

Aberdeen Plant Materials Center



2023 Progress Report of Activities

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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 (IDPMC) 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. IDPMC 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 of these, or other, PMC projects, please call or email the center with the information at the top of the page.

Tech Note 24 Revision

Possibly the most broadly used document from the Aberdeen Plant Materials Program is [Technical Note 24: Conservation Plant Species for the Intermountain West](#). The first version of this document was written in the 1990s by PM Specialist, Dan Ogle, then PMC Manager Loren St. John, and collaborators from Montana and Washington. It is considered the primary source for plant information for Idaho and Utah NRCS and is also used by several other agencies including USFS, BLM, and WYDEQ to name but a few. It has undergone several revisions since its first inception, and last year we made a substantial addition to TN24 with the inclusion of succession-based restoration, several early seral species descriptions, and revised seeding date recommendations. Make sure you have the latest edition, as practice standards are linked directly to the guidance in this tech note.



A new revision of Plant Materials Tech Note 24: Conservation Plant Species for the Intermountain West came out in 2023. The new version adds several species and has updated seeding date recommendations.

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 2023, the PMC had seed production fields of 'Ephraim' crested wheatgrass, 'Bannock' thickspike wheatgrass, 'Nezpar' Indian ricegrass, 'Tegmar' intermediate wheatgrass, 'Magnar' basin wildrye, 'Delar' small burnet, Anatone Germplasm bluebunch wheatgrass, 'Recovery' western wheatgrass, Clearwater Selection Venus penstemon, 'Goldar' bluebunch wheatgrass, 'Appar' blue flax, Maple Grove Germplasm Lewis flax, 'Paiute' orchardgrass, 'Regar' meadow brome, and Amethyst Germplasm hoary tansyaster. 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 of these or our other plant releases.



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. Clearwater Selection Venus Penstemon is shown above.

PMC Intern

We had the privilege of hosting an undergraduate intern this summer from Cal Poly Pomona. Carla Corea joined us for two months and worked on several projects including fiddleneck harvesting and processing and the sand dropseed germination trials. She also helped with our evaluations at off-center sites for the early seral mix trial. She was a great asset to us this year, and we hope to see her again.



PMC intern, Carla Corea processing fiddleneck seed while wearing full protective gear.

Fiddleneck Initial Evaluation

We were requested by seed industry representatives to explore harvesting and processing of bristly fiddleneck (*Amsinckia tessellata*), a native annual forb with reclamation potential. This species is covered with sharp, glass-like bristles, that can irritate the eyes and skin. This year we evaluated wildland harvesting methods, seed cleaning techniques, and seed germination requirements. Next year we plan to install a small seed production field to compare agricultural harvesting methods. An interim report is available upon request.

Curlycup Gumweed Release Development

Forbs that provide nectar and pollen to bees and butterflies in late summer are critical for pollinator conservation, but species choices are limited. In 2016 we started evaluating curlycup gumweed (*Grindelia squarrosa*) to help meet this need. We have been investigating 25 populations in a common garden study and multiple laboratory and greenhouse evaluations. Final selections of populations for a selected class release will be made in 2024.



Gumweed and pollinators. Photos by Jim Cane, ARS.

Ecological Succession

The vast majority of reclamation and restoration seedings attempt to recreate a climax plant community. However, following the natural process of ecological succession may be necessary to achieve a fully functioning ecosystem. We designed a field trial to compare standard NRCS seed mixes to those with a multi-successional seed mix to compare establishment and follow the long-term transition to the desired state. We have study sites at Aberdeen,

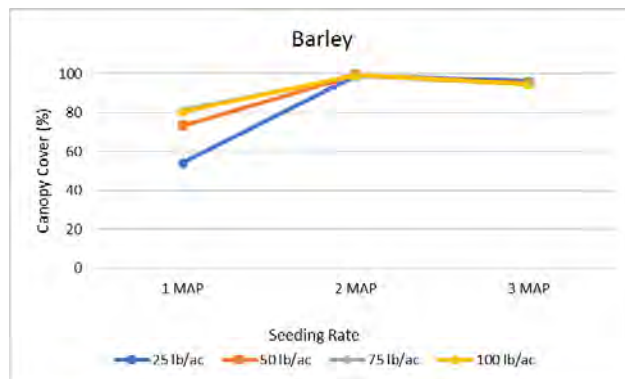
Curlew National Grassland and Pahsimeroi Valley near Challis which we planted in 2021 and 2022. Early data are promising and suggest that mixes with higher diversity do indeed establish with greater seedling density, produce better cover and add significant biodiversity.



Early successional species like common sunflower (above) establish easily, provide early cover and wildlife habitat, and may suppress weeds.

Cover Crop Rate Trial

While cover crops have many benefits, they can also be prohibitively expensive for many producers to implement. For some species there can be a wide range of recommended seeding rates which may cause producers to plant too heavily, leading to a scenario where costs are greater than the perceived benefits. IDPMC established the second year of a 2-year field trial in August 2023 to evaluate four seeding rates of each of eight different cool season cover crop species: barley, triticale, wheat, oat, turnip, radish, hairy vetch, and winter pea. Biomass and growth stage were recorded at 2 months after planting (MAP) and will be recorded again at termination in spring 2024. Canopy cover is evaluated monthly. The goal of the study is to find optimal single species seeding rates for Idaho, which can then be used to determine the appropriate amount of each species to include in a cover crop mix. In general, we are finding that by 2 MAP, the highest seeding rates do not provide higher canopy cover or biomass.



