



United States Department of Agriculture

Bridger Plant Materials Center Year 2017 Progress Report of Activities

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The Natural Resources Conservation Service (NRCS) Bridger Plant Materials Center (BPMC) is one of 25 USDA Centers nationwide using plants to solve natural resource problems. These problems include soil erosion and degradation, water quality deterioration, invasive species, native habitat disturbance, mining and logging impacts, wildlife habitat loss, wetlands damage, and other conservation issues. Our work reflects current needs identified by our field staff in a needs assessment. The development of new conservation technologies, training, plant testing and selection, and Foundation seed production are the primary products of the plant materials program. The BPMC serves Montana and Wyoming.



This document presents a brief overview of significant Year 2017 activities at the BPMC and with the Montana-Wyoming Plant Materials program. For detailed information, contact the BPMC staff or Montana-Wyoming Plant Materials Specialist. All photos in this Progress Report are USDA-NRCS unless noted.

Although the BPMC addresses many resource issues, our current program emphasis is in the following areas:



- rangeland health
- cover crops and soil health
- technology transfer, training, and outreach
- pollinator and wildlife-friendly plantings
- woody plant establishment and selection
- native habitat restoration
- critical area revegetation

In 2017, the BPMC released conservation plant selection number 32, Stucky Ridge Germplasm silverleaf phacelia. Although released primarily for the purpose of restoring lands impacted by acid and heavy metal contamination (critical areas), Stucky Ridge Germplasm silverleaf phacelia also performs well on good sites, and is heavily utilized by native pollinators and European honeybees (pollinator habitat enhancement plantings). It provides pollen and nectar for native bees and other beneficial insects during an extended blooming period ranging from May through September. Incorporation into planting mixes may support



beneficial predatory insects, and a long bloom period and excellent drought tolerance make Stucky Ridge Germplasm a good selection for low maintenance and naturalistic landscapes. Foundation seed of Stucky Ridge Germplasm are currently available to commercial seed producers for certified seed production. Landowners and conservation planners should anticipate commercial availability beginning in 3 to 4 years. Publications related to Stucky Ridge Germplasm on the Plant Materials website include a [Release Brochure](#), [Plant Guide](#), and [Release Notice](#).

In 2017, the BPMC staff and Plant Materials Specialist continued working collaboratively on cover crop projects, partnering with Montana NRCS agronomists, Montana State University, and participating in a national cover crop research study. Montana area agronomist Susan Tallman completed a study report testing a small-seeded fava bean line titled, *Small-Seeded Fava Bean as Cash Crop and Within Cover Crop Mixture*. Cover crop treatments were grown both as a single-species cover crop and as a cover crop mixture to evaluate plant biomass and seed production in comparison with 'Arvika' forage pea (*Pisum sativum* L.), a common legume cover crop in Montana.



Differences in cover crop biomass were detected in the spring dryland planting, with mixed-cover crop treatments producing more biomass than single-species cover crop treatments due to a late harvest date. However, there were no differences in biomass between single-species fava bean and pea biomass treatments and between mixed-species fava bean and mixed-species pea treatments. In contrast, fava bean produced more seeds by dry weight (1110 lb./ac, with 1742 seeds/lb.) than forage pea (418 lb./ac, with 3294 seeds/lb.) when harvested for grain under spring-seeded dryland conditions ($p < 0.05$). There were no differences in cover crop biomass between all cover crop treatments in the late-summer irrigated planting. Results indicate fava bean produces comparable biomass to forage pea when grown as a single-species or mixed-species cover crop in both dryland and irrigated conditions in southern Montana (see [Final Study Report](#)).



BPMC staff also assisted Montana NRCS area agronomist Mark Henning install, maintain, and sample cover crop studies at the BPMC testing the impact of legume seeding rate in cover crop mixes on legume presence and production. Cowpea (*Vigna unguiculata* L.) and mung bean (*Vigna radiata* L.) were added separately to a six-way warm season cover crop mix at

three rates (5, 10, and 20 lb./acre) and planted in a randomized complete block design under dryland conditions. Based on first year study results, if warm season legumes are desired as part of a cover crop mix, 5 to 10 lb./acre of cowpea or mung bean is an economical seeding rate range in Montana under dryland conditions. Details of the study will be available shortly on the Plant Materials website.



