

# Aberdeen Plant Materials Center



## 2019 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.

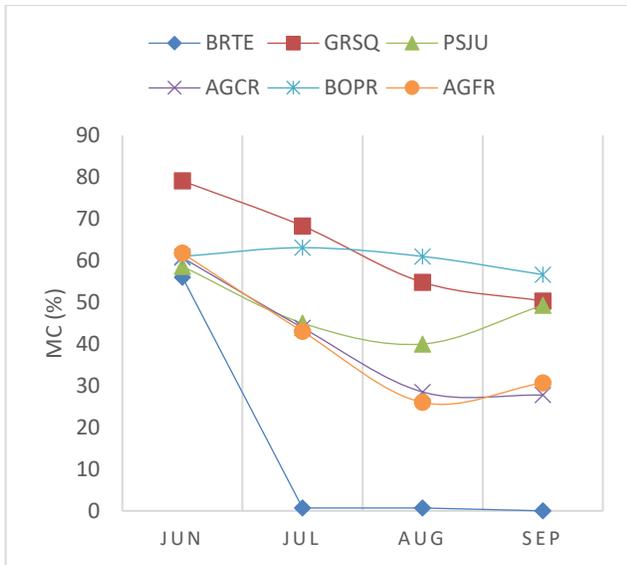
### Native Forbs

A broader selection of native forb releases is needed for use in habitat plantings for pollinators, sage-grouse and other wildlife throughout the Intermountain West. 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 and butterflies. The leaves are also considered to be 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.

We further evaluated curlycup gumweed's potential for use in Intermountain greenstrip plantings for wildfire suppression. We compared percent moisture content, time to ignition and duration of combustion of samples of curlycup gumweed, cheatgrass, forage kochia, Siberian wheatgrass, crested wheatgrass and Russian wildrye. We found curlycup gumweed to have excellent fire suppression characteristics comparable to forage kochia. Our results indicate curlycup gumweed possesses many traits desirable for a greenstrip species and should be considered for inclusion in Intermountain seed mixes. Its presence in greenstrips could increase species diversity and provide a pollen and nectar source for native insects.



**Moisture Content (MC) of wildland-harvested cheatgrass, 3 introduced forage grasses, forage kochia and curlycup gumweed from June 15 to September 15, 2019 in the Intermountain West. BRTE=cheatgrass, GRSQ=curlycup gumweed, PSJU=Russian wildrye, AGCR=crested wheatgrass, BOPR=forage kochia, AGFR=Siberian wheatgrass.**

### Milkweed Establishment and Management



**Swamp milkweed is a valuable monarch butterfly host plant in certain areas of Idaho and Utah.**

For the past few years, the PMC has been 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, and milkweeds are crucial to the reproduction and survival of these butterflies. This year we collected root crowns and rhizome sections of swamp milkweed to investigate transplanting potential. We found the species to be very easy to divide and transplant.

However, the narrow, fibrous swamp milkweed roots were very different from the stout storage rhizomes of showy milkweed and failed to produce plants for us.



**Crown and roots of swamp milkweed. Dividing and transplanting the two stems and roots is an easy way to establish this species; but individual root cuttings will not produce a new plant.**

### Alternative Configuration Seedings

Separating forbs from grasses in a seeding has been shown to help improve seedling establishment. Most of our commonly utilized grasses require seeding depths of  $\frac{1}{2}$  to  $\frac{3}{4}$  inches, while our forbs tend to be seeded shallower, 0 to  $\frac{1}{4}$  inch. Blending all of the species in a mix and seeding them to the same depth will be detrimental to at least some of the species resulting in lower establishment. Also, grasses are highly competitive and tend to muscle out the less vigorous forbs. By separating the grass and forb seed into different mixes, you can maximize the establishment of both. The PMC recently installed a publicly accessible display planting to showcase alternative seeding configurations including alternating drill passes, alternating drill rows, perpendicular rows and forb islands.



**Alternating drill passes of forbs grasses are clearly seen in the new PMC seeding display. Separating forbs from grasses can increase establishment and facilitate management practices.**

### Cover Crop Variety Trial

Aberdeen recently finalized a two-year, multi-PMC trial of several varieties of commonly used cool-season cover crop species to develop accurate recommendations for different regions. Species tested at Aberdeen included hairy vetch, winter pea, balansa clover, red clover, crimson clover, oat, cereal rye, and oilseed (daikon) radish. A total of fifty-nine varieties were evaluated for field emergence, winter hardiness, plant height, days to 50% bloom, and resistance to disease and insects. Many of the varieties exhibited good adaptation to the Intermountain West based on the evaluated traits. Oilseed radish, black seeded oat and some varieties of cereal rye demonstrated strong emergence and fall growth and then winter-killed, making them a good choice for producers who want the benefits of a fall cover crop without the need for chemical or mechanical termination. Most of the cover crop varieties evaluated had no insect or disease issues, and none showed more than slight damage.



