



## Bridger Plant Materials Center Year 2001 Progress Report of Activities



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### What is the Bridger PMC?



The Bridger Plant Materials Center (BPMC) is one of 26 Centers nationwide that use plants to solve natural resource problems. These problems include soil erosion, water quality deterioration, native habitat disturbance, mining and logging impacts, wildlife habitat loss, wetlands damage, and other conservation issues. Our work reflects the current needs of CRP, EQIP, WHIP, and other farm programs. Plant testing/selection and the development of new conservation technologies are the primary products of the program. The BPMC serves all of Montana and Wyoming.

### Program Emphasis

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

- Seed Production
- Windbreak and Shelterbelt Improvement
- Habitat Restoration and Enhancement
- Native Plant Propagation and Production

This document presents an overview of Year 2001 activities at the BPMC. For detailed information, contact the staff at the Bridger Plant Materials Center or the Montana Plant Materials Specialist.

### Seed Production

Seed production at the Bridger PMC begins in mid-June with alpine bluegrass and continues until late October with winterfat and prairie sandreed.

Foundation seed is distributed through the Montana and Wyoming Seed Certification programs, with the proceeds supporting graduate research at Montana State University and the University of



Wyoming. A large portion of the cooperative work with the National Park Service (Glacier and Yellowstone Parks) and Deer Lodge Valley Conservation District (acid/heavy metal tolerant project) involves seed production and associated research.

Category	No. Accessions	Pounds
Foundation	16	5,496
Initial Increase	15	1,226
YNP Reimbursable	13	467
GNP Reimbursable	12	69
Acid/Heavy-Metal Grant	21	302
<b>Total:</b>	<b>77</b>	<b>7,560</b>

COMBINING FOUNDATION SEED

## Windbreak and Shelterbelt Improvement

The BPMC's goal is to improve the performance of windbreak plants in order to maximize benefits to the environment and consumers. In 2001 the BPMC circulated for release a Selected Class germplasm of ponderosa pine with impressive rates of growth and improved seedling survival.



HUNTER GERmplasm

Hunter Germplasm ponderosa pine should be available from the Montana Conservation Seedling Nursery in 2003 and seeds are currently available to the nursery industry for production.

Bur oak is a hardy, native tree providing a long-lived, strongly wooded alternative for windbreaks and shelterbelts in the Northern Plains. Data was collected on our 400-tree bur oak seed orchard again in year 2001 and included timing of bud break, survival, height, width, form, and seed production. An MSU graduate project funded through our Foundation Seed Research Program was initiated in 2001 that will study the vegetative propagation of this species.

## Habitat Restoration and Enhancement



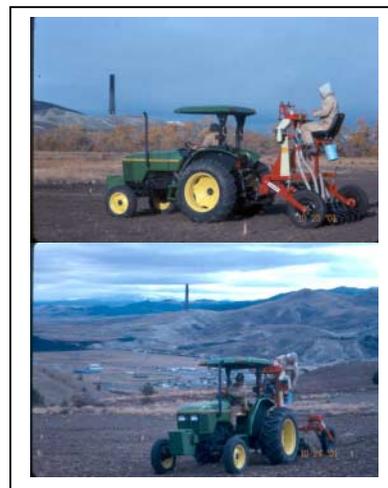
HABITAT RESTORATION IN GLACIER PARK

Habitat restoration work continued at the BPMC in 2001 and included the following projects:

1. Restoration of Roadside Disturbances in Yellowstone and Glacier National Parks.

Since 1985 the BPMC has assisted Yellowstone and Glacier National Parks with the collection, propagation, and reestablishment of native indigenous plant material along reconstructed roadsides. The Parks have utilized native plants to reduce soil erosion, compete with invasive plants, and improve the aesthetics on these disturbed sites. In 2001, the BPMC cleaned 233 wildland seed collections from the Parks and produced about 540 pounds of seed of 25 collections. Technical Note No. MT-39 was developed to predict the cost of seed and plant production based on potential production levels and degree of difficulty. The matrix was circulated nationwide to PMCs and Parks with cooperative agreements. A paper titled "Native Plant and Seed Production for High Elevation Restoration" was presented at Eugene, Oregon.

2. Development of Acid/Heavy Metal-Tolerant Plants Project (Deer Lodge Valley CD).



ANACONDA LOWLAND & UPLAND SITES

Results from a greenhouse Comparative Evaluation Planting, reported in the DATC Project Biennial Report (April-September 2001), provided data supporting the release of three accessions collected on low pH and heavy-metal laden sites near Anaconda, Montana. These upcoming pre-varietal releases are Washoe Germplasm basin wildrye, Old Works Germplasm fuzzytongue penstemon, and Prospectors Germplasm common snowberry. These releases and other promising accessions are being further tested at two field plots near Anaconda installed late October 2001. The relative competitiveness and compatibility of eight seed mixes of varying blends and

compositions are being tested in the plots. First-year evaluation results from a third Anaconda field plot comparing the performance of 19 woody accessions have been published in an NRCS Plant Materials Technical Note and submitted for journal publication.

### 3. Rangeland and Mineland Restoration.

Since the BPMC was established in 1959, there has been an emphasis on the development of native plants for use on all disturbances on semi-arid grasslands and foothills of Montana and Wyoming. The BPMC continues to select native grasses, forbs, and shrubs to add species diversity to reclamation mixes.



