PLANT MATERIALS CENTER
BRIDGER, MONTANA

History

The Bridger Plant Materials Center (PMC) opened its doors in 1959 for evaluation, selection, and development of plant materials for Montana and Wyoming. From 1959 to 1970, the PMC operated on 80 acres of a 140-acre farm leased by the Carbon County (Montana) Conservation District. In 1970, the 104 Conservation Districts in Montana and Wyoming purchased the entire 140-acre farm. The USDA Soil Conservation Service leased 110 acres of this farm from 1970 to 1984. Due to an ever-expanding program, the Natural Resources Conservation Service now leases 130 acres from the Conservation Districts.

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For additional information on plant materials, visit our website:
http://Plant-Materials.nrcs.usda.gov
For specific details on plants, visit the Plants Database:
http://plants.usda.gov

Facility

The 140 acres are irrigated primarily by furrow irrigation; however, a small, hand-moved sprinkler system is used for establishment-year irrigation. Major buildings include:

40’ x 80’ metal seed cleaning building,
30’ x 50’ seed storage building,
50’ x 80’ metal building for shop and machinery storage,
26’ x 52’ office building,
19’ x 31’ greenhouse with 19’ x 31’ headhouse,
20’ x 48’ coldframe/lath house, and
30’ x 40’ laboratory.

REIMBURSABLE PROJECTS

National Park Service Cooperative Agreements

Since 1986, the Bridger PMC has maintained cooperative agreements with the National Park Service for native plant restoration relating to highway reconstruction. With funding from the Federal Highway Administration, the National Park Service is upgrading and realigning the major roads within national parks' boundaries nationwide. The Bridger PMC has assisted both Yellowstone and Glacier National Parks with numerous aspects of this work, including:

- identifying early successional or colonizing species that can be used to restore roadside disturbances,

- identifying species that lend themselves to be increased using traditional cultural practices,

- determining the method and timing of seed collection,

- determining seed cleaning methods,

- collecting, cleaning, inventorying, and storage of seed collections,

- developing germination and dormancy-breaking techniques for hard-to-propagate species,

- developing asexual propagation techniques for woody plants, and

- developing cultural techniques for seed, container plant, and bare-root production.

Seed production plots (varying from 0.03 to 0.45 acres) are established at the Bridger PMC and harvested using hand harvesting, a seed stripper, diapered swather, or a plot combine. Presently there are approximately 6.2 acres of seed production for the two national parks. For Yellowstone there are ~5.9 acres, and for Glacier there are 10 species (17 different collections) of grasses and 1 forb species (1 collection) in production. For Yellowstone, there are 13 grass species (31 collections) and 3 forb species (4 collections) in production.

Not all Park Service collections are increased at the Bridger PMC. Although most collections made in the parks are sent to the Bridger PMC for cleaning, accessioning, and storage, some seed is returned directly to the respective parks for direct seeding or sent to commercial growers for seed or plant increase. Yellowstone and Glacier are making approximately 300 individual collections per year. To date, Yellowstone has made collections from 146 different sites from within Yellowstone National Park. Glacier National Park has made collections from 95 different sites, both from within the park and from adjacent National Forest Land.

Woody plant projects involve the collection, processing, storage, production, planting, and inventorying of native woody seed and plants. Most of this work involves the bareroot production of species such as Wood's rose, snowberry, serviceberry, chokecherry, currant, Oregongrape, silverberry, and other species with conservation and revegetation applications. In some cases, the clonal propagation of plants is necessary through the use of stem cuttings. This research is being conducted in the PMC greenhouse under highly controlled conditions.

Yellowstone National Park Cooperative Agreement

Numerous projects are currently underway at the PMC for Yellowstone National Park that include:

- seed increase fields of mountain brome *Bromus marginatus*, nodding brome *Bromus anomalus*, blue wildrye *Elymus glaucus*, slender wheatgrass *Elymus trachycaulus*, basin wildrye *Leymus cinereus*, Indian ricegrass *Achnatherum hymenoides*, green needlegrass *Nassella viridula,* bluebunch wheatgrass *Pseudoroegneria spicata* ssp. *spicata*, needle and thread *Hesperostipa comata*, sulphur-flower buckwheat *Eriogonum umbellatum*, littleflower penstemon *Penstemon procerus*, and slender cinquefoil *Potentilla gracilis*.

- propagation by seeds of sulphur-flower buckwheat *Eriogonum umbellatum*.

Glacier National Park Cooperative Agreement

The PMC currently has several projects in support of our cooperative agreement with Glacier National Park, including:

- using container production of grasses and forbs to reduce seed production intervals and increase product quality.

- a germination study of beargrass *Xerophyllum tenax* that compares duration of cold chilling and the use of seed disinfecting treatments.

- a germination study involving several alpine species to determine the effect of light or darkness on the ability of these species to germinate.

- seed increase fields of several sedge *Carex* species, blue aster *Symphyotrichum laeve*, blue wildrye *Elymus glaucus*, alpine timothy *Phleum alpinum*, and alpine bluegrass *Poa alpina*.

- container production of thimbleberry *Rubus parviflorus,* kinnikinnick *Arctostaphylos uva-ursi,* common snowberry *Symphoricarpos albus,* Oregongrape *Mahonia repens, and W*ood's rose *Rosa woodsii* for roadside restoration.

Development of Acid/Heavy-Metal Tolerant Cultivars (DATC) Project

The DATC project is funded by a State of Montana Natural Resource Damage program and an EPA Mine Waste Technology Program grant. The project is sponsored by the Deer Lodge Valley Conservation District and headquartered at the NRCS Plant Materials Center in Bridger, Montana. The DATC project's mission is to release plant materials that exhibit tolerances to mineland soils characterized by elevated heavy-metal concentrations and low pH.

The scope of the project encompasses (1) greenhouse testing of experimental acid/heavy-metal tolerant accessions growing in low pH and heavy-metal contaminated soil media; (2) comparative field testing of selected herbaceous seed mixtures; (3) comparative field testing of promising woody species; (3) establishment, production, and maintenance of seed increase blocks of superior performing plant materials; (4) release of superior plant materials; and (5) technology transfer of research results, best management practices, and products.

Results from a Greenhouse Comparative Evaluation Planting (CEP) study identified several superior plant ecotypes. Subsequently, four seed mixtures containing various blends of ten grass and four forb species were field tested in 2001 at two affected sites near Anaconda (upland site and lowland site). A control planting was established at the Bridger PMC. The Seed Mixture Treatment Study compared the four "local" seed mixtures (originating from seed collected within the Anaconda Smelter Superfund Site) to four "nonlocal" seed mixtures

containing cultivars currently on the market. Limited data resulted from this study due to poor stand establishment at both the upland and lowland sites.

In the fall of 2000, a Woody CEP was installed near Anaconda on soils affected by acidity and heavy-metal contamination. This study tested 19 accessions of seven woody species. "Local" stock, originating at the Anaconda Smelter Superfund Site, was compared to "nonlocal" nursery stock of the same species from other areas of Montana, Colorado, Utah, and Wyoming. Both first and second growing season (2001 and 2002) results supported the use of "local" stock, which exhibited superior growth, vigor, and survival in six of the seven species tested. Overall, ponderosa pine and western snowberry were the hardiest species.

