service 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.



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

Early results indicate that certain treatments are beneficial under different conditions. For example, the snow fence produced significantly higher germination of milkvetch seedlings in dry sites where winter snow was limited. We also saw positive responses from fungicide treatments. More results will become available as the data are analyzed.

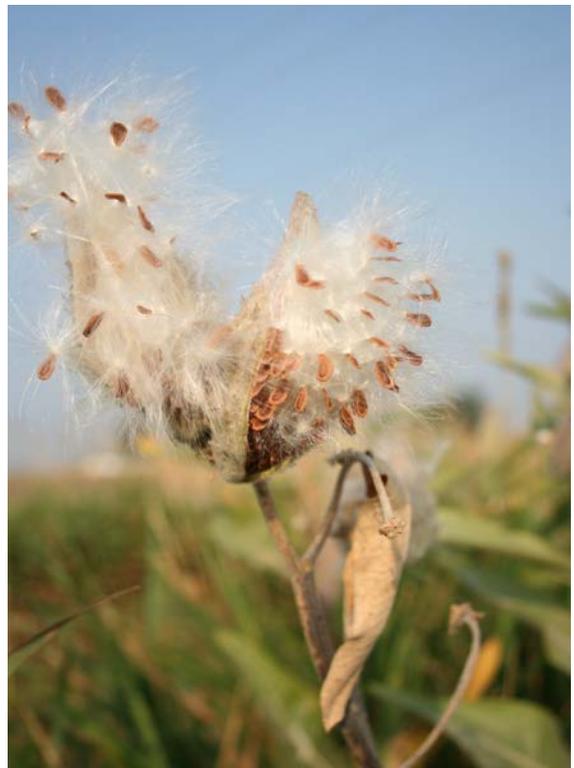
Milkweed Establishment and Management

The PMC is looking at techniques to establish and manage milkweed habitat for monarch butterfly conservation. Western North American monarchs are facing serious declines due to pesticide use and habitat loss. Milkweeds are crucial to the reproduction and survival of these butterflies, and this species has been surprisingly difficult for conservationists to establish. We compared seeding in the fall and spring with using greenhouse grown materials as well as transplanting freshly harvested rhizomes. The trial also examines ways to reduce competition and encourage milkweed growth with mowing and disking treatments.



Showy milkweed is grown in a trial aimed at finding the best techniques to establish and manage monarch butterfly habitat.

We are also interested in helping local conservationists collect milkweed seed for restoration and habitat creation projects. We have teamed up with Jessa Kay Cruz of the Xerces Society to develop a technical note on seed collection and processing, which should come out early in 2019.



Availability of seed of local ecotypes of showy milkweed can be a limiting factor to creating new habitat. The PMC is working on developing technical guidance for collection and processing of milkweed seed for local conservation efforts.

Cover Crop Variety Trial

Aberdeen is participating in a multi-PMC trial of several varieties of commonly used cover crop species to develop accurate recommendations for different regions. Species

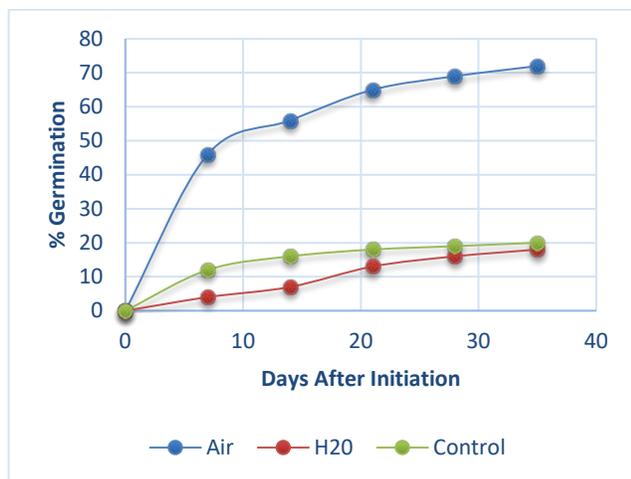
being tested at Aberdeen include hairy vetch, balansa clover, red clover, crimson clover, radish and black oat. The data will be analyzed over the winter and a report of the findings should be available in the spring or summer.



