

# Aberdeen Plant Materials Center



## 2024 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 contact the center with the information at the top of the page.

### Address change

Please note we've given up our PO box and are now receiving all mail at our physical address: 1691A South 2700 West, Aberdeen, ID, 83210.

### 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 evaluations of [curlycup gumweed](#) (*Grindelia squarrosa*) to help meet this need. We are investigating 25 populations in a common garden study and multiple laboratory and greenhouse evaluations. Our studies indicate gumweed populations have high amounts of genetic diversity but little genetic structure on the landscape, i.e. populations don't group according to geographic distance. We are making decisions on release development and will begin seed production for distribution to the commercial seed industry next year.



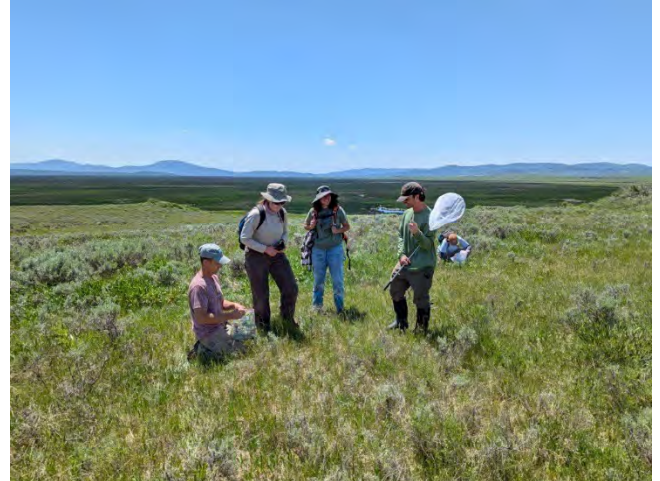
*Zonitis* beetles are one of many arthropods that live on curlycup gumweed. Bees and butterflies are also attracted to the pollen and nectar.

### Training, Training, Training

This year we had a diverse schedule of training for NRCS staff and our partner agencies. We held a 3-day plant materials training session at the Pullman, WA PMC for west Idaho field office staff. New employees were taught the basics of plant materials, including planning a seeding, seed mix development, and seed quality. We also had outdoor demonstrations of tillage equipment, drill calibration and grass identification. Special thanks are due to Steven Lee and the Pullman PMC staff for hosting this event.



Steven Lee, manager of the Pullman, WA PMC, discusses seed production and cover cropping during a plant materials training.



Aberdeen PMC manager Derek Tilley identifies a plant for Gray's Lake NWR staff.



Attendees at the 3-day PM training were shown several pieces of tillage equipment and were able to see what the ground looked like following their use.

In late June, we assisted Gray's Lake National Wildlife Refuge (NWR), a 20,000-acre wetland in eastern Idaho, with botanical surveys. We identified approximately 80 plant species in only two visits, and conducted a training on plant identification for multiple regional refuge staff.

In July, we were honored to have NRCS partner biologist, Sarah Gardner, join us for a native bee identification workshop. NRCS staff and other partners spent the morning collecting bees in pollinator habitat around the PMC. In the afternoon Sarah taught a class on specimen preparation and finally ran several specimens through a dichotomous key with the class. Attendees went home with collecting nets, kill jars and the specimens they collected and mounted. Thank you, Sarah!



Bee identification workshop hosted by Aberdeen PMC with guest instructor Sarah Gardner.

### SEEDS Project

Seeding Evaluation and Experimental Design Strategies (SEEDS) partnership is a team of researchers and managers using innovative experimental designs, implementation, and monitoring to evaluate and compare post-fire seeding practices. Hundreds of post-wildfire rehabilitation and restoration treatments are applied across the western US each year. Unfortunately, some seedlings fail to meet ecosystem recovery goals. These large experiments rapidly advance restoration practice by exploring novel seeding treatments that work in various Great Basin site conditions. Partners in the project include USDA Forest Service Rocky Mountain Research Station, Agricultural Research Service, Great Basin Fire Science Exchange, and Aberdeen PMC. The first trial was installed last fall, and more will be done each year.





Seeding a SEEDS project site in fall 2023. Photo by Francis Kilkenny, USDA Forest Service.

### Breeder and Foundation Seed Production

The Aberdeen PMC produces the highest quality conservation seed available and is responsible for Breeder and Foundation seed production of 20 plant releases. In 2024, IDPMC 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, ‘Paiute’ orchardgrass, ‘Regar’ meadow brome were harvested. 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. ‘Goldar’ bluebunch wheatgrass is shown above.

### Solar Fields for Pollinator Habitat

Solar power or photovoltaic projects are becoming more and more frequent in western landscapes. Meanwhile, pollinator habitat and nectar resources are declining, negatively affecting ecosystems and agricultural

productivity. Solar projects provide a space to establish pollinator-friendly plants, offering an excellent opportunity to benefit insect pollinators like butterflies and bees. IDPMC released a technical note this year that summarizes the benefits of pollinator habitat in solar projects and outlines practices for establishment and maintenance of pollinator habitat. Co-authored by Bradley Stokes, an entomologist with University of Idaho, the document provides guidance on site preparation, species selection, seeding, and management. It also provides tables of beneficial plant species suitable for use in photovoltaic arrays under a variety of climatic and soil conditions. [Idaho Plant Materials Technical Note No. 79: Establishing Pollinator Habitat in Idaho Solar Projects](#), is published on the Plant Materials Program Technical Document website. For more information, contact the Aberdeen PMC staff.



A solar array planted to an understory of pollinator plants. Photo by Lacey Clarke.