Data collected from these studies has resulted in three plant releases. In 2002, Washoe Germplasm basin wildrye, Prospectors Germplasm common snowberry, and Old Works Germplasm fuzzytongue penstemon were released through the Montana Seed Stock Program and distributed to commercial seed growers through the Montana Seed Growers Association. Potential future releases include ecotypes of silver buffaloberry, Wood's rose, western snowberry, tufted hairgrass, slender wheatgrass, Indian ricegrass, alpine bluegrass, silverleaf phacelia, and pacific aster.

This spring three new trials will be installed north of Anaconda within the 2002 Stucky Ridge Uplands Remedial Action area. This lime-amended area was chosen for the new study site, as past plantings on untreated soils did not produce adequate stands. The purpose of the study is to compare the performance of experimental plant material originated from contaminated minelands to cultivars presently on the market. Superior performing experimental plant material will subsequently be developed for the commercial market.

Summer Internship Project

The Foundation Seed Program at Montana State University-Bozeman sells Foundation seed produced at the Bridger PMC. Beginning in 2003, a summer Internship position has been established at the Bridger PMC to give practical experience and training to students enrolled in Land Rehabilitation, Range, Horticulture, or Seed Physiology curriculums. Presently, an MSU crop science major, Carey Andersen, is evaluating and documenting phenology of all major plant species at the PMC.

Foundation Seed Research Assistantships

All Foundation seed from the Bridger PMC is given to the Foundation Seed Programs at Montana State University and the University of Wyoming. Money generated by the sale of Foundation seed is used to fund research projects, particularly graduate research, related to the seed production, forages, and reclamation industries. The Director of the Montana State University Agricultural Experiment Stations and the NRCS State Conservationist mutually agree upon all funded projects.

Two graduate projects are presently being conducted in cooperation with the Bridger PMC. Cheryl Moore, working with Dr. Tracy Dougher, Montana State University-Bozeman, is investigating the vegetative propagation of bur oak from stem cuttings. Cheryl and the BPMC tested over 1,000 cuttings taken from the Center's bur oak seed source study to establish baseline propagation percentages using conventional techniques. Novel approaches such as etiolation, blanching, hedging, and banding are being conducted in 2003.

Sarah Metcalf, working with Dr. Clain Jones, is examining the nitrogen-fixing capabilities of native legumes. They will be establishing field trials at the BPMC, the Central Montana Agricultural Experiment Station-Moccasin, and the MSU Post Farm--investigating the nitrogen fixation of American vetch, purple prairieclover, slender white prairieclover, lupine, northern sweetvetch, and Canada milkvetch.

The BPMC is assisting with another graduate research project that is being conducted by Myrna Ulmer from the University of Wyoming. Myrna is studying the effects of within-row spacing on the quality and quantity of prairie coneflower seed production. Although substantial information is available on the effects of between-row spacing on seed production, less is known about the influence of within-row competition. Replicated plots have been established at the BPMC and Powell, Wyoming Experiment Station.

MAJOR PROJECTS

Arid Rangeland and Mineland Revegetation

This project was initiated in 1980 with the following objectives:

1. Increase the number and diversity of species available for revegetating arid (<10 inches precipitation) range and mine sites in Montana and Wyoming, and

2. Evaluate techniques for successful establishment of these plant materials.

Plantings were made spring and fall 1980-81 at Bridger Coal Mine, Rock Springs, Wyoming; spring and fall 1981-82 at Dresser Minerals Bentonite Mine, Greybull, Wyoming; and fall 1984 at both sites. A total of 3,587 rod rows were planted, evaluating 915 different accessions. All accessions were also planted at the Bridger PMC.

Field Tests:
To test superior collections of Sandberg bluegrass, bottlebrush squirreltail, and Gardner's saltbush, seed mixture trials (four mixtures utilizing released cultivars and potential release material) were established at two sites along the recently constructed Express Pipeline. The arid sites (7- to 9-inch ppt. zone) are in the Bighorn Basin of Wyoming near Greybull and Worland. These research sites are in cooperation with the USDI Bureau of Land Management.

Releases:
In 2000, 'High Plains' tested class germplasm of Sandberg bluegrass was released and in 2002 'Open Range' tested class germplasm of winterfat was released in cooperation with Montana State University-Bozeman and the University of Wyoming. Other material in advanced stages of evaluation and seed increase includes Gardner's saltbush, bottlebrush squirreltail, and prairie coneflower.

Plant Materials for Mountains and Foothills of Western Montana and Wyoming

Initial Evaluation Plantings (IEPs) were established at the Montana State Forest Tree Nursery, Missoula, Montana, beginning in October 1983. Approximately one thousand accessions have been evaluated at this field evaluation site. In 1989, 25 accessions were selected for advanced evaluation.

The objectives of this project are:

1. Prevent soil erosion from road construction associated with timber harvesting activities, streambank erosion, mining, and urbanization, and

2. Select adapted native species with good seedling vigor for revegetating low-condition rangelands.

Comparative Evaluation of Idaho Fescue—*Festuca idahoensis*:
The superior Idaho fescues have been established in a replicated Comparative Evaluation Trial at the Bridger PMC, evaluating vigor, forage production, and seed production. Seed increase blocks have been established of the superior material. Two accessions from Sanders and Missoula Counties, Montana, have been combined for potential use in western Montana. Two accessions from Big Horn and Powder River Counties, MT, have been combined for potential use in southeastern Montana. An accession originating in the Bighorn Mountains of Wyoming is also being increased.

Recurrent Selection of Bluebunch Wheatgrass—*Pseudoroegneria spicata* ssp. *spicata*:
Bluebunch wheatgrass--Montana's state grass--is found on coarse, well-drained sites. The released cultivars of 'Goldar', 'Secar', and 'Whitmar' originate from the Palouse country of western Idaho and eastern Washington. In an attempt to develop an ecotype for Montana, 20 collections of east-slope bluebunch wheatgrass were established in a Recurrent Restricted Phenotypic Selection (RRPS) block. Plants were evaluated in Cycle 1 and 20% selected for evaluation in Cycle 2. Another 20% selection criteria was imposed on the second cycle. Seed from each of the two crossing blocks were planted in containers, along with seed of Goldar, Secar, Whitmar, and MOPX (Utah) as standards of comparison. On June 23-24, 1999, a CEP study in a Randomized Complete Block Design, with 20 replications of the six entries, was space-planted for performance testing.

Releases:
The first release out of this project is a joint release with the Meeker, Colorado Environmental Plant Center of 'Garnet' mountain brome. The release was official in May 2000, with the first Foundation seed being sent out this spring to growers in several western states. In 2001 Foothills Selected class germplasm of Canada bluegrass was released for use on reclamation of infertile sites, for low maintenance landscaping, and for livestock and wildlife forage on harsh foothill sites.

Plant Materials Project for Development of Trees and Shrubs

Woody plant research at the Bridger Plant Materials Center is becoming an increasingly significant aspect of our program. The demand for trees and shrubs that can tolerate the severe conditions characteristic of the Northern Great Plains and the variety of applications for their use continues to grow. Woody plant research, like most plant studies, requires evaluation over the anticipated life or usefulness of the planting. This makes for slow progress. Many projects initiated 10, 20, or even 30 years ago are just now nearing fruition. As data is tabulated and summarized, selections of superior trees and shrubs will be identified and targeted for release. Fortunately, the PMC can now use new prevarietal release procedures to get superior selections on the market sooner. To the consumer, this means plants that can better tolerate the severe environmental conditions in Montana and Wyoming, while performing such conservation functions as reducing soil erosion, providing wind and sun protection, preventing snow drifts, providing food and shelter for wildlife, riparian restoration, and more.

