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This is a quarterly field office newsletter to transfer plant materials technology, services, and needs. The plant materials personnel will be featuring short articles on project results, new cultivar releases and establishment techniques, seed collection, and field planting needs, etc. All offices are encouraged to submit articles about plant material-related activities relative to plant performance, adaptation, cultural and management techniques, etc. Direct inquiries to USDA NRCS, Plant Materials Center, 98 South River Road, Bridger, MT 59014, Phone 406-662-3579, Fax 406-662-3428; or Larry Holzworth, Plant Materials Specialist, USDA NRCS Montana State Office, Federal Bldg., Rm 443, 10 East Babcock Street, Bozeman, MT 59715-4704, Phone 406-587-6838, Fax 406-587-6761.

A Call for Field Plantings

The Plant Materials (PM) Program depends on landowner participation to field-test new selections of grasses, forbs, and woody plants. This happens by working with local conservation districts and NRCS field offices that are routinely in contact with local cooperators who show interest in looking at new plants and technologies. This unique relationship allows us to field-test new plant materials in a "real world" setting on farms and ranches in Montana and Wyoming.

The PM program has eight grasses, two forbs, two shrubs, and two trees in need of field testing in Montana and Wyoming. The grasses include switchgrass *Panicum virgatum* (9005439), Foothills Canada bluegrass *Poa compressa*, High Plains Sandberg bluegrass *Poa secunda,* Garnet mountain brome *Bromus marginatus,* 'Rush' intermediate wheatgrass *Thinopyrum intermedium,* 'NewHy' hybrid wheatgrass *Elymus hoffmannii,* 'Goldar' bluebunch wheatgrass *Pseudoroegneria spicata* ssp*. spicata,* and 'Bannock' thickspike wheatgrass *Elymus lanceolatus* ssp*. lanceolatus.* The two forb species are Great Northern western yarrow *Achillea millefolium* var. *occidentalis* and Stillwater prairie coneflower *Ratibida columnifera*. The shrubs are Open Range winterfat *Krascheninnikovia lanata* and Trapper Germplasm western snowberry *Symphoricarpos occidentalis*. The trees include Hunter Germplasm ponderosa pine *Pinus ponderosa* and Bridger Select Germplasm Rocky Mountain juniper *Juniperus scopulorum*.

The accessions of switchgrass, Canada and Sandberg bluegrass, and mountain brome, plus the forbs, shrubs, and trees, are all the newest plant materials identified to help solve the resource concerns listed in the Bridger PM long-range plan. Additional information on these plants can be found on the Montana or Wyoming NRCS home page under plants, then "field plantings and seed collections" or under "Bridger Plant Materials Center," then publications, then technical notes.

The 2006 list of seed availablility for field plantings can be accessed via the Montana NRCS website under plant materials, then field planting and seed availability. Montana applicants must submit requests on the form, MT-ECS-9 Field Planting Plan, which can also be accessed on the Montana NRCS website, under plants, then plant materials forms. Applications are due to Larry Holzworth no later than February 15, 2006. The Montana State Plant Materials Committee meeting is scheduled to occur jointly with the Montana State and Area Technology meeting planned for March 7-9.

In Wyoming, the 2006 list of seed availability for field plantings can be accessed via the Wyoming NRCS website under plants. Wyoming applicants will need to submit requests on the form, WY-ECS-54 Field Planting Plan, which also can be accessed on the Wyoming NRCS website, under government forms, then Wyoming ECS forms. Also complete and attach the form, WY-ECS-25 Seeding Application/As-built Spreadsheet. Applications are due to Larry Holzworth by February 15, 2006. The Wyoming State Plant Materials Committee meeting is tentatively scheduled for the week of March 13.

By Larry Holzworth, Plant Materials Specialist.

Award from WACD

On November 17, 2005, during the Business Meeting portion of the annual convention of the Wyoming Association of Conservation Districts in Riverton, Pete Jachowski presented the Bridger PMC with an Outstanding Service and Performance Award. The plaque inscription reads: 'In Recognition of Outstanding Support of Local Conservation Efforts'.

The Bridger PMC land and facilities are owned by a non-profit corporation (Soil and Water Conservation Districts of Montana & Wyoming, Inc.) made up of all the conservation Districts in the two states. USDA-NRCS leases this land and associated facilities to conduct research on plant materials that can help to solve

conservation problems in Montana and Wyoming. A Board of Managers, made up of appointed CD representatives, oversee the PMC operations and invest in maintaining the land and facilities. The present Board of Managers members are Ken Borcher (Chair), Powell, WY, Walt Borntrager (vice-chair) Bloomfield, MT, Shirley Parrott (member/ treasurer) Roundup, MT, Pete Jachowski Cody, WY, and Brenda Schladweiler, Gillette, WY.

The staff at the Bridger PMC is greatly honored to receive this recognition from the Wyoming Association of Conservation Districts.

By Mark Majerus, PMC Manager.

Pinedale Establishes New Field Planting

The NRCS, Bureau of Land Management (BLM), Wyoming Game and Fish Department (WGFD), and Petroleum Association of Wyoming (PAW) have teamed up to support improved reclamation techniques in association with oil and gas production activities taking place in the Pinedale Anticline and Jonah Gas Field regions located in Sublette County. With national interest in sagebrush systems and sensitive species such as sage grouse, the entities agreed that vegetative restoration efforts in development areas of southwestern Wyoming is a priority for both private and public lands. Local resource professionals and land managers entered into discussions that led to the signing of a cooperative working agreement with a common goal to "develop reclamation and rangeland restoration trials to determine the best native plants and establishment techniques for restoring, enhancing and maintaining native rangeland and sagebrush ecosystem diversity, forage production, and habitat improvement."