IDAHO FESCUE STUDY

Evaluations of Idaho fescue are being conducted on the top 9 accessions, with a potential release to be made in 2005. Evaluation continues on Montana's state grass (bluebunch wheatgrass). Recurrent selection on 20 east-slope accessions will potentially provide a cultivar that is adapted for range and wildlife habitat restoration in the eastern plains of Montana and Wyoming. Other future releases include Gardner saltbush, winterfat, western yarrow, bottlebrush squirreltail, blanketflower, prairie coneflower, dotted gayfeather, and silverleaf phacelia.

### 4. Wildlife Habitat Restoration and Enhancement.

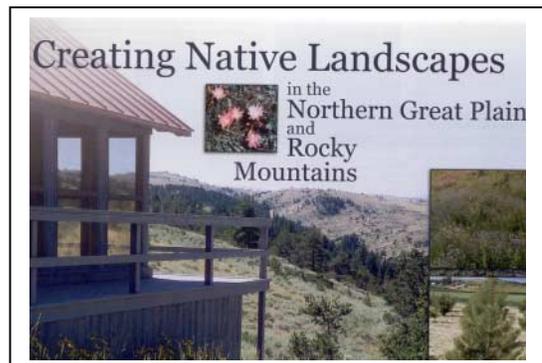
Plant materials are being evaluated for upland game bird habitat, winter grazing for large ungulates, and native landscaping designed to attract wildlife. In cooperation with Ducks Unlimited, Pheasants Forever, and MT and WY Game & Fish Departments, the BPMC has



WILDLIFE ANNUAL FOOD PLOTS

established test plantings to evaluate native plant mixtures and patterns of planting. In May 2000, the BPMC, in cooperation with the NRCS Montana State Biologist, established an Annual Food Plot study evaluating a variety of grains and row crops as annual food crops. Thirteen species were seeded in strips and then cross-seeded so that each plot contained two species. Species tested include oats, wheat, barley, canary seed, pinto beans, Austrian winter pea, corn lentil, millet, sorghum, safflower, canola, and sunflower. A combination of grain sorghum with millet was most effective at providing wildlife food and cover. Wheat, barley, and oats also worked well with sorghum. Portions of the plots were left to determine if seed shatter would perpetuate the stands, but poor growing conditions prevented any useful data from this part of the study.

### 5. Low-maintenance Landscaping

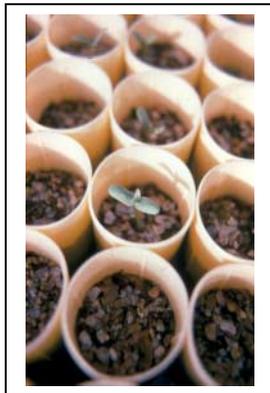


Introduced dryland forage and native reclamation grasses are finding new uses--*xeriscaping*. These hardy, drought tolerant species have lower maintenance requirements than typical turf grasses. Plots of 11 potential

xeriscape grasses established at the BPMC were evaluated in 2001 for growth and performance with and without mowing, as well as assessed for resilience to foot traffic. A 15-page booklet titled *Creating Native Landscapes in the Northern Great Plains and Rocky Mountains* was completed and published in 2001. The booklet walks homeowners through planning, design, site preparation, plant selection and care, water conservation, maintenance, and protection. Nearly all of the 10,000 copies produced in the first printing have been distributed. An *American Nurseryman FieldNotes* was published on the use of sheep fescue *Festuca ovina* as a low maintenance landscape plant.

### Native Plant Propagation and Production

Numerous projects in 2001 involved propagation and production research with native plants. Work continued on separate projects with Rocky Mountain juniper, ponderosa pine, and bur oak to evaluate the seed production of individual seed sources from across the Northern Great



SEED PROPAGATION

Plains. Work continued in 2001 on a Rocky Mountain juniper seed-dormancy study to determine the most effective combination of treatments to break dormancy. Results indicate that the traditional combination of warm stratification and cold chilling works best to break dormancy. Germination and establishment research was initiated on beargrass *Xerophyllum tenax*. Propagation protocols of ~50 species were developed and submitted to the Native Plants website. Sweetgrass is a culturally significant plant historically used by Native American tribes in their religious and cultural activities. Field-grown plants were transplanted to containers in anticipation of increasing the production of this species prior to release.

### Technology Transfer

Technology transfer is all information that the Center provides through talks, tours, written materials, and other forms of communication. In 2001 four quarterly BPMC newsletters were published covering such topics as CRP establishment, enhancing with shrubs, invasive species, meadow brome grass, tree and shrub stress, wildlife food plots, enhancement and interseeding, sweetgrass, sheep fescue, as well as numerous projects and activities. A presentation and paper titled "Native Plants of Lewis and Clark – Establishing Indoor and Outdoor Classrooms" was given at the Montana Education Association annual meeting in Belgrade, Montana. A paper titled "Rocky Mountain Juniper Seed Collecting, Processing and Germinating" was published in the *Native Plants Journal*. PMC tours included visiting Chinese and Mongolian scientists, CSU wildlife biology class, Kentucky stockmen, MSU graduate students, and Rocky Boy Advanced Science high school students. Presentations were given at the Montana Seed Trade Association meeting and Governor's Range Tour.



SITE PREPARATION NEAR BOX ELDER, MONTANA

Outreach assistance was provided to tribal college professors, high school teachers, students, state park administrators, and conservationists in Montana, Oklahoma, and South Dakota. The Center hosted honor students from Rocky Boy Schools on a day-long tour that emphasized alternative careers in agriculture. Nearly 600 vegetative tillers of sweetgrass were distributed to cultural leaders for demonstration and educational purposes.

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