Two common threads running through our woody plant program are the GP-13 (Forestry subcommittee of the Great Plains Agricultural Council, now the Plains & Prairie Forestry Association [PPFA]) and MITOSIS (Montana Interagency Tree and/or Shrub Improvement Study) projects. The various GP-13 projects were coordinated through the ARS (Agricultural Research Service) at Mandan, North Dakota, and the Prairie Farm Rehabilitation Administration Shelterbelt Center at Indian Head, Saskatchewan. The goal of this program was to evaluate numerous superior collections of a species over much of the range of the Great Plains in an attempt to identify superior plants or ecotypes. The MITOSIS program is a multi-agency project that attempts to improve the quality, survivability, and diversity of trees and shrubs for windbreaks and shelterbelts for Montana. Trees from superior, old-aged windbreaks and shelterbelts, as well as plants performing exceptionally well on harsh sites, are incorporated into these studies for evaluation.

Releases:
The first release from this project was Bridger-Select Rocky Mountain juniper, a drought-tolerant evergreen released in 1998 for windbreaks and shelterbelts. Two Source-Identified silverberries, Dupuyer Streambank and Pondera Floodplain, were released in 2000 for stream channel stabilization. Hunter Selected Class Germplasm ponderosa pine was released in 2002 as a tall, fast growing evergreen component in windbreaks and shelterbelts. All four releases are well-adapted native species that will provide numerous conservation benefits.

Plant Materials For Saline Soils

The Bridger PMC has been working on the development of salt-tolerant plant materials since 1975. Originally the Soil and Water Conservation Districts of Montana, Inc. (SWCDMI) accepted a grant from the Old West Regional Commission (Department of Commerce) to collect and evaluate salt-tolerant plants both from native and foreign origins.

Native collections were made throughout Montana and Wyoming and evaluated on a saline site at the Bridger PMC. Eventually field evaluation sites were established near Conrad, Fort Benton, Hardin, Malta, and Rapelje, Montana; and Powell, Wyoming. Trials were established to compare direct seeding with sprigging, and compare the establishment success and intra-specific competition within several seed mixtures. Tech Note—Plant Materials No.26 was written as a guide for species and establishment techniques that are best utilized on saline-alkaline soils.

Releases:
In 1980 ‘Shoshone’ beardless wildrye was released and in 1988 ‘Pryor’ slender wheatgrass was released. Other potential releases include plains bluegrass, alkali bluegrass, alkali sacaton, Nuttall’s alkaligrass, strawberry clover, and Ruby Valley pointvetch.

A project plan is currently being developed to study the salt tolerance of trees and shrubs adapted to the Northern Plains and used for various conservation activities.

ACTIVE STUDIES

Xeriscape Demonstration

There is presently a great interest in utilizing low maintenance/low water requirement grasses, both native and introduced, for landscaping. Plots of nine different grasses have been established under dryland conditions (Introduced--crested wheatgrass, Russian wildrye, sheep fescue, and Canada bluegrass; Native--thickspike wheatgrass, streambank wheatgrass, western wheatgrass, buffalograss, and blue grama). In the spring of 2001, 'Roadcrest' crested wheatgrass was added to the demonstration plots. Half of each plot is periodically mowed, while the other half is allowed to reach full growth. A vehicle is driven across the plots ten times every 3 weeks to evaluate trampling resistance.

Deleted: Comparative Evaluation of Buffalograss - *Buchloe dactyloides*

Deleted: Buffalo grass *Buchloe dactyloides* has become very popular as a low-maintenance turf grass. Buffalograss is a warm-season, sod-forming, short grass that spreads by stolons. It requires less water, fertilizer, and mowing than many lawn grasses. Commercial cultivars have been developed for use in southern regions and one North Dakota sterile variety is being tested for use in northern climates. Three released cultivars -- 'Plains', 'Texoka', and 'Topgun', along with the North Dakota selected release, 'Bismarck' (accession 9057442), were planted in a demonstration plot on June 2, 1994. The purpose of the planting is to subjectively evaluate buffalograss for adaptability to colder environments. Plant vigor, height, spreadability, winter injury, and percentage survival will be assessed for each variety.

Comparative Evaluation of Mongolian Legumes

In the fall of 1998, two members of the Bridger PMC participated in a USDA-Agricultural Research Service (Logan, UT) seed collection expedition to north-central Mongolia. The Bridger PMC was able to obtain approximately 50 seeds each of 113 different legumes, although most of the collected material will first be evaluated by the Plant Introduction Station at Pullman, WA. These were established in the greenhouse and transplanted to a replicated study in the field. The grasslands of Mongolia are very similar to those of eastern Montana and Wyoming, with the exception that the Mongolian grasslands support a larger variety of native dryland legumes. These legumes may have potential as forage crops in this region of the northern Great Plains.

Saline Forage Species Comparative Evaluation

In the fall of 1996, drill-width replicated plots were established along a salinity gradient to compare 'Shoshone' beardless wildrye, 'Pryor' slender wheatgrass, 'NewHy' hybrid wheatgrass, 'Jose' tall wheatgrass, and 'Prairieland' Altai wildrye. The primary purpose of this study is to evaluate the performance of NewHy under saline conditions in comparison to the most commonly used salt-tolerant cultivars.

Bur Oak Seed Source Study—*Quercus macrocarpa*

Bur oak is a native species widely distributed across much of the United States. Although found only in the far southeastern corner of Montana in uncultivated, natural stands, it is found in numerous small communities across the state as a street tree or landscape plant. Adapted to a wide variety of soil conditions, this species tolerates relatively high soil pH, is drought tolerant, and has few insect or disease problems. Capable of reaching heights over 100 feet on good sites, it normally attains a maximum height of about 50 feet in Montana. Like all oaks, bur oak is a strong-wooded species capable of surviving in environments that seem to support only weak-wooded, deciduous trees.

A 24-accession, replicated study was established at Bridger in June of 1994. The goal of this project is to identify well adapted accessions with better than average rates of growth and superior form for use in windbreaks. Annual evaluations have been taken each year since 1994 and will occur again in 2003. Performance data are already identifying superior seed sources.

A bur oak vegetative propagation study was initiated in 2002 in cooperation with a graduate student at Montana State University. Cheryl Moore is a first-year MS candidate funded in part through our cooperative Foundation Seed graduate fund. Cheryl will be looking at conventional stem propagation protocols as well as etiolation, light quality, and hedging techniques. More than 2,000 cuttings have been taken to date. The PMC is very interested in developing practical asexual propagation techniques for this hard-to-root species in order to clonally increase seed orchard trees and to facilitate commercial production.

GP-13 Ponderosa Pine Seed Source Study—*Pinus ponderosa*

Ponderosa pine--Montana's state tree--is one of the most widely distributed pines in western North America. Traditionally valued as a timber species, ponderosa pine makes an excellent tall tree in windbreak and shelterbelt plantings. It has a wide range of adaptability, is drought and cold tolerant, and typically has a uniform branching pattern and symmetrical form. In addition, this species has several wildlife applications and aesthetic appeal as an ornamental landscape plant.

