



PLANT MATERIALS TODAY

A Quarterly Newsletter of the Montana-Wyoming Plant Materials Program

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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, RR2 Box1189, 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.

Newsletter Now Available Electronically!

The Bridger Plant Materials Center is pleased to announce that our newsletter is now available electronically. Beginning with this issue, the newly developed list-serve will transmit copies to nearly 600 e-subscribers in federal and state agencies, and the private sector across the US.

Individuals interested in receiving future issues of the newsletter electronically can send an e-mail request to: susan.winslow@mt.usda.gov

Seed Production in 2001

The final seed production numbers have been tallied and the seed is in the barn. The PMC was very busy over the course of last year, despite continuation of a 4-year drought. Seed harvest began in mid-June with sweetgrass and alpine bluegrass and continued until late October with prairie sandreed and winterfat. The PMC is responsible for providing Foundation Seed of commercial releases to seed and plant producers through the Montana and Wyoming Seed Certification programs. A large portion of the cooperative work with the National Park Service (Yellowstone and Glacier) and the Deer Lodge Valley Conservation District (Development of Acid/Heavy Metal-Tolerant Cultivar project-DATC) involves seed production. In addition, plant materials that originated from field office collections are maintained, harvested, and advanced through the stages of testing, evaluation, and increase for future release to the commercial seed industry.

Mark Majerus

Category	No. Accessions	Pounds
Foundation	16	5,496
Initial Increase	15	1,226
YNP Reimbursable	13	467
GNP Reimbursable	12	69
DATC	<u>21</u>	<u>302</u>
Total	77	7,560

Soda Lake Field Evaluation Planting 2001

The Soda Lake Field Evaluation Planting (FEP) was established to conduct advanced testing on plant materials for use in the climatic and soil conditions of southwestern Wyoming. The FEP is located near Pinedale, on the Wyoming Game and Fish Department's Soda Lake Big Game Range, in MLRA 46 (Northern Rocky Mountain Foothills), at an elevation of 7,450 ft. The soils

are a Ryark loamy sand, with 15 inches of annual precipitation occurring from May to June. The range site is loamy, 15- to 19- inch precipitation zone. In preparation for planting in 1995, existing vegetation on the site was sprayed with Glyphosate and rototilled.

A randomized complete block, with three replications featuring 50 accessions representing 20 species, was dormant planted on September 26 and 27, 1995, and on October 8 and 9, 1996, an additional 33 accessions were planted. The Agricultural Research Service (ARS) in Logan, Utah, and the Plant Materials Centers in Aberdeen, Idaho, Bridger, Montana, and in Meeker, Colorado, provided the featured plant selections and cultivars. All plots are dryland and rely on the natural environmental conditions for survival. The planting is evaluated annually for percentage basal cover, vigor, and leaf height. Beginning in 1996, 4 m (13 ft) by 60 cm (2 ft) subplots are harvested for annual biomass production on 63 of 80 entries.

Percentage stands (basal cover) ranged from 0.1% for 9067480 *Atriplex canescens* fourwing saltbush to over 24% for the ARS-L4PX *Leymus* wildrye hybrid. ARS-L4PX *Leymus* wildrye hybrid and ARS-636b *Leymus cinereus* basin wildrye had the best stands of all the entries, 24.3% and 22.7%, respectively. ARS-L4PX ranked the fourth highest yield. The standards of comparisons, 'Magnar' and 'Trailhead' basin wildryes, had 6% and 4.7%, respectively, with Magnar ranking the 11th highest yield at 220 lb/acre. *Poa sandbergii* Sandberg bluegrass 9076297, ARS-T961b *Stipa robusta* sleepygrass, 'Albertan' *Nassella viridula* green needlegrass, 9019230 and 9030446 *Stipa nelsonii* ssp. *dorei* Dore's needlegrass, 9005589 *Elymus glaucus* blue wildrye, 'Goldar' *Pseudoroegneria spicata* bluebunch wheatgrass, and 'Rush' *Elytrigia intermedia* intermediate wheatgrass were the only entries establishing greater than 10% stands, approximately 16% of the almost 80 entries.

'Sherman' *Poa ampla* big bluegrass had the best yield of all entries at 377 lb/acre. The top yield and stands were Albertan; ARS-L4PX, *Leymus* wildrye hybrid; 9019230, 9005589, and 9040047 *Stipa nelsonii* ssp. *dorei*; ARS-1105b *Elymus elymoides* bottlebrush squirreltail; Goldar *Pseudoroegneria spicata* bluebunch wheatgrass; and ARS-T961b *Stipa robusta* sleepygrass all rating over 10% stands and producing near or greater than 200 lb/acre air dry forage.

Due to a negative impact on plant growth and vigor from the 1999 clipping, the plots were not harvested in 2000. Mean annual precipitation remains below normal. The final evaluation of the study will be conducted in 2002.