Canopy cover (%) of barley seeded at 4 different rates, measured at 1, 2, and 3 months after planting (MAP).

National Parks

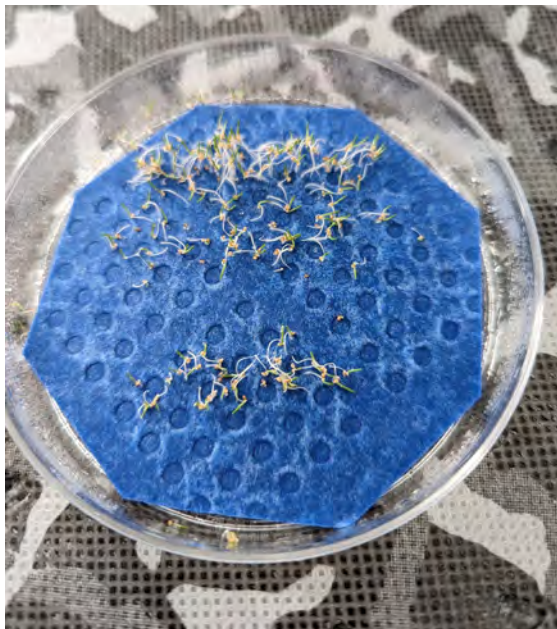
IDPMC has been working with Yellowstone and Grand Teton National Parks for many years to produce seed for restoration efforts within the parks. The PMC also benefits from these agreements by being able to explore production methods of species that may not have been previously considered. For example, we discovered that using a shop vac for seed collection of small aster seed is very effective compared to other methods. This year marked the end of our agreement with Grand Teton, and in August we delivered over 5,000 lb of seed produced at IDPMC over the years.



Harvesting YNP western aster seed from a PMC production field using a shop vac.

Sand dropseed Germination and Initial Evaluation Planting

Sand dropseed (*Sporobolus cryptandrus*) is a native, warm season perennial bunchgrass that has value in conservation seedings in the Intermountain West. This fall we planted a common garden study containing 50 populations from the Intermountain West from which we will collect data over the next few years with the goal of a selected class plant release. We also conducted multiple experiments to determine whether seed treatments could improve germination. We found that the highest overall germination for each accession occurred with scarified seed, but stratification alone could also improve germination. These results suggest that scarification, and possibly stratification (both of which can be used for field-scale plantings) may improve the success of sand dropseed establishment in conservation seedings.



Sand dropseed seedlings from scarified seed only 2 days after study initiation.

Grass Display Nursery

In fall 2021, we planted a display nursery containing 33 species and 73 varieties of native and introduced grasses adapted to the Intermountain area. The grasses were mature and in full bloom when we held the Plant Materials training in June 2023, providing a valuable hands-on learning experience in grass identification. Additionally, we took photos of each grass; these will be used in a future grass identification Tech Note. The grass nursery will remain on display for those who want to learn identification or to compare the characteristics of different varieties of the same species.



Carla Corea standing in a demonstration plot of 'Latar' orchardgrass.

Annual Hairgrass

Earlier this year we received a request from University of Idaho to investigate annual hairgrass, a native annual grass infrequently found throughout much of Idaho. This species is very similar in appearance to the invasive weed, *ventenata*. We were asked to determine if annual hairgrass and *ventenata* habitat overlapped, find diagnostic features to easily tell the species apart, and create a fact sheet for landowners and conservationists. We found annual hairgrass and *ventenata* growing in close proximity to one another at multiple sites, but nowhere did they fully overlap. Annual hairgrass was found consistently in wetter soils of depressions while *ventenata* was restricted to drier soils surrounding hairgrass habitat. We also found that it was very difficult to tell the species apart without getting up close. Only by looking at the seeds could a positive identification be made. See our new fact sheet "[Annual Hairgrass or Ventenata?](#)" for more information.



Annual hairgrass seed above and *ventenata* seed below.

Products and Technology Transfer

Journal Articles

- A 16-year case study of bluebunch wheatgrass and Snake River wheatgrass plant materials in Idaho's Snake River Plain. *Native Plants Journal*

Release Brochures

- 'Douglas' crested wheatgrass
- 'Vavilov' Siberian wheatgrass
- 'Immigrant' forage kochia

Training/Presentations

- Plant Identification, Camas National Wildlife Refuge
- Plant Materials 3-day Training for ID & UT, Aberdeen, ID
- Rangeland Restoration Training, Redmond, OR
- Succession Management, Petroleum Association of Wyoming, Casper, WY
- Cover crop training for ID planners, Aberdeen, ID

Final Study Reports

- Scarification and high, diurnal temperatures produce optimal germination of sand dropseed

Technical Notes

- TN24: Conservation Plant Species for the Intermountain West (revision)

Propagation Protocols

- Sand dropseed (*Sporobolus cryptandrus*)
- Bristly fiddleneck (*Amsinckia tessellata*)
- Annual hairgrass (*Deschampsia danthonioides*)

Plant Guides

- Annual hairgrass (*Deschampsia danthonioides*)

Fact Sheets

- Annual hairgrass or Ventenata?

Training Videos

In 2020 we posted four videos to the Idaho NRCS YouTube Channel, and in 2022 we added a new video on succession management. So far, these videos have garnered nearly 1,100 views since posting.

- IDPMC Overview
- How to Develop a Seed Mix
- Drill Calibration
- Grass Identification
- Succession Management

Website

<https://www.nrcs.usda.gov/plant-materials/idpmc>

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