The study at Bridger was established in 1989 and consisted of 1,500 trees from 79 different collections from Montana, South Dakota, and Nebraska. Final selections were made in 1996 and a seed orchard established of the best 200 trees. This selection, named Hunter Selected Class Germplasm ponderosa pine, was released in 2002. Data was collected annually on male and female flower production, as well as fruit and seed production by individual tree.

GP -13 Rocky Mountain Juniper Seed Source Study—*Juniperus scopulorum*

Rocky Mountain juniper, a close relative of eastern redcedar, has many of the same attributes that favor bur oak and ponderosa pine as windbreak and shelterbelt trees. Widely adapted, drought and cold tolerant, used extensively by wildlife, this species is found on some of the toughest sites in Montana and Wyoming. Numerous ornamental cultivars have been released by the nursery industry.

When our replicated study was established in 1980, it consisted of 48 collections of Rocky Mountain juniper and eastern redcedar from Montana, Wyoming, North Dakota, South Dakota, Nebraska, and New Mexico. The goal of this study was to reduce the variability in form typical of this species. Rate of growth, seedling survival, vigor, and freedom from insect and disease were all considered. When final selections were made in 1994, no eastern redcedar was retained. In all, over 960 trees were initially planted with 181 superior trees remaining today. The Montana Conservation Seedling Nursery in Missoula and commercial nurseries use seed from this selection to produce superior quality seedlings. This selection was formally released in 1998 as Bridger-Select Rocky Mountain juniper, using the new prevarietal release procedure. Data is currently being collected each year on male and female flower production, as well as fruit and seed production by individual tree. In addition, research is being conducted on breaking seed dormancy, a production challenge that affects the supply and cost of this valuable conservation species.

MITOSIS Western Snowberry Selection Study—*Symphoricarpos occidentalis*

As a result of the aforementioned plant evaluations at the Montana Conservation Seedling Nursery at Missoula, a bulk of several superior accessions of western snowberry was developed and is currently in the process of seed increase and prevarietal release. Cuttings were taken from the original test plants at Missoula in 1996 and used to establish a seed orchard at the PMC. In 1999, additional cuttings were taken from the PMC plants and used to establish seed orchards at the PMC and Montana Conservation Seedling Nursery in Missoula. A Selected class release of this synthetic is anticipated in the next 2 years for use in various western Montana revegetation applications.

Initial Seed Increase of Plant Materials for Biological Diversity in Rangeland and Restoration Seedings

Initial Evaluation Plantings were established at the PMC beginning in 1994. Approximately 68 accessions of three species have been evaluated at this field site. In the spring of 1998, after 3 years of evaluation, the most promising collections were planted in seed increase. One accession of common yarrow *Achillea millefolium* and one accession of upright prairie coneflower *Ratibida columnifera* are being increased for release in the selected class.

Cultural and Establishment Trials

Culturally Significant Plants

Sweetgrass tends to reproduce vegetatively and traditional, large-scale seed production techniques are rarely successful. In July 2001, transplants of 9063351 sweetgrass *Hierochloe odorata* were relocated in Field 4 to establish a vegetative increase block. Plant growth and development are being monitored, and various cultural techniques are utilized to optimize stand production. In May 2002, an Inter-Center Initial Evaluation Planting of six sweetgrass entries was established to compare the performance of regional sources.

Ducks Unlimited

Ducks Unlimited Canada is an active participant in the Canadian native plant materials program. They have been actively planting native plant material and have now upgraded their program to the collection and development of "Ecovars" of native plants. These are releases of native plants of multiple sources that will be adapted to eco-regions of the central Canada prairie region. Ducks Unlimited Canada has established a native plant program at a new research farm, Native Plant Solutions at Brandon, Manitoba. The Bridger Plant Materials Center established multiple-row replicated plantings of 16 accessions of native grasses and 1 forb at the Bridger PMC and at the ARS Range and Livestock Research Station at Miles City, MT, in the spring of 2001. These potential Ecovar™ releases are being grown in comparison to corresponding U.S. "Cultivars". Species under evaluation include green needlegrass, needle and thread, western wheatgrass, prairie junegrass, awned wheatgrass, blue grama, little bluestem, sideoats grama, and purple prairieclover.

Native Wildflower Pre-emergent Herbicide Study

The control of broadleaf weeds in wildflower seed production fields is difficult due to a lack of specifically labeled herbicides. Seed of seven species was assembled and planted in a replicated, Randomized Complete Block Design, and 10 pre-emergent herbicide treatments were applied with a CO_2 backpack sprayer. Weed control will be determined by randomly counting weed presence in a microplot frame and crop response will be visually assessed for damage.

OFF-CENTER TRIALS AND DEMONSTRATIONS

Wayne Barry—Sidney, MT

A warm-season grass and legume adaptation trial and a cool-season grass/forb replicated study were planted on May 3, 1994, at Sidney, MT. The 47-acre trial area is considered a Bismarck and Bridger PMC joint study since it is located near the North Dakota and Montana border.

The warm-season trial includes 22 cultivars/accessions representing seven species. Each entry was planted with a grass drill in approximately 2-acre blocks. An intensive grazing management system was designed, and the landowner monitors livestock preferences and performance. The cool-season trial was planted in four-row plots, 20 feet long, and replicated four times. The plots are evaluated for plant emergence, establishment, vigor, stand, and biomass production. Periodic evaluations are planned for 10 years.

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The objectives of the trials are to study the adaptation and performance of various grasses, legumes, and forbs, and to determine their value and use in the Northern Great Plains dryland pasture/hayland resource management systems. The need to extend the grazing season to provide a longer period of high quality forage for livestock is a high priority need identified in the Bridger PMC long-range plan.

Soda Lake—Pinedale, WY

The purpose of this planting is to demonstrate the value and use of species and cultivars under the climatic and soil conditions around Pinedale, Wyoming. The planting features over 100 entries that are evaluated for stand, vigor, and height. This study is a joint effort between the Bridger PMC and Meeker EPC.

On October 10, 1991, 15 grasses were drilled into replicated plots and six grasses were drilled into single, drill-width plots by the Agricultural Research Service (ARS), Logan, Utah, range research unit. The cooperative planting features some of the recent wheatgrass and wildrye hybrids being developed by ARS for western rangeland improvement. ARS is evaluating the plots for stand establishment and forage production as compared to standard released forage cultivars.

On September 19,1995, 50 accessions were seeded in four-row plots replicated three times. Genera represented are: *Elymus*, *Stipa*, *Festuca*, *Poa*, *Bromus*, *Leymus*, and *Penstemon*. Accessions of *Achnatherum*, *Pseudoroegneria*, *Astragalus,* and *Kraschenninnikovia* were planted in 1996.

McCone County—Circle, MT

On April 17-19, 2001, a 17-acre demonstration planting was seeded near Circle, Montana. The purpose of the planting is to demonstrate the performance and adaptation of various conservation plants and cultural techniques for their successful establishment. The 66 entries (37 species) of 22 cool-season and six warm-season grasses, four leguminous forbs, two non-leguminous forbs, and three shrubs were planted in 15- by 50-ft plots. Also included were 18 different mixtures of various warm- and cool-season grasses with combinations of winterfat, fourwing saltbush, and warm-season grasses within the same drill row and in alternate rows. Tree and shrub seedlings were included to display the various woody species adapted to McCone County for windbreaks, buffers, wildlife, etc.