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

### Living Mulch

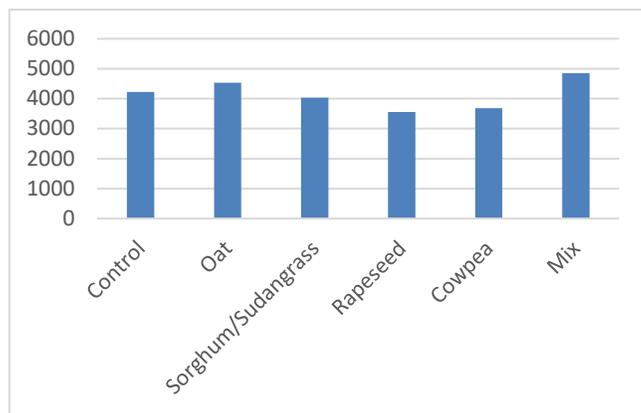
The idea of a living mulch and the many potential benefits has been a topic of conversation as well as a few studies. When functioning properly, the mulch can help reduce erosion, suppress weeds, and provide nitrogen. Last year we initiated a trial to see if we can reap the benefits of planting grasses 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). Plots were evaluated in 2019 for percent cover and biomass production. In 2020 we will drill seed grass rows into the stand and evaluate grass establishment and production.



Plots of Aberlasting, Kura and white Dutch clover to be used as a living mulch in grass seed production.

### Interseeding Warm Season Annuals into Perennial Pastures

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 can be economical. Preliminary findings of planting warm season annuals into a cool season pasture have been mixed, but in certain cases this practice has shown promise. We compared the production of oat, sorghum/sudangrass, rapeseed, and cowpea and a blend of the four against a non-seeded control. However, we found no evidence of an increase of biomass resulting from the seeded species.



Average biomass production from interseeding annual cover crops into fertilized perennial pasture, 2019. We found no significant increase in production compared to a control.

### 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 2019, 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, Appar blue flax,

Maple Grove Lewis flax, Magnar basin wildrye, Paiute orchardgrass, Regar meadow brome, 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 2020 the PMC entered into a new agreement to produce seed of numerous grasses and forbs including slender cinquefoil, showy goldeneye, curlycup gumweed, Sulphur-flower buckwheat and phacelia.

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. In 2019 we grew Idaho mountain brome and Idaho fescue for restoring lands that were previously in production agriculture. In the coming years we will be producing a new suite of grasses and forbs.

### 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.

### New PMC Agronomist

When Mary Wolf started as a Soil Conservationist at the Orofino, ID Field Office, she learned about the Plant Materials Program and thought, “Wow! Those people have the coolest job in the world!” In 2016, she accepted a position with the Plant Materials Center in Tucson, AZ. When offered the opportunity this year to work at the Aberdeen PMC, she returned to Idaho and is settling in as the new PMC Agronomist.



Mary brings her prior PMC experience to the job, as well as her 10 years of experience as a Soil Conservationist in Idaho. She is looking forward to helping Field Office staff with their plant materials needs.

## **Products and Technology Transfer**

### **Technical Notes**

- ID Plant Materials TN 2a: Plants for Pollinators in the Intermountain West (2019 revision)
- ID Plant Materials TN 71: Monarch Butterfly Habitat: Development and Maintenance
- ID Plant Materials TN 73: Creation and Management of Utah Butterfly Habitat
- ID Plant Materials TN 74: How to Collect and Process Wildland Showy Milkweed Seed
- ID Plant Materials TN 75: Commonly Occurring Wetland Plant Species for Idaho and Utah NRCS Wetland Delineators

### **Fact Sheets**

- Oilseed Radish for Nematode Control

## **Trainings**

- Monarch and Pollinator Conservation and Habitat Development (NRCS and Xerces)
- Interagency Plant Materials Meeting
- Wetland Delineation
- Wetland Plant Identification for USACOE

## **Plant Guides**

- Nettleleaf giant hyssop
- Three-tip sagebrush

## **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/>

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