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

Breaking Seed Dormancy with Oxygenated Water Priming

We showed in the past that seed dormancy could be overcome in Nebraska sedge by soaking the seed in an oxygenated water bath, but no one really knows how applicable this technique is to other species. This year we tested 8 additional wetland sedges and bulrushes and one forb, curlycup gumweed. The results aren't final yet, but it appears that some species respond well to this treatment, while others are largely unaffected. Gumweed, for example, had a pronounced increase in overall germination and germination rate compared to soaking in non-oxygenated water and a non-treated control. Some sedges however, with a thick seed coat, did not respond to the oxygenated water treatment and may need a scarification treatment before optimal germination is realized. It may be possible to prime the seed of certain species just before seeding for quick and even establishment.



Germination response of curlycup gumweed to oxygenated water (air), non-oxygenated water (H2O) and a non-treated control.

Living Mulch

The idea of a living mulch and the many potential benefits has been a topic of conversation as well as a few studies. We will be conducting a trial to see if we can reap the benefits of planting grasses for seed production directly into an established short-statured legume. During the 2018 season we established plots of three clover varieties (Aberlasting clover, Kura clover and white Dutch clover) to plant into in the 2019 season.

Interseeding Annuals into Perennial Pastures

Preliminary findings of planting warm season annuals into a cool season pasture have proven to be of mixed results, but in certain cases have been promising. The PMC is interested in finding which techniques and species can be used to help extend the productivity of established cool season pastures and to determine whether the introduction of annuals proves to be economical. In 2018 we conducted the first round of this trial, but it will be replicated over the next few years.

Breeder and Foundation Seed Production

The Aberdeen PMC produces the highest quality conservation seed available and is responsible for the production of Breeder and Foundation seed of 20 plant releases. In 2018, the PMC had seed production fields of Tegmar intermediate wheatgrass, Amethyst hoary tansyaster, Anatone bluebunch wheatgrass, Sodar streambank wheatgrass, Vavilov II Siberian wheatgrass, Richfield firecracker penstemon, Clearwater Venus penstemon, Goldar bluebunch wheatgrass, Maple Grove Lewis flax, Magnar basin wildrye, Recovery western wheatgrass, Ephraim crested wheatgrass, Soda Springs buckwheat 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.



Foundation seed produced by the PMC is allocated through the University of Idaho Foundation Seed program or the Utah Crop Improvement Association to seed producers.

National Park Service

The PMC has been working with Yellowstone National Park since 2009 to produce seed for restoration efforts in

the park. In 2018 we produced seed of Sandberg bluegrass and bluebunch wheatgrass which will be 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 the PMC began growing over 20 species of rushes and sedges and other wet meadow species for Yosemite National Park. The park is relocating parking areas 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. So far, we have delivered approximately 30,000 wetland plants to the Park, including milkweed, goldenrod, penstemon, and several species of sedges. For each species we also develop protocols for seed cleaning and propagation techniques which are published on the Native Plants Journal Propagation Protocol Database.



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

ARS Hairy Vetch Increase

The Agricultural Research Service is developing several new lines of hairy vetch for building soil health. New varieties are being selected for adaptation to various regions in the U.S. as well as for traits such as reduced hard seed. The PMC is cooperating in this endeavor by producing seed

of breeding populations for adaptation testing and evaluation.



Hairy vetch grown for ARS will be used to select new releases for cover crops and soil health.

Products and Technology Transfer

Technical Notes

- ID Plant Materials TN 70: Collecting and Processing Botanical Voucher Specimens
- ID Plant Materials TN 72: A Review of Techniques and Technologies for Improving Seedling Establishment

Trainings

- Monarch and Pollinator Conservation and Habitat Development
- Plant Materials Training for ID Soil and Water Conservation Commission
- Soil Health Workshop

Plant Guides

- Western goldentop

Propagation Protocols

- Curlycup gumweed
- Dogbane
- Fragile-sheath sedge
- Hood's sedge
- Swamp sedge
- Brown sedge
- Sword-leaf rush
- Bearded melicgrass
- Harford's oniongrass
- Rough Canada goldenrod

Journal Articles

- Case Study of In-Situ Seed Harvesting in Restored Grasslands to Increase Native Seed Availability

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/>



One of four monarch butterflies reared on PMC milkweed plants and released with a tracking tag.

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