### Diversifying Fuel Breaks with Curlycup Gumweed

Wildfires threaten lives, property, and cost millions of dollars in the semi-arid Intermountain West. Fuel breaks, strips of fire-resistant vegetation, are used to compartmentalize the landscape and slow fire progress. However, nearly all fuel breaks are monocultures of introduced species. Curlycup gumweed is a native forb that has been shown to be very fire resistant. In 2020, we planted a study to determine if curlycup gumweed could be seeded concurrently with standard fuel break species to provide greater diversity and wildlife benefits, while not diminishing fuel break effectiveness. While producing a limited amount of cover, the addition of curlycup gumweed provided pollinator and wildlife benefits that are otherwise absent, and after 4 years, gumweed continues to volunteer and reestablish.





Curlycup gumweed rosettes can be seen growing among forage kochia and Russian wildrye in this fuel break study in Aberdeen.

### PMC Intern

We had the privilege of hosting an undergraduate intern this summer from Cal Poly Humboldt. Jennifer Salguero joined us for two months and worked on several projects. She made seed collections of several species for us including western stickseed, fiddleneck and Indian ricegrass. She led the western stickseed cleaning and germination projects, and she measured thousands of roots from 10-day old sand dropseed seedlings. We wish her the best in the remainder of her studies!



PMC intern, Jenny Salguero processing western stickseed through a laboratory brush machine.

### Western Stickseed

Western stickseed (*Lappula occidentalis*) is a small native annual forb that is commonly seen after disturbance in early seral plant communities. You may know it from the bristly seeds that get stuck in your socks and pets. It may have potential for use in restoration and reclamation mixes, but very little is known about this species. One useful trait is that it germinates at low temperatures, providing direct competition with cheatgrass in late fall and early spring. We made field collections near Aberdeen and Jerome, Idaho, to develop cleaning and propagation protocols. Western stickseed is often confused with an introduced relative, European stickseed (*L. squarrosa*) that occupies similar habitats. Our [Plant Guide](#) describes how to tell them apart and includes a summary of the information we've learned this year.



Western stickseed is a native forb that often comes up in restoration and pollinator plantings. It may be useful as an early seral colonizer of disturbed sites.

### 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 are 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 trials in 2022 and 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. The results of this study will help producers and conservation planners determine appropriate seeding rates for some commonly used cover crops. These seeding rates can be put into a cover crop mix calculator to generate an economical cover crop mix.



Eight cool-season species were evaluated in the PMC cover crop seed rate trial. Aerial photo by Nathaniel Tilley.

### Ecological Succession

Habitat restoration should attempt to rebuild a fully functioning ecosystem rather than merely copying the climax state, yet early-seral species have been largely omitted from restoration planning. We designed a field trial to compare standard NRCS seed mixes to those that include a multi-successional seed mix to compare establishment and follow the long-term transition to the desired state. Study sites are located in Aberdeen, Pahsemeroi Valley, and on the Curlew National Grassland. Early data indicate multi-seral mixes provide greater initial establishment, greater diversity, and greater target species cover than standard late seral mixes.



Derek Tilley and Jenny Salguero evaluate early seral species establishment at the Pahsemeroi Valley site in summer 2024.

### Sand dropseed Initial Evaluation Planting

Sand dropseed is a warm-season perennial native grass that grows throughout much of western North America. We commonly see this species growing on roadsides, sand dunes, and other disturbance prone habitats. We are currently evaluating 50 collections with the goal of developing a selected class germplasm release. So far, we have evaluated germination, early root growth, and done a full genetic characterization. We are in the process of establishing common garden studies at the PMC and at an off-center site on BLM managed land where we will measure adult plant characteristics.



Volunteer Andie Tilley thinning sand dropseed seedlings in the PMC greenhouse for transplanting to common garden studies.

## Products and Technology Transfer

### Journal Articles

- Showy Milkweed Establishment by Seed, Rhizome and Transplants in California's Central Valley. *Native Plants Journal* 25(1): 4-14.
- Scarification and high, diurnal temperatures produce optimal germination of sand dropseed (*Sporobolus cryptandrus* [Torr.] A. Gray). *Native Plants Journal* 25(1): 28-37.
- Diversifying Intermountain Fuel Breaks with Curlycup Gumweed. *Reclamation Matters* Fall 2024: 36-38.

### Training/Presentations

- Plant Identification, Gray's Lake National Wildlife Refuge. Wayan, ID.
- Plant Materials 3-day Training for Idaho field office staff. Pullman, WA
- Native Bee Identification Workshop. Aberdeen, ID
- Cover Crop Seeding Rates. North Bingham SCD Cover Crop Day. Blackfoot, ID.
- Cover Crop Rate Trials. Pacific Northwest Direct Seed Association Cropping Systems Conference. Kennewick, WA.
- Twilight Tour. Aberdeen, ID

### Study Reports

- Adding forb diversity to Intermountain fuel breaks with curlycup gumweed
- Phenotypic and genotypic variation of curlycup gumweed (*Grindelia squarrosa*) collections from the Intermountain Region, U.S.A
- Influence of successional group structure and seeding rate on establishment of sagebrush steppe seed mixtures (year 1)

- Fiddling around with fiddlenecks: seed collection, processing, and propagation of *Amsinckia tessellata* and *Lappula occidentalis*

### Technical Notes

- TN69a: Calculator for Calibrating a Cover Crop Mix with a Box-type Drill
- TN79: Establishing Pollinator Habitat in Idaho Solar Projects

### Propagation Protocols

- Western stickseed (*Lappula occidentalis*)

### Plant Guides

- Western stickseed (*Lappula occidentalis*)
- Bristly fiddleneck (*Amsinckia tessellata*) and Menzies' fiddleneck (*A. menziesii*)

### 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 1,300 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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