Stillwater County—Molt, MT

On May 14 and 15, 2002, a demonstration planting was installed on David Coles' farm about 3 miles south of Molt, Montana. The planting will compare the performance of a variety of species including: switchgrass, big bluestem, little bluestem, sideoats grama, bluebunch wheatgrass, crested wheatgrass, pubescent wheatgrass, Siberian wheatgrass, thickspike wheatgrass, western wheatgrass, basin wildrye, Russian wildrye, green needlegrass, winterfat, Gardner's saltbush, fourwing saltbush, slender white prairieclover, and a variety of mixes. The native species were cross-seeded with two drill widths each of fourwing saltbush, Canada milkvetch, and slender white prairieclover. The introduced species were cross-seeded with two drill widths each of alfalfa, sainfoin, and cicer milkvetch. All of the seed was donated and planted by the PMC, with the exception of the sainfoin, which was purchased by the conservation district. This project covers about 3.4 acres and consists of 33 plots that are 60' x 60'.

Weston County—Newcastle, WY

On May 12 and 25, 1999, two ranch sites were seeded near Newcastle, Wyoming. The objective of the plantings is to evaluate the yield performance of cool- and warm-season grasses as potential forage producers in livestock operations. The study was set up as a Randomized Complete Block Design with four replications of 31 grass cultivars at the Geier site and 29 grass cultivars at the Materi site. Forage will be sampled annually to determine annual yield.

RELEASED CULTIVARS

Garrison Creeping Foxtail—*Alopecurus arundinaceus*

'Garrison' creeping foxtail was released by the Bismarck PMC and the University of Wyoming in 1959. The Bridger PMC has responsibility for Breeder and Foundation seed production. It is an excellent grass for irrigated or subirrigated hay or pasture. Garrison produces a light fluffy seed that is difficult to plant. Rice hulls have been used as a carrier, and pelletizing the seed reduces seeding difficulty. In some instances, wet meadows are too wet to prepare a clean seedbed and, consequently, producers have resorted to feeding Garrison hay to livestock on areas where they would like to establish Garrison. Sprigging is also an excellent way of establishing Garrison.

Critana Thickspike Wheatgrass—*Elymus lanceolatus* ssp. *lanceolatus*

'Critana' thickspike wheatgrass was originally collected by Montana State University in 1960 near Havre, Montana, and was released by Bridger PMC and the Montana Agricultural Experiment Station in 1971. This grass has been used mostly for mine reclamation, road-sides, recreation areas, and range reseedings. Critana has excellent seedling vigor and forms a dense sod. Critana is noted for its variable genetic expression. For example, a Critana plant may produce rhizomes that have characteristics of Montana wheatgrass or slender wheatgrass. Genetic expression has created problems in producing certified seed and, in the past, has allowed standards for allowable slender wheatgrass included in Critana seed to approach 30 percent. However, for its intended use in mine reclamation or range reseeding, genetic expression has not posed a problem.

Lutana Cicer Milkvetch—*Astragalus cicer*

'Lutana' cicer milkvetch was the first release in the United States of this species (1971). The original germplasm was introduced from Sweden in 1926. Cicer milkvetch is a nonbloating legume adapted for use as hay and pasture in irrigated meadows or in dryland areas receiving at least 15" annual precipitation. Cicer milkvetch will tolerate a high water table or standing water better than alfalfa. This legume has coarser stems and higher moisture content than alfalfa, making cicer less desirable as a hay crop. It will, however, withstand heavy grazing pressure and is compatible with most irrigated forage grasses.

Rosana Western Wheatgrass—*Pascopyrum smithii*

'Rosana' western wheatgrass is a native perennial grass selected for reseeding depleted rangelands, mined lands, and abandoned cropland. It was collected in Rosebud County, Montana, and cooperatively released by the Bridger PMC and Montana Agricultural Experiment Station in 1972. Rosana is adapted to medium- to fine-textured soils, neutral to strongly saline,

and 12 or more inches of precipitation, run-in, or overflow range sites. Rosana is usually seeded in mixtures with other plant species such as green needlegrass *Nassella viridula*.

Goshen Prairie Sandreed—*Calamovilfa longifolia*

'Goshen' prairie sandreed was released to stabilize and revegetate sandy range sites in eastern Montana and Wyoming receiving more than 12 inches of annual precipitation. Goshen was cooperatively released in 1976 by the Bridger PMC and the Montana and Wyoming Agricultural Experiment Stations. Good stands of Goshen are usually established using standard rangeland seeding methods when planted between April and mid-May. Goshen does well when seeded in a grass mixture including Critana thickspike wheatgrass, Rosana western wheatgrass, green needlegrass, or Indian ricegrass. At Bridger, Montana, Goshen grows to about 34 inches high on dryland and to 70 inches with irrigation. Vigorous spring growth begins by the end of April, full bloom usually occurs by August, and the seed ripens by October.

Wytana Fourwing Saltbush—*Atriplex* X *aptera*

'Wytana' was cooperatively released in 1976 by the Bridger PMC and the Montana and Wyoming Agricultural Experiment Stations. Wytana was released primarily for mine reclamation and range revegetation. Plantings should be in mixtures with native grasses. In mixtures, adequate plant populations have been obtained by using a seeding rate of 1/2 to 1 pound of bulk seed-per-acre. Protein content is good (15%) and remains so throughout the winter. Wytana is the first released cultivar of a shrub species to be successfully harvested for seed with standard farm equipment.

Shoshone Beardless Wildrye—*Leymus triticoides*

'Shoshone' was released in 1980 by the Bridger PMC and Montana and Wyoming Agricultural Experiment Stations after extensive testing on saline soils throughout Montana and Wyoming. Prior to release, this grass was tested in over 100 field plantings. Shoshone is one of the most salt-tolerant grasses on the commercial market. Once established in strongly saline soil, Shoshone is capable of spreading by rhizomes into soils with electrical conductivity in excess of 30 dS/m.

Bozoisky-Select Russian Wildrye—*Psathyrostachys juncea*

'Bozoisky-Select' Russian wildrye was released by ARS, NRCS, and Montana, Utah, and Idaho Agricultural Experiment Stations in 1984. Russian wildrye is native to the steppe and desert regions of Russia and China. It has not been used much in the past because of poor seedling vigor. Through recurrent selection, Bozoisky-Select was developed with improved seedling and vegetative vigor, leafiness, and seed yield. Bozoisky-Select can add substantial flexibility to a grazing management program. Much like crested wheatgrass, it provides for early spring grazing, but retains greenness and nutritive value over the entire summer. It cures well and provides good winter roughage for grazing animals.

Pryor Slender Wheatgrass—*Elymus trachycaulus* ssp. *trachycaulus*

'Pryor' originated from a collection from a saline intermittent drainage-way in a saline upland range site approximately 15 miles south of Bridger, near the Wyoming border. Pryor was released in 1988 by the Bridger PMC and Montana and Wyoming Agricultural Experiment Stations. Pryor has been found to have better seedling vigor, salt tolerance, and longevity than the other released cultivars of slender wheatgrass ('Primar', 'Revenue', and 'San Luis'). Pryor

has a larger seed than other cultivars of slender wheatgrass (97,000 seeds-per-pound compared to 147,000 seeds-per-pound). Pryor is a self-fertile, short-lived, forage grass that is used in a variety of seeding mixtures to provide quick cover and soil stabilization without competing with the slower developing, long-lived species.

