

NORTHLAND NEWS

Annual Progress Report of Activities 2007 - 2008

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Who We Are

by *Wayne Duckwitz, Plant Materials Center Manager*

The Bismarck Plant Materials Center (PMC) is one of 27 Plant Materials Centers operated by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). The Bismarck PMC serves the States of Minnesota, North Dakota, and South Dakota. It is the Mission of the Plant Materials Program to develop plant materials and plant science technology for the conservation of our natural resources. **Current work at the PMC focuses on ten major conservation priorities.**

OUR CONSERVATION PRIORITIES

Streambank & Lakeshore Stabilization | Warm-Season Grass Promotion and Development
Alternative & Specialized Use of Conservation Plants | Tree & Shrub Related Technology
Native Prairie Ecosystem Restoration | Saline & Alkaline Tolerant Plant Materials
Wetland and Riparian Plant Materials | Filter Strips & Nutrient Management
Information, Education & Outreach | Urban Conservation



'Manifest' Intermediate Wheatgrass Released

by *John Hendrickson, John Berdahl, Mark Liebig (ARS Northern Great Plains Research Laboratory), and Wayne Duckwitz, PMC Manager, Bismarck Plant Materials Center*

Information taken from *Northern Great Plains Integrator*, January 2008

Intermediate wheatgrass provides many advantages to producers. It is easy to establish and has high yields and quality. However, stands of intermediate wheatgrass are generally not long lived, especially when they are grazed. The Northern Great Plains Research Laboratory (NGPRL) and the Bismarck Plant Materials Center have released Manifest, a new cultivar of intermediate wheatgrass. Manifest has shown greater ability to withstand grazing while maintaining the yield and quality desirable in intermediate wheatgrass.

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Table 1

Average dry-matter yields of intermediate wheatgrass cultivars in a cooperative regional trial. (2001-2003, also 2000 at Mead NE)

Location / (Number of Years)							
Entry	Mandan ND (3)	Miles City MT (3)	Mead NE (4)	Sidney NE (3)	Blue Creek UT (3)	Green Canyon UT (3)	Mean (19)
Pounds/Acre							
Manifest	4614	1409	9708	3215	1729	3406	4611
Reliant	4867	1295	8738	3162	1192	3365	4214
Manska	4206	1396	7774	3076	1361	3783	3931
Oahe	4864	990	8466	3355	1506	2706	4405
Greenar	3843	1170	8101	2907	1873	3762	4071
Beefmaker	4505	1537	9163	3253	1125	2682	3924
Haymaker	4422	1369	8996	3091	1116	3152	4161
Mean	4474	1310	8654	3151	1415	3265	4150

Table 2

Crude protein (CP) and *in vitro* dry matter digestibility (IVDMD) of intermediate wheatgrass cultivars at Mandan, ND (2 yr) and Mead, NE (4 yr)

Entry	Mandan, ND		Mead, NE	
	IVDMD	CP	IVDMD	CP
----- % -----				
Manifest	62.3	6.9	65.1	9.1
Reliant	63.2	8.1	66.0	9.5
Manska	63.6	7.5	66.3	9.7
Oahe	61.2	7.5	64.1	8.9
Greenar	62.5	6.9	64.6	9.4
Beefmaker	63.9	8.1	66.5	9.3
Haymaker	63.2	7.5	65.1	9.4
Mean	62.8	7.5	65.4	9.3

Table 1 shows the average yields of Manifest in comparison to other common intermediate wheatgrass cultivars at various locations in the Great Plains and Utah. Average yields for Manifest were very comparable to the other cultivars, and Manifest had the highest yield when averaged across all locations.

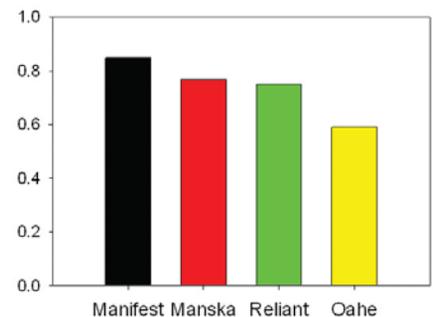
Table 2 shows crude protein (CP) and *in vitro* dry matter digestibility (IVDMD) values for selected cultivars. IVDMD is a measure of how well livestock can digest the forage. While Manifest had slightly lower CP and IVDMD values than the averages of all the cultivars, it was still high quality forage for livestock.

