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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 Ron Nadwornick, State Resource Conservationist, USDA NRCS Montana State Office, Federal Bldg., Rm 443, 10 East Babcock Street, Bozeman, MT 59715-4704, Phone 406-587-6998, Fax 406-587-6761.

2007 Seed Collection Reminder

The Plant Materials (PM) Program is requesting seed collections of nine species in Montana and Wyoming. In 2007, continued collection is requested of fuzzytongue penstemon *Penstemon eriantherus* ssp. *eriantherus*, silverleaf phacelia *Phacelia hastata*, scarlet globemallow *Sphaeralcea coccinea*, and American vetch *Vicia americana*. There are five legume species requested to address emerging conservation concerns. These include groundplum milkvetch *Astragalus crassicaarpus*, silverleaf Indian breadroot *Pediomelum argophyllum* (synonym *Psoralea argophylla*), large Indian breadroot *Pediomelum esculentum* (synonym *Psoralea esculenta*), slimflower scurfpea *Psoralidium tenuiflorum* (synonym *Psoralea tenuiflora*), and prairie thermopsis *Thermopsis rhombifolia*.

The list is available electronically and the information can be accessed via each state's homepage. Helpful tips on seed collection can be found in *The NRCS Field Office Guide to Collecting Wildland Seed*, which is located on the Montana and Wyoming NRCS webpages as the Plant Materials Technical Note MT-50 and WYPM11. Please schedule time to make seed collections and send directly to the PMC.

By Ron Nadwornick, State Resource Conservationist.

The "Dean" Retires

Thirty-seven years of service, literally thousands of miles traveled and numerous plants identified along the way.

Larry Holzworth, often called the "Dean of Plant Materials" by his coworkers, retired this past May. His colleagues in the National Plant Materials Technical Committee named him the "Dean" for his dedication to the plant materials discipline—and the fact he was always ready to provide NRCS employees and others a lesson in plant science.

Holzworth, who started as an SCS student trainee in 1970, found unending excitement and professional development throughout his career. He worked with the Bridger Plant Materials Center to release over 20 cultivars and coordinate numerous on-the-ground demonstration projects. He provided one-on-one assistance to farmers, ranchers, timber and mining companies, National Parks, highway departments, universities, and fish and wildlife agencies to research new plant solutions, rehabilitate disturbed areas and improve the health of the landscape using plants. Through his expertise and work, he taught hundreds of training sessions, gave presentations across the country, and participated in eight scientific exchanges with Inner Mongolia and China.

Not bad for a farm boy from Colorado who grew up milking cows and planting crops such as corn, barley, and sugar beets. He attended Colorado State University and received a B.S. in agronomy. He worked as a soil conservationist in both Longmont and Sterling, Colorado, before becoming the assistant manager—and eventually the manager—at the Plant Materials Center in Tucson, Arizona. In 1979, he took the job as the Plant Materials Specialist for Montana and Wyoming located in Bozeman, Montana, where he would eventually complete his career.

During Holzworth's retirement party, his colleagues referred to a Charles Swindell quote he kept at his desk, saying it defined his outlook at work every day:

"The longer I live, the more I realize the impact of attitude on life ... Attitude to me is more important than the past, than education, money, circumstances, failures, success ... I am convinced that life is 10 percent what happens to me and 90 percent how I react to it." –Charles Swindell (excerpted)

Holzworth has often said the best part of this job was the people, especially the farmers and ranchers. "I really enjoyed the challenge of evaluating a resource concern and trying to come up with a viable solution," he says.

It's clear no grass will grow under Holzworth's feet during retirement. He is serving as the general contractor for building his new house this summer, along with a fishing trip to Alaska later in July. In the fall, he will teach a 300-level forages course at Montana State University.

By Jody Holzworth Fagan, Bozeman.

National Review

August 14th will be an informative and exciting time for us as we will host the National Plant Materials Center Advisory Committee's summer meeting at the BPMC. In addition, the National Plant Materials Review Team will be here the following 2 days to conduct a programmatic review of the BPMC conservation planning, goals, ongoing research, organization, plant releases, reimbursables, safety issues, security, etc. It has been over 20 years since the BPMC was reviewed by the National Review Team and we are looking forward to their comments for improvement of our operation.

By Roger Hybner, PMC Manager.

Developing Seeding Rates

Reprinted and adapted with thanks, from the February 2004 issue of Mid-South Plant News, a newsletter of the Jamie L. Whitten PMC (Mississippi)

Do you ever wonder where the seeding rates listed in the PMC planting guides or brochures came from? When we release a new plant, we determine its recommended seeding rate based on two factors: 1) the number of seeds per foot of row (or per square foot for broadcast plantings) required to produce an acceptable stand, and 2) the average number of seeds per pound. (Note: the seeds per pound can vary from one selection or cultivar to another of the same species.)

First, we calculate the number of seeds required per acre. In this example, we wish to drill-seed 25 western wheatgrass seeds per foot of row and the spacing between rows is 30 inches. To determine seeds per acre, we multiply the number of square feet in an acre (43,560) by the number of inches in one foot (12). We divided this number by the row spacing (30) and then multiply by the number of seeds per foot of row (25).
→ $43,560 \times 12 / 30 \times 25 = 435,600$ seeds per acre. For a broadcast planting, this calculation is much simpler. If we want to broadcast 50 seeds per square foot of prairie coneflower, we multiply the number of square feet in

an acre (43,560) by the number of seeds per square foot (50) to determine the number of seeds required per acre. → $43,560 \times 50 = 2,178,000$ seeds per acre.