The first project resulting from this working agreement, a Cooperative Plant Materials Center Field Evaluation Planting, was implemented in October of 2005 among NRCS, BLM, WGFD, Sublette County Conservation District, and Shell Exploration and Production Company. The project included the reclamation of an existing well pad leased by Shell on BLM lands. The planting included 72 different plant entries of 32 grasses, 24 forbs, and 16 shrubs. Each entry was seeded as a pure stand in a 4'x20' plot, and each plot was replicated four times. The Bridger Plant Materials Center provided seed, the precision cone seeder to plant the plots, and personnel for seeding the plots.

In addition to the cone seeder plots, two different seed mixes were used to seed plots using different methods. The WGFD provided a broadcast seeder mounted on an ATV and personnel to plant 2 ½ acre plots with each mix, and Shell/BLM cooperatively provided a Truax range drill and personnel to plant two 1-acre plots with each mix. Shell provided all non-NRCS seed that needed to be purchased for the plots. A hydro-seeder, provided by Shell, was used to seed any disturbed areas outside of the plots.

A fence was installed around the study plots (approximately 3.5 acres) to prevent ungulate access for the next 5 years.

By Karen Clause, Rangeland Management Specialist.

Revised Seeding Rates

"Seeding rates for pubescent and intermediate wheatgrass (10lb/acre) went up? That sure brings the cost-per-acre up on our seeding costs. It's hard to convince producers to try something other than crested wheatgrass and alfalfa!!!" Several field office conservationists have asked why the seeding rates for some species have increased, while others have decreased.

The seeding rates where adjusted following about 2 years of literature searches, vegetative specifications and personal experiences in Montana, Wyoming, Colorado, Idaho, and the Dakotas. The Ecological Sciences staffs in several of the states exchanged information, met, and finally came to a consensus. The changes were justified in that: (1) to align seeding rates more closely within the Northern Great Plains and Rocky Mountain states; (2) research and personal experiences, particularly on pubescent and intermediate wheatgrass, have shown the higher rates established more productive stands; (3) for providing parity in species mixtures based on seeds/lb rather than pounds-per-acre (e.g., pubescent and intermediate wheatgrasses where at 14 seed per lineal foot @ 1 PLS lb/acre as opposed to most species being near 20.

Several state Ecological Sciences staffs agreed that the rate changes are justified, and provide for successful establishment and more productive stands. Our purpose is to provide our clients the most current and technically accurate information based on applied science.

By Larry Holzworth, Plant Materials Specialist.

Native Legume Research Results

The NRCS Bridger Plant Materials Center (BPMC) has a Foundation Seed Exchange Memorandum of Understanding (MOU) with the Wyoming and Montana Agricultural Experiment Stations. The MOU provides for the sale of foundation seed from BPMC plant releases through their respective Crop Improvement Associations. The purpose of the MOU is to use the revenues generated from foundation seed sales to conduct cooperative research projects that benefit conservation and the growers of conservation plants. Since the inception of the MOU, several graduate

research projects have been completed. One of the latest was a research project on the **Symbiotic Nitrogen Fixation and Establishment of Six Montana Native Legume Species.** The research project evaluated the following six native legume species released by the NRCS plant materials program for use in establishing diverse and sustainable native species communities.

Canadian milkvetch	*Astragalus canadensis*
slender white prairieclover	*Dalea candida*
purple prairieclover	*Dalea purpurea*
northern sweetvetch	*Hedysarum boreale*
silvery lupine	*Lupinus argenteus*
American vetch	*Vicia americana*

The study attempted to improve establishment methods and determine the ability of each species to fix nitrogen. The following abstract summarizes the research results.

Symbiotic Nitrogen Fixation and Establishment of Six Montana Native Legume Species

By Sarah Metcalf[1]

ABSTRACT. Legume species have been known to increase soil N content and are incorporated into land restoration seed mixes in hopes of improving degraded soils and vegetative communities. The goals of this project were to determine effects of soil type, soil moisture, inocula and fungicide treatments on legume establishment, N_2 fixation capacity, and plant biomass for six individual native legume species. In potted greenhouse studies, legumes were grown in five field soils to verify nodulation without inocula. In a second phase, plant biomass was measured in two soils at two moisture contents (60% and 80% of field capacity). The efficacies of *Rhizobia* inocula and fungicide treatments were also tested. The greenhouse studies were used to supplement data gathered at three field sites around Montana. Native soils contained *Rhizobia* that were specific to many of the plant species tested and induced nodulation. Soil moisture content, inoculation, and fungicide treatments had less effect on nodulation and biomass than the soil origin. Fungicide treatments benefited establishment of *Lupinus argenteus*, and had mixed effects on *Astragalus canadensis* and *Dalea candida.* Benefits were dependent on soil location. Shoot biomass at each field site also varied significantly; in general, *A. canadensis* had the highest nodulation and biomass, while *Dalea purpurea* and *D. candida* typically had the lowest biomasses and nodulation. This research should assist land managers in selecting species to suit a wide variety of ecological conditions and land restoration scenarios.

[1] Master of Science Graduate in Land Rehabilitation, Montana State University, 2005.