Trailhead Basin Wildrye—*Leymus cinereus*

'Trailhead' basin wildrye was cooperatively released in 1991 by the Bridger PMC and the Montana and Wyoming Agricultural Experiment Stations. Trailhead is a native, collected near Roundup, Montana, and is noted for its production and longevity under droughty conditions— exceeding 'Magnar', the only other released cultivar. Due to its large size and ability to remain standing over winter, basin wildrye provides excellent cover for upland game birds and good forage for wildlife such as elk, deer, and bighorn sheep.

Rimrock Indian Ricegrass—*Achnatherum hymenoides*

'Rimrock' was cooperatively released in 1996 by the Bridger PMC, the Montana and Wyoming Agricultural Experiment Stations, and the USDA Agricultural Research Service, Logan, Utah. Rimrock is a native perennial grass that can be used in seed mixtures for range revegetation and reclamation of disturbed sandy soils. This species produces an abundance of high protein, plump seed that makes excellent food for upland gamebirds and songbirds. Rimrock was released primarily because of its ability to retain mature seed better than the cultivars 'Paloma' (origin Pueblo, CO) or 'Nezpar' (origin Idaho). The more acute angle of the glumes of Rimrock helps retain seed longer and protects from catastrophic shattering events such as high winds and heavy rain.

Bridger-Select Rocky Mountain Juniper—*Juniperus scopulorum*

Bridger-Select Rocky Mountain juniper was released in 1998, and represents the first Bridger PMC selection to utilize the new prevarietal release mechanism. This release is a bulk of 181 trees from 26 superior seed sources collected from across the northern Great Plains. Final selections were made based primarily on height growth, uniformity of shape, vigor, and crown density. It also exhibits excellent seedling survival (97%). Bridger-Select performs best in areas of Montana and Wyoming with 12 inches or more of annual precipitation and in USDA Hardiness Zone 3b (-30° to -35°F) or warmer. It is recommended as a medium component in windbreaks and shelterbelts offering low maintenance, year-round protection, and numerous wildlife applications.

Antelope Slender White Prairieclover—*Dalea candida*

'Antelope' was released in the spring of 2000 in cooperation with the Bismarck PMC and the Agricultural Experiment Stations of Montana, Wyoming, and North Dakota. The original collection was made in Stark County, near Dickinson, North Dakota. This collection has been evaluated in North Dakota, Montana, and Wyoming since its collection in 1947. Although it performed well in comparison with other collections of slender white prairieclover and purple prairieclover, there was never a significant demand for seed of this species until just recently. Several of the Farm Assistance programs are requiring the seeding of native grasses and forbs. There is one release of purple prairieclover ('Kaneb') and no previous releases of slender white prairieclover.

Garnet Mountain Brome—*Bromus marginatus*

'Garnet' mountain brome was released in the spring of 2000 by the Meeker, CO Environmental Plant Center in cooperation with the Bridger PMC. The ecotype of mountain brome originated in Powell County, Montana, near the ghost town of Garnet. This mountain brome has done well in Montana, Wyoming, and Colorado, outperforming the only other release of this species, 'Bromar'. Garnet is longer lived and has a much higher level of head-smut resistance. Mountain brome is a short-lived, pioneer/colonizing species that is used for critically disturbed sites. It is adapted for use in forest and meadow habitat types throughout the northern Rocky Mountain region.

High Plains Sandberg Bluegrass—*Poa sandbergii*

Numerous collections of Sandberg bluegrass were collected from arid sites in Wyoming, particularly the Bighorn Basin and the Red Desert. 'High Plains', released in 2000, is a composite of three superior ecotypes from Uinta County (Granger, WY), Natrona County (Casper, WY), and Campbell County (Gillette, WY). Sandberg bluegrass is a short-lived, short-stature, native grass that can be included in seeding mixtures for reclamation of disturbed sites and rangeland reseeding.

Dupuyer and Pondera Silverberry—*Elaeagnus commutata*

Silverberry is a native, small to moderate stature, multi-stemmed, deciduous shrub useful in riparian channel stabilization projects. Two Source-Identified silverberries were released in 2000 for this purpose in Montana. Joe Carleton of the former Montana Interagency Wetland Team identified these seed sources. Although these sources have not been field-tested, a critical need for additional species for riparian stabilization warranted their identification and release to the commercial market. Dupuyer Streambank is recommended for overbank and transitional zones, whereas Pondera Floodplain can be used in transitional and upland sites.

Foothills Canada Bluegrass—*Poa compressa*

Canada bluegrass was introduced into Canada (circa 1792) and has naturalized throughout much of the northern United States and southern Canada. This short-growing, rhizomatous grass was released in 2001. It is considered a pioneer species--readily colonizing on disturbed soils--that thrives on moderately acidic, droughty, and low nutrient soils.

Hunter Germplasm Ponderosa Pine—*Pinus ponderosa*

A Selected Class of Rocky Mountain ponderosa pine was released in 2002. Ponderosa pine is a native conifer in Montana and Wyoming that provides a tall, evergreen component to windbreaks and shelterbelts, as well as year-round protection. This new 200-tree selection, named Hunter Germplasm ponderosa pine, consists of eastside seed sources selected for improved rate of height growth and increased seedling survival. Height growth rates at Bridger of ~2 feet per year without supplemental irrigation were measured at 10 years of age—nearly double the rate of growth reported for the species on similar sites. Hunter Germplasm ponderosa pine is currently in production at the Montana Conservation Seedling Nursery at Missoula and is available to commercial nurseries.

Open Range Winterfat—*Krascheninnikovia lanata*

A Tested Class germplasm release of winterfat was released in 2002. This release is a composite of three superior accessions: one from Prairie County, MT (Terry), one from Carbon County, MT (Bridger), and one from Carbon County, WY (Rawlins). This is the first commercial release of this shrub species. Open Range is adapted for use throughout the Northern Great Plains region, including north-central U.S. and south-central Canada. Winterfat retains it leaves throughout the winter, providing quality year-round browse.

Washoe Germplasm Basin Wildrye—*Leymus cinereus*

Washoe Germplasm basin wildrye was released in 2002. This selection of basin wildrye was collected in Deer Lodge County near the defunct Washoe smelter stack south of Anaconda, Montana. Fallout from past copper smelting emissions has elevated heavy metal levels and decreased soil pH in the area. At the collection site arsenic, cadmium, copper, lead, and zinc ranged from moderately to highly phytotoxic. Soil pH ranged from 4.6 to 5.6. Washoe Germplasm had better overall height, vigor, and survival compared to 'Trailhead' and 'Magnar' when tested in low pH and heavy-metal contaminated soil. Basin wildrye has an extensive fibrous root system making it an excellent soil stabilizer. Its tall, robust stature also makes it a good wind barrier.

Old Works Germplasm Fuzzytongue Penstemon—*Penstemon eriantherus*

Old Works Germplasm fuzzytongue penstemon was released in 2002. It is a native blue-flowering perennial forb adapted to loamy and sandy soils. It is commonly found in dry, open terrain from prairies into mountains. This selection was collected near the historic Old Works smelter in Deer Lodge County, Montana. It has excellent potential for restoration of dry, open lands and in xeriscape and rock gardens.