Larry K. Holzworth

Evaluation Completed of Field Office Seed Collections

The NRCS Field Office seed collection program in Montana and Wyoming contributed 179 entries to three studies planted in November 1997 at the PMC. Seed collections of both native and introduced species--received from 1989 to 1997--originated from 37 Montana counties (66% state representation) and 12 Wyoming counties (52% state representation), as well as counties in Colorado, Missouri, and North Dakota. The dryland, initial evaluation plantings (IEPs) compared the relative performance of 38 grasses, 30 legumes, and 118 forbs over a 4-year time period. Concurrently, the PMC experienced above-average temperatures

and below-average annual precipitation in all but the seeding year. All plots were periodically evaluated over each growing season for survival, stand, vegetative and bloom height, and time of flowering.

The best native grass performance of 19 species was recorded for basin wildrye (Uinta County, WY) and green needlegrass (Sheridan County, MT), with both species maintaining greater than 90% stand at the end of the study. Of the 13 native legumes, purple prairieclover (Custer County, MT) and slimflower scurfpea (Sweet Grass County, MT) sustained stands of 70% or greater.

Seven wildflower families were originally represented by 26 native species, with the Aster group comprising almost half of the planting (58 accessions of eight genera). The two *Echinaceae* entries from Custer County, Montana, topped the performance list with excellent vigor and seedhead abundance, and percentage stand greater than 90. The common gaillardia collections from Glacier, Park, and Toole Counties, Montana, also performed well. Prairie coneflower from Daniels, Park, and Phillips Counties, Montana, maintained good vigor, but overall percentage stand of the 23 entries dramatically declined the fourth year to a low of 14. Four collections of arrowleaf balsamroot continued a slow-growing trend with a final average percentage stand of 18, and did not at any time develop an inflorescence. Performance of the eight, dotted gayfeather collections was extremely lackluster, finishing with two entries averaging only a percentage stand of 7.

The two annuals in the study, Bicknell's geranium (*Geraniaceae*) and threadleaf phacelia (*Hydrophyllaceae*) performed well the establishment year, and then both sporadically re-seeded themselves in subsequent years, in various locations across the 16 study rows. The biggest change in the study occurred between the 2000 and 2001 evaluation years, when 13 entries of silverleaf phacelia (*Hydrophyllaceae*) declined from an average percentage stand of 75, to an average of 13%! The 2001 evaluation indicated that the Missoula County, Montana, collection performed better than the other 12 entries in all categories. Scarlet globemallow (*Malvaceae*) performance was quite variable across the 4 years for most all of the 20 accessions. Overall survival remained very high at 90%, but vigor and percentage stand declined substantially. The Garfield County, Montana, collection received the highest ratings in the final evaluation.

Wild bergamot (*Lamiaceae*) performed very well in all years and finished the study as a strong contender for future testing. The county origin of this entry is unknown, but it was collected by Montana NRCS employees Granbois and French in 1993. The lone blue flax (*Linaceae*) entry from Park County, Montana, maintained a percentage stand of 50, and readily self-seeded in neighboring plots.

The majority of the 12 penstemon species (*Scrophulariaceae*) performed very well over the life of the trial. Smooth penstemon (Rosebud County, Montana, and Weston County, Wyoming) ranked second only to *Echinacea* in the final evaluation. This penstemon and several other species have potential for advanced testing, seed increase, and future release to the commercial market.

Susan R Winslow

Seed Collection List for 2002

The Plant Materials (PM) Program is requesting seed collections of four species in Montana and Wyoming. NRCS Field Office personnel, and other interested collectors, are being called upon to participate in the 2002 collection of fuzzytongue penstemon *Penstemon eriantherus* ssp. *eriantherus* (PEERE), silverleaf phacelia *Phacelia hastata* (PHHA), scarlet globemallow *Sphaeralcea coccinea* (SPCO), and American vetch *Vicia americana* (VIAM). Seed collections of the fuzzytongue penstemon are being requested as part of ongoing evaluations in the DATC project. The annual collection bulletin will be in field offices by June 2002, and will contain an attachment outlining the areas of each state that still need species representation (see table below). Also included with the bulletin will be a detailed description of each species to aid in identification, potential site location, bloom period, and approximate time of seed maturity. Seed is subsequently planted in evaluation studies to test performance and utility for solving conservation problems outlined in the Long-Range Plans for Montana and Wyoming. The PMC prefers to secure 25 collections of each species and plant within 5 years of receiving the seed. For more information call Larry Holzworth.

State	Natural Resource Area	Species Code
Montana	Columbia Basin	PEERE
		SPCO
		VIAM
	Headwaters	PEERE
		SPCO
		VIAM
	Upper Missouri	PEERE
		PHHA
		VIAM
	Lower Missouri	PEERE
PHHA		
VIAM		
Lower Yellowstone	PEERE	
	SPCO	
	VIAM	
Wyoming	Northern	PEERE
		PHHA
		VIAM
	Southwestern	PHHA
		VIAM
	Southeastern	PHHA

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