A primary advantage of Manifest is its improved ability to withstand grazing. This was tested by marking individual tillers/shoots of different cultivars. After being grazed, it was determined if those tillers/shoots remained alive, died, or if they were replaced by new shoots. The information was then compiled into a shoot replacement ratio. The higher the ratio the better a cultivar performs under grazing.

Figure 1 compares the shoot replacement ratio of Manifest with 'Reliant', 'Manska', and 'Oahe'. Because of Manifest's high shoot replacement ratio, this cultivar should withstand grazing and have increased stand longevity.

Manifest has the traditional high yields and high quality which make intermediate wheatgrass attractive forage for producers in the northern Great Plains. The increased persistence of Manifest during grazing will result in greater stand longevity. Research at NGRPL has suggested that the best time to graze intermediate wheatgrass to increase its persistence is before the boot stage. This generally occurs in early to mid June at Mandan. The USDA-NRCS Bismarck Plant Materials Center established a foundation seed production field of Manifest in 2006, and the first harvest of foundation seed was in late July of 2007. This seed will be cleaned and allocated to seed growers for seed increase. Seed of Manifest should be commercially available in 2010 for conservation plantings. This cooperative release between the USDA Northern Great Plains Research Laboratory and the USDA Natural Resources Conservation Service, Plant Materials Center is one of many cooperative efforts to ensure adapted forage grasses are commercially available to the public.

Figure 1
Shoot Replacement Ratios



Indiangrass Assembly

by Nancy Jensen, Agronomist



Indiangrass

Indiangrass is perennial and native to the tall and mixed grass prairies. It can be good quality forage (prior to flowering) for livestock and has aesthetic characteristics desirable for landscaping. In 2005, an evaluation block with approximately 330 plants was planted at the PMC. Plants were collected from native stands in Minnesota, and the majority dug from a spaced plant nursery at South Dakota State University. The South Dakota plants originated from sites near Aurora and Yankton in southeastern South Dakota. The varieties 'Tomahawk' and 'Holt' were used as check or comparison plants. The goal of the planting is to select and make releases for landscaping and forage use. Data including leafiness, height, plant size, phenology, lodging, and color are recorded each year. Plants showed great diversity in leafiness and fall color in 2007. Plants will be evaluated again in 2008. Data will be analyzed, and plants will be selected for crossing blocks in 2009. A planting was also made at the University of Minnesota Arboretum with the South Dakota plant material. Dr. Mary Meyer is evaluating these plants for a landscape release as well. Thanks to Dr. Arvid Boe at South Dakota State University for sharing plant material and to Dr. Mary Meyer at the University of Minnesota for additional evaluations.

'McKenzie' Black Chokeberry

by Mike Knudson, Forester



Chokeberry fruit collected at Staples, Minnesota

Black chokeberry is a cold-hardy, deciduous shrub, which is native to Minnesota. This species is sometimes known as Aronia in the nursery trade. The dark-purple fruit can be canned whole, or the juice can be used in jellies and fruit drinks. One of the larger fruit juice producers in the U.S. uses Aronia berries in its blends. Though black chokeberry is native to eastern and central North America, it has been planted extensively in Europe and Asia. In Russia, Denmark and Eastern Europe, the fruit is used for juice and wine production. The Europeans have developed several cultivars, which are now available in the U.S. from commercial nurseries. 'Viking' is a vigorous, productive variety from Scandinavia, which can grow to a height of six feet. 'Nero' is a shorter growing variety, which seems to be less hardy than Viking in North Dakota. The Bismarck PMC received the

accession PI 323957 in 1976 from the USDA-ARS Plant Introduction Station at Ames, Iowa. After 30 years of planting and observing the performance in the Northern Plains, the PMC is ready to release this accession as a cultivar. It will be named 'McKenzie' black chokeberry and should be formally released in the spring of 2008. Plants of black chokeberry have been available from regional conservation nurseries for a number of years. If you are looking for a shrub with tasty, marketable fruit, try planting McKenzie black chokeberry.



Prairie junegrass

Prairie Junegrass Pursuit

by Nancy Jensen, Agronomist

Thanks to all who diligently collected prairie junegrass seed in the past few years. The PMC now has over 90 collections of this early cool-season grass that we will be propagating in the greenhouse in 2008. Approximately 9 to 12 plants from each collection that are started in the greenhouse will be space planted to a field at the PMC in late May or early June of 2008. The plants will be evaluated for the next three to five years with anticipation of a release after that time.

Collecting Virginia Wildrye

by Dwight Tober, Plant Materials Specialist



Upright spike seedhead
Photo Credit: Mike Hallock

Rigid ligule
Photo Credit: Mike Hallock

Virginia wildrye (*Elymus virginicus*) is a native, cool-season perennial bunchgrass which grows 2 to 3 feet in height. It prefers moist soils, heavier soil textures and is shade tolerant. Prime habitat includes bottomlands, low prairies, stream banks, and edges of woods or woody draws. It is found in scattered locations throughout North and South Dakota, and the western half of Minnesota. Identifying characteristics include: spikes stiffly upright and 2 to 6 inches long; awns or no awns; usually two spikelets per node; heavy glumes (horseshoe shaped) bowed at the base; and short, rigid ligules. The PMC is requesting your help in collecting seed of Virginia wildrye. One seed collection from your county would be sufficient. Collect seed from several plants if

possible. Prime time for seed collection is early July to mid-August. Approximately one hundred seeds per collection would be adequate. Site location information is requested. Seed envelopes are available from the PMC. There are no developed

northern seed sources of Virginia wildrye available commercially. Conservation uses for this species include pasture and hayland planting, wildlife habitat, range seeding, riparian planting, and conservation cover.

Perennial Food Plots

by Wayne Duckwitz, Plant Materials Center Manager



Perennial food plot showing an introduced species planting on the left and a native species on the right

A five-year study working with perennial food plots was ended in 2007. This was a cooperative study between the North Dakota State Game and Fish Department and the NRCS Bismarck Plant Materials Center. The study was initiated due to the interest both agencies had in the benefits that perennial plantings could offer in developing wildlife habitat plans.

The advantages of the perennial food plots are as the name implies, a practice that would not have to be planted by land users on an annual basis. The benefits of these forb and legume dominated plantings are increased habitat for pollinators and other insects which also serve as a food source for birds and their young. The plantings also provide seed and forage that benefit many other wildlife species.

The plots were planted on November 4, 2004. Both a native and an introduced species mix was planted. The plantings struggled during

2005 due to the extremely dry conditions, and stands were rated from good to poor. It was observed that the better plots were ones with more surface residue present during the 2004 seeding period. The warm open winter of 2004/2005 may have caused some germination and loss of seedlings in plots with lower surface residue amounts. The stands remained thin on some of the plots and weed pressure became a major issue on the marginal plantings. We did observe a number of species that established more readily under dry conditions and were able to compete with the weed pressure.

In general, the native plantings established better than the introduced plantings. This was not what we were expecting and may be due to germination the fall of seeding. Native species that established and persisted in the plantings included stiff sunflower, Maximilian sunflower, hyssops, purple prairieclover, Lewis blue flax, wild bergamot, stiff goldenrod, yellow coneflower, shell-leaf penstemon and narrow-leaved coneflower. The introduced species plots were dominated by species of alfalfa, sainfoin, and cicer milkvetch. Weed pressure was a major problem in all the plantings, even when plantings were no-tilled into chemically killed sod. The species mix of grasses, forbs and shrubs makes management very difficult in reducing the competition from weed pressure. Perennial food plots are really nothing more than using multiple species in your plantings and dominating the mix with forbs and legumes instead of the traditional grass dominated plantings. These plantings offer diversity and provide an additional tool for use in developing your wildlife habitat plans.

Progress with Bur Oak

by Mike Knudson, Forester

With the threat of new insect pests on the horizon, it is important to develop some additional selections of tall trees for the Northern Plains. One of the more widespread tall trees native to our region is the bur oak. Bur oak is a drought-resistant, long-lived tree. It has a moderate growth rate. In the early 1990s, the SCS field office personnel of the Great Plains made collections of bur oak seed. In 1993, selected seedlings from 90 seed sources were planted in eight blocks, in a nursery at the ARS Research Lab at Mandan, North Dakota. The soils on this site are a Parshall fine sandy loam. The area was fenced to keep out the deer. After 15 growing seasons, the trees were measured in 2007. The seed source with the tallest trees was from Cass County, North Dakota. The trees measured almost 20 feet tall.



Bur oak in Minnesota

Other seed sources which have done well in the Mandan planting are from Emmons and Griggs Counties of North Dakota, Becker County, Minnesota, and Pennington County, South Dakota. Some of these same seed sources were also planted at the PMC in Bridger, Montana. The seed sources from Emmons County, North Dakota and Pennington County, South Dakota have also performed well at Bridger. The Bridger PMC is ready to release a variety of bur oak from western North Dakota seed sources. The new variety, once it is available commercially, should be a good choice for use in windbreak plantings in the Dakotas.

South Dakota Conservation Field Trials

by Dwight Tober, Plant Materials Specialist



Grass and legume mixture trial near Bison, South Dakota

The Bismarck PMC assisted in the planning and planting of two herbaceous demonstration sites. One was cooperative with the Wessington Springs NRCS field office and the Jerauld County Conservation District, and the other was cooperative with the Bison NRCS field office, and landowner Jim Lyon. The plots were planted with the PMC 8-row covered cone-seeder. Individual packets were weighed and packaged for each species and each row. A total of 2,304 individual packets were prepared for the two plantings.

The planting at Wessington Springs had fifty-one plots of various grasses, legumes, forbs, and mixtures of each. Border strips of Bad River blue grama were planted between each plot. Rainfall conditions were good, and the plots were off to a good start. Grasses with the best initial establishment included

‘NewHy’ hybrid wheatgrass, ‘Arthur’ Dahurian wildrye, ‘Fleet’ meadow brome grass, ‘Rebound’ smooth brome grass, ‘Alkar’ tall wheatgrass, ‘Mandan’ Canada wildrye, all of the intermediate wheatgrass entries, and ‘Bowie’ buffalograss. The higher rated legumes included alsike clover, ‘Kenland’ red clover, ‘Travois’ alfalfa, and ‘Dawn’ birdsfoot trefoil.

The planting at Bison was primarily a grass/legume mixture trial and consisted of 41 entries. A rain shower after seeding helped some plots get off to a good start. Conditions, however, turned dry and annual weeds started to grow. It was difficult to find the drill rows when taking notes in August.

Grasses that were off to the best start included ‘Mankota’ Russian wildrye, ‘Rodan’ western wheatgrass, ‘Manska’ pubescent wheatgrass, NewHy hybrid wheatgrass, and ‘AC2’ crested wheatgrass. The legumes with the best stand included SDSU yellow-blossom alfalfa, ‘Eski’ sainfoin, and Travois alfalfa. ‘Delar’ small burnet and Dawn birdsfoot trefoil appeared to establish well initially, but the rows were hard to find in the August stand counts.



Demonstration planting at Wessington Springs, South Dakota

Better Hackberries Found

by Mike Knudson, Forester



Polk County accession in Mandan evaluation

The Bismarck PMC, in the mid-1980s, released the cultivar 'Oahe' hackberry. The origin of this seed source was a shelterbelt near Gettysburg, South Dakota. About that same time, the Field Offices throughout the Great Plains began collecting seed from local seed sources of hackberry. Hackberry had been identified as an excellent substitute for American elm, which was declining due to Dutch elm disease. The ARS Northern Great Plains Research Laboratory planted seedlings from these seed sources near Mandan in 1990. The soil type on the site is predominantly a Temvik-Wilton silt loam. In 2005, a number of seed sources superior to the Oahe hackberry were noticed in the hackberry planting on the Area IV Research Farm. The best single source is from Polk County, Minnesota, northwest of Crookston. It was collected by Jim Ayen on Roger Wagner's land. After the trees were measured in the summer of 2007, this seed source (ND-3878) averaged almost seven feet taller than the Oahe. Several other seed sources from eastern North Dakota looked better than Oahe. Ordean Jacobson, Kevin Kehrwald, Jerry Timm, and Rod O'Clair collected some of these. A faster growing hackberry tree will be above the reach of the deer sooner. These trees have shown excellent growth, despite grazing by the resident deer population. Almost all the trees have multiple stems, because of the deer pressure. In the future, we will need another choice of tall trees to plant in place of green ash.

Prairie Turnip (*Pediomelum esculentum*)

by Nancy Jensen, Agronomist



Tuber size after 1, 2, 3 years

Potatoes are not the only tubers growing in the Northern Great Plains. Indian breadroot, a native legume with a tuberous thickened taproot, can be found growing on dry prairies, bluffs, valleys, and open woodlands. Indian breadroot, also known as prairie turnip, was an important food source for the Great Plains Indians. They pulverized the root into flour or ate it raw or cooked. The PMC planted a small plot in October of 2004 to study the growth of prairie turnip. Seed was planted with a mix of grass to closely mimic the prairie. Plants were very slow to grow the first year. The second year (2006) plants flowered and root growth increased. In 2007, numerous plants set seed and root growth was excellent. A study

to evaluate planting dates began in November