Prospectors Germplasm Common Snowberry—*Symphoricarpos albus*

Prospectors Germplasm common snowberry was released in 2002. It is an important food, nesting, and cover species for many game and songbirds in the western United States. Bighorn sheep, pronghorn antelope, and deer also browse the foliage and twigs. This selection was collected near the Anaconda Smelter Site near the defunct Washoe Smelter. Prospectors Germplasm was selected for its superior adaptation to moderately acidic and heavy-metal laden soils. This species is an excellent soil stabilizer with its densely branched and rhizomatous root system that often forms dense plant colonies.

Great Northern Germplasm Common Yarrow—*Achillea millefolium*

Great Northern Germplasm common yarrow is pending release in 2003. It is a native, white-flowering, perennial forb adapted to droughty conditions on gravelly loam and thin or sandy soils. Common yarrow is one of the most widely recognized and adaptable wildflowers in North America. This selection will be utilized primarily in seed mixtures to add species' diversity on rangeland, mineland, and roadside revegetation projects.

FIELD LAYOUT
Bridger PMC

(Plantings listed for each field in order, beginning on the north.)

Accession	Common Name	Origin or Source	Acres	Date
FIELD 1				
Saline Cover	tall wheatgrass	commercial	0.25	04/23/00
Wytana	fourwing saltbush	Musselshell County, MT	1.00	11/20/01
Development Acid-Tolerant Cultivars (DATC)				
8 Treatments	Research Plot	various sources	0.21	11/01/01
9081618	Indian ricegrass	Deer Lodge County, MT	0.18	11/07/02
9016273	alpine bluegrass	Gallatin County, MT	0.21	06/12/02
9081636	bluebunch wheatgrass	Deer Lodge County, MT	0.25	06/11/99
9081632	silverleaf phacelia	Deer Lodge County, MT	0.18	12/06/01
9081631	fuzzytongue penstemon	Deer Lodge County, MT	0.18	12/06/01
9081629	Indian ricegrass	Deer Lodge County, MT	0.22	11/07/02
Initial Seed Increase				
9057902	common yarrow	Flathead County, MT	0.39	05/16/03
FIELD 2				
Saline Cover	tall wheatgrass	commercial	0.25	04/23/00
Antelope	white prairieclover	Stark County, ND	1.00	05/03/02
National Park Service Seed Increase				
9054372	mountain brome	Yellowstone National Park	0.22	04/25/00
Development Acid-Tolerant Cultivars				
9081633	big bluegrass	western Montana	0.06	04/28/00
Breeder Blocks				
Rosana	western wheatgrass	Rosebud County, MT	0.15	04/30/97
Garrison	creeping foxtail	Bismarck, ND PMC	0.15	04/30/97
Critana	thickspike wheatgrass	Hill County, MT	0.15	07/08/94
Cultural & Establishment Trials				
7 acc.	native wildflower pre-emergent herbicide study		0.13	06/03/03
7 acc.	MSU native legume nitrogen study		0.05	04/17/03
FIELD 3				
Initial Seed Increase				
9081963	western snowberry	composite (6 acc.)	0.25	1997,2000
Initial Evaluation Planting				
30 plants	Wood's rose thorniness evaluation		0.01	08/20/02
Propagation Stock Rocky Mountain juniper				1996
Recurrent Restricted Phenotypic Selection Block (RRPS)				
Cycle 1	bluebunch wheatgrass	RRPS		05/24/91
Initial Evaluation Planting				
6 acc.	sweetgrass	CO, KS, MI, MT, ND, SD	0.01	06/18/02
FIELD 4				
Initial Evaluation & Plant Increase				
9063351	sweetgrass	Toole County, MT	0.03	07/18/01

Accession	Common Name	Origin or Source	Acres	Date
National Park Service & DATC Seed Increase				
9078591	slenderbeak sedge	Glacier National Park	0.03	1998
9081447	blue aster	Glacier National Park	0.03	1998
9078646	Douglas' sedge	Glacier National Park	0.02	1998
9081443	sedge species	Glacier National Park	0.02	1998
9076290	tufted hairgrass	Silver Bow County, MT	0.05	05/30/01
9076274	woolly cinquefoil	Deer Lodge County, MT	0.09	06/13/02
9076290	tufted hairgrass	Silver Bow County, MT	0.09	05/30/01
3 acc.	alpine bluegrass	Glacier National Park	0.15	05/07/99
9078645	Hoods' sedge	Glacier National Park	0.02	1998
Pete	eastern gamagrass	Kansas PMC		1997
Pondera Floodplain	silverberry	Pondera County, MT	28 ea.	11/08/99
9058245	sulfur-flower buckwheat	Yellowstone National Park	0.03	07/19/01
Cultural Trials				
U of WY prairie coneflower row spacing study			0.03	2002
U of WY forb emergence study			0.03	11/15/02
FIELD 5/6 East				
Critana	thickspike wheatgrass	Hill County, MT	1.00	04/07/99
Baroness	barley	commercial	5.10	04/02/03
FIELD 5/6 West				
Initial Seed Increase				
9082278	Idaho fescue	western MT	0.06	05/20/03
National Park Service Seed Increase				
9081773	green needlegrass	Yellowstone National Park	0.30	05/15/03
9081725	blue wildrye	Yellowstone National Park	0.45	05/07/03
9081887	basin wildrye	Yellowstone National Park	0.45	05/07/03
9081500	bearded wheatgrass	Yellowstone National Park	0.15	05/07/03
9081502	needle and thread	Yellowstone National Park	0.22	04/14/03
Initial Seed Increase				
9081988	prairie coneflower	composite (5 acc.)	0.40	05/09/02
Secondary Seed Increase				
Foothills	Canada bluegrass	composite (8 acc.)	0.33	04/12/02
Seedbed Preparation Study				
Critana	thickspike wheatgrass	Hill County, MT	0.13	05/05/03
FIELD 7 East				
Baroness	barley	commercial	2.25	04/02/03
FIELD 7 West				
Comparative Evaluation Plantings				
9 acc.	Idaho fescue	MT, WA, ID	0.04	05/19/98
Initial Seed Increase				
3 acc.	winterfat	MT, WY	0.05	04/21/89