BPMC staff also installed and evaluated a cover crop study as part of a nation-wide Plant Materials Program effort. This project tests numerous species and cultivars across the U.S. Eight species represented by 58 varieties, including rye (15), Balansa clover (2), red clover (8), hairy vetch (6), crimson clover (6), Daikon radish (12), black oat (2), and Austrian winter pea (7), were tested at Bridger. In addition to collecting standardized data for the national effort, biomass samples were collected, weighed, and submitted for crude protein, acid and neutral detergent fiber, total digestible nutrients, nitrates, and sulfur. Results are currently being analyzed.

In addition to the Stucky Ridge Germplasm documents and study reports, Montana-Wyoming Plant Materials staff developed or contributed to a variety of publications. These include:

- [Palmer Amaranth](#) (*Amaranthus palmeri* S. Watson), Agronomy Technical Note MT-92
- [Ecology and Management of Invasive Knotweeds](#) (*Polygonum* spp.), MT Invasive Species Tech Note MT-34
- [How Seed Certification in Montana and Wyoming Improves the Success of NRCS Conservation Plantings](#), Montana Plant Materials Technical Note MT-118
- [Vegetative Guide for Identifying Four Native Wheatgrasses in Montana and Wyoming](#), Plant Materials Technical Note MT-119
- [Ekalaka Germplasm Bur Oak \(*Quercus macrocarpa* Michx.\)](#) Release Brochure
- [Bridger-Select Germplasm Rocky Mountain juniper](#) (*Juniperus scopulorum* Sarg.) Release Brochure
- [Plant Materials Today](#) newsletter (April 2017)

BPMC Outreach activities continued in several ways in 2017. The BPMC hosted an open house and field day in June, offering multiple concurrent presentations in the morning, followed by a field tour of studies, demonstrations, and seed increase fields in the afternoon. BPMC staff presented at numerous events including the Wyoming Crop Improvement Association annual meeting, National Native Seed



conference, Billings Arbor Day celebration, Carbon County Conservation Days, Bridger Elementary School tour, Montana Range Days, Wyoming Association of Conservation Districts meeting, Montana Area meetings, and the Northern Rockies Tree School.



The BPMC also continued its collaborative efforts propagating vegetative cuttings of champion and historic trees with the Special K Ranch, a non-profit organization providing horticultural career

opportunities for special needs adults. The BPMC produced over 400 rooted cuttings for the ranch for transplanting and finishing in 2017.



Field Plantings are an opportunity for Plant Materials staff to collaborate with NRCS field offices on studies or demonstrations to provide information applicable to conservation. Many field plantings evaluate new plant species or planting technologies under a variety of soil, climatic, and land uses to assess their conservation potential under actual use conditions. In 2017, we evaluated 26 field plantings in Montana and Wyoming (13 per state). Field Planting Reports are a new format for sharing information, observations and evaluation results. They provide useful information on lessons learned for

incorporating into future plantings. Check out our new [field planting reports](#).

Since 1959, the BPMC has collected, tested, and released superior plant materials for use in conservation practices. The commercial availability of these seeds and plants depends on the production of Foundation seed, the seed produced at Plant Materials Centers and distributed to seed producers and nurseries. In 2017, the BPMC maintained 89 individual production fields, with most production supporting the commercial seed industry growing certified seed for use in a variety of conservation activities.



Staffing changes continued in 2017 with the retirement of one employee, and loss of two additional employees to term appointment or grant expiration. Joe LeFebvre, Project Leader for the Development of Acid Tolerant Cultivars project completed his grant in April. Ross Oyler, Biological Technician since 2009, completed his term appointment in June. Robert Kilian, Rangeland Specialist, retired after 30 years of federal service in September. The Montana-Wyoming Plant Materials program will greatly miss the technical expertise and contributions of these staff. Current Plant Materials staff includes [Monica Pokorny](#), Plant Materials Specialist (Bozeman), [Joe Scianna](#), BPMC Manager, and [Darren Zentner](#), BPMC Farm Foreman.

Need More Information?

Obtain plant materials assistance and information in Montana and Wyoming by calling your local NRCS field or area offices, or the Plant Materials Specialist in Bozeman, Montana. For project specific, Foundation seed, or other Center information, call (406)-662-3579. Montana-Wyoming Plant Materials program information is available at the [Montana NRCS homepage](#) or [National Plant Materials](#) website.

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