To determine the seeding rate, we divide the number of seeds per acre by the number of seeds per pound. In the first example, we will be using 'Rosana' western wheatgrass. It averages 93,000 seeds per pound. The seeding rate is → $435,600 / 93,000 = 4.7$ pounds of seeds per acre. In the second example, using Stillwater Germplasm prairie coneflower (600,000 seeds per pound), the planting rate would be
→ $2,178,000 / 600,000 = 3.6$ pounds of seed per acre.

In many cases, seed lots of native plants do not have high germination and/or purity values. To account for this, seeding rates will often be expressed on a pure live seed (PLS) basis. You will need to know how much bulk seed to plant to achieve the recommended pounds of PLS. Assume you want to plant 5 PLS pounds of a little bluestem seed lot with 80 percent purity and 80 percent germination. First, you calculate the percentage PLS of your seed lot by multiplying the percent purity (80) by the percent germination (80) and dividing by 100
→ $80 \times 80 / 100 = 64$ percent PLS. Then, you divide the PLS seeding rate (5) by the percent PLS and multiply by 100 → $5 / 64 \times 100 = 7.8$ pounds of bulk seed per acre are needed. For more information, you can digitally access via the Montana NRCS website, Plant Materials Technical Note MT-46, Seeding Rates and Recommended Cultivars.

By Joel Douglas (then Mississippi Plant Materials Specialist) and Janet Grabowski (then PMC Agronomist).

Five Myths Concerning Native Grass Varieties

This is part 1 of a 2-part article, reprinted with thanks from the Proceedings of the Native Plant Summit VII held in Fargo, North Dakota, in September 2003 (Revised 2005)

What seed source is better for native grass seedings-- local populations, cultivated varieties, or something in-between? One answer that I believe most people would agree with is that it depends on the objective(s) of the planting. Multiple objectives may cloud the issue, but providing clear and definitive objectives generally will lead you to the best answer. For example, germplasm preservation may be a primary objective for planting seed from remnant local populations, and wildlife cover/food plots may be a primary objective for planting a variety proven to provide good biomass and a minimum amount of lodging over winter.

Varieties or Natural Germplasms are sometimes not used because of misinformation associated with the development and release of native plant materials.

Natural Germplasm is plant material that has not been manipulated or significantly altered from the original collection. Some of this misinformation is presented in the following five myths regarding native grass releases.

1. Varieties of native grass are too aggressive and do not perform well in mixtures.

Certain species are aggressive on specific sites and can become dominant. For example, 'Rodan' western wheatgrass, planted as part of a mixture, may dominate a clayey site after several years. However, it is the strong adaptation of the species to that site that may be undesirable and not the performance of the variety Rodan. Switchgrass, especially the lowland types, can become overly competitive on some wet sites. This is generally more of a species/site issue rather than a seed source issue. Seeding a balanced mixture of species suited to the site is a good start. Species dynamics over time is highly correlated to environmental conditions and management schemes.

2. Varieties of native grass will not produce seed because they are too competitive and will remain vegetative.

This misunderstanding probably got started years ago when more southern (Nebraska, Kansas) varieties of warm-season grasses were being used in the Dakotas and Minnesota because of the unavailability of more northern sources. These southern sources were late maturing, often remained vegetative, and did not produce seed, especially during dry conditions. Northern source varieties and Natural Germplasms are now available. These northern sources are early maturing and produce excellent seed crops.

3. Varieties of native grass are Genetically Modified Organisms (GMOs).

I am not aware of any native grass varieties that are GMOs. Although the extent of selection varies, all of the native grass releases being produced at the Bismarck PMC originate from natural populations. New releases are more genetically diverse than previously and are no longer called varieties. Native grasses are now generally being released as Natural Germplasms. Itasca Natural Germplasm little bluestem is a regional collection with 72 different sources (site collections) of

parent material comprising its genetic background. Bad River Ecotype blue grama originates from native seed harvest and has had no intentional selection or purposeful genetic manipulation.

By Dwight Tober, North Dakota Plant Materials Specialist

Reminder for Creating Native Landscapes

Now is the time to consider improving conservation measures in your home landscape. The maintenance of introduced plant material requires considerable time, water, fossil fuel, and fertilizer, while at the same time lowers air and water quality. Many native plants have evolved under low-input environments; they are beautiful, enhance wildlife habitat, and support native pollinators. Anyone interested in developing an environmentally-friendly landscape can learn more in a step-by-step color guide entitled, *Creating Native Landscapes in the Northern Great Plains and Rocky Mountains*. The goal of the booklet is to provide an overview of native landscaping principles and practices through the concept of Xeriscape™--the wise use of water through water-efficient landscaping. It is intended to help homeowners with comprehensive coverage of planning, landscape design, site preparation, plant selection and care, and maintenance. Copies may be obtained through the Montana Natural Resources and Conservation Service's Public Affairs Staff: phone 406.587.6971; write to Federal Building--Room 443, 10 East Babcock Street, Bozeman, MT 59715; email MT-nrcs-publications@one.usda.gov; or visit the web at <http://www.mt.nrcs.usda.gov/technical/ecs/plants/xeriscp/index/html>.

By Susan R. Winslow, PMC Agronomist.

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