Accession	Common Name	Origin or Source	Acres	Date

FIELD 8				
Woody Species			4.78	
Comparative Evaluation Planting				
17 acc.	Ducks Unlimited	Canada	0.36	05/17/01
FIELD 9				
Plant Materials Demonstration Rows greenhouse transplants			0.14	06/16/93
Orchard Understory Trial (East to West)			0.40	05/17/84
Parkway	crested wheatgrass			
Covar	sheep fescue			
Paiute	orchardgrass			
Ephraim	crested wheatgrass			
Durar	hard fescue			
FIELD 10/11 East				
Seed Increase				
9063535	winterfat	composite	0.45	04/13/00
High Plains	Sandberg bluegrass	composite (3 WY acc.)	0.88	04/04/00
National Park Service Seed Increase				
9075844	blue wildrye	Glacier National Park	0.33	04/13/00
9081735	slender wheatgrass	Yellowstone National Park	0.29	04/05/01
9081697	mountain brome	Yellowstone National Park	0.26	04/05/01
9076309	slender wheatgrass	Yellowstone National Park	0.22	04/19/99
9081705	mountain brome	Yellowstone National Park	0.26	04/05/01
9081862	Indian ricegrass	Yellowstone National Park	0.15	11/07/02
9081553	bluebunch wheatgrass	Yellowstone National Park	0.22	04/14/02
FIELD 10/11 West				
Comparative Evaluation Planting				
113 acc.	Mongolian legumes	Mongolia	0.23	05/30/00
National Park Service Seed Increase				
9078503	Indian ricegrass	Yellowstone National Park	0.10	12/07/01
9081757	bluebunch wheatgrass	Yellowstone National Park	0.06	04/12/02
9081723	blue wildrye	Yellowstone National Park	0.23	05/15/03
Seed Increase				
9025731	Idaho fescue	Big Horn Mountains, WY	0.06	05/21/03
National Park Service Seed Increase				
9081692	nodding brome	Yellowstone National Park	0.16	04/14/02
9081733	slender wheatgrass	Yellowstone National Park	0.19	04/23/02
9082025	mountain brome	Yellowstone National Park	0.13	04/14/02
9081887	basin wildrye	Yellowstone National Park	0.19	04/14/02
9075911	blue wildrye	Yellowstone National Park	0.19	04/12/02
9063200	slender wheatgrass	Yellowstone National Park	0.19	04/14/02
Seed Increase				
9082279	Idaho fescue	southeastern Montana	0.05	05/23/03

Accession	Common Name	Origin or Source	Acres	Date

National Park Service Seed Increase				
9081520	slender wheatgrass	Yellowstone National Park	0.26	04/02/01
9081705	mountain brome	Yellowstone National Park	0.26	04/05/01
9081725	blue wildrye	Yellowstone National Park	0.26	04/05/01
9081726	slender wheatgrass	Yellowstone National Park	0.10	04/05/01
FIELD 12				
Open Range	winterfat	composite	0.80	04/15/03
Goshen	prairie sandreed	Goshen County, WY	3.00	04/16/03
FIELD 13				
Goshen	prairie sandreed	Goshen County, WY	4.05	05/05/92
FIELD 14				
Rocky Mountain Juniper seed orchard		Great Plains states	2.52	04/25/80
Bridger-Select				
Critana thickspike wheatgrass orchard cover				
Row-Spacing Demonstration Area			0.04	
Sainfoin-Bozoisky	Russian Wildrye	University of Wyoming	0.11	05/01/96
Comparative Evaluation Planting				
6 acc.	bluebunch wheatgrass	RRPS	0.02	06/28/99
FIELD 15				
Baroness	barley	commercial	3.70	04/02/03
FIELD 16				
Garrison	creeping foxtail	Bismarck PMC, ND	2.10	03/22/00
High Plains	Sandberg bluegrass	composite (3 WY acc.)	1.85	04/10/03
FIELD 17				
Trailhead	basin wildrye	Musselshell County, MT	3.80	04/06/95
FIELD 18				
9019219	bottlebrush squirreltail	Washakie County, WY	0.25	04/14/03
Rimrock	Indian ricegrass	Yellowstone County, MT	1.46	10/17/00
Bozoisky-Select	Russian wildrye	ARS Logan, UT	2.14	03/29/01
FIELD 19				
Ponderosa pine seed orchard		Great Plains states	3.60	05/30/89
Hunter Germplasm				
PMC source	silverberry	Wheatland County, MT	29 ea.	11/04/99
10 acc.	Xeriscape		0.12	04/10/98
Covar sheep fescue orchard cover				

Accession	Common Name	Origin or Source	Acres	Date

Development Acid-Tolerant Cultivars				
Prospectors				
Germplasm	common snowberry	Deer Lodge County, MT	0.44	05/22/00
Initial Evaluation Planting				
12 trees	honeylocust thorniness evaluation			1999
FIELD 20				
Pryor	slender wheatgrass	Carbon County, MT	1.00	03/29/01
Living Snow Fence				05/77
Bighorn (E)	skunkbush sumac	Los Lunas, NM PMC		
Jemez (W)	New Mexico forestiera	Los Lunas, NM PMC		
Baroness	barley	commercial	0.43	04/02/03
Rimrock	Indian ricegrass	Yellowstone County, MT	1.75	10/30/01
Baroness	barley	commercial	1.85	04/02/03
Antelope	white prairieclover	Stark County, ND	0.64	06/04/99
FIELD 21				
Critana	thickspike wheatgrass	Hill County, MT	3.85	04/11/03
FIELD 22				
Development Acid-Tolerant Cultivars (East)				
9081629	Indian ricegrass	Deer Lodge County, MT	0.34	10/26/98
Old Works				
Germplasm	fuzzytongue penstemon	Deer Lodge County, MT	0.04	10/26/98
9076276	redtop	Deer Lodge County, MT	0.21	04/08/99
Washoe				
Germplasm	basin wildrye	Deer Lodge County, MT	0.21	04/08/99
Development Acid-Tolerant Cultivars (West)				
9081635	Canby bluegrass	Deer Lodge County, MT	0.14	04/08/99
9081628	Indian ricegrass	Deer Lodge County, MT	0.14	04/08/99
Initial Seed Increase				
9016134	Gardner saltbush	Washakie County, WY	0.25	10/26/98
National Park Service Seed Increase				
9075846	blue wildrye	Glacier National Park	0.25	04/12/02
FIELD 23				
24 acc.	bur oak	Great Plains States	3.20	06/17/94
Development Acid-Tolerant Cultivars				
9081623	creeping juniper	Deer Lodge County, MT	0.60	05/29/02 & 05/20/03
Ephraim	crested wheatgrass	commercial	0.40	10/98
FIELD 24				
Saline Grass Cover			3.00	05/04/93

Accession	Common Name	Origin or Source	Acres	Date

Initial Seed Increase				
9005439	switchgrass	composite (3 WY acc.)	0.15	04/19/99
Baroness	barley	commercial	1.20	04/02/03
Breeders Block				
Shoshone	beardless wildrye	Fremont County, WY	0.11	04/08/96
FIELD 25				
Pryor	slender wheatgrass	Carbon County, MT	3.90	04/14/03
FIELD 26				
Saline Seep Evaluation Area				
Discontinued IEPs and CEPs				1975-79
Saline Seep Seed Mixture Trial			0.25	10/21/91
FIELD 27				
9019219	bottlebrush squirreltail	Washakie County, WY	0.43	05/09/02
9016134	Gardner saltbush	Washakie County, WY	1.06	10/30/01
Rosana	western wheatgrass	Rosebud County, MT	3.10	03/29/01
FIELD 28				
Saline Forage Comparative Planting				
5 acc.	salt-tolerant grasses	commercial	0.45	11/11/96
Baroness	barley	commercial	2.65	04/29/03
FIELD 29				
Baroness	barley	commercial	2.40	04/29/03
FIELD 30				
Woody Plantings			5.15	
Dupuyer				
Streambank	silverberry	Pondera County, MT	30 ea.	11/09/99
Development Acid-Tolerant Cultivars				
9081638	Wood's rose	Deer Lodge County, MT	0.40	07/22/99
9081639	western snowberry	Deer Lodge County, MT	0.40	05/16/00
9081334	silver buffaloberry	Deer Lodge County, MT	0.60	05/22/00
FIELD 31				
Fallow			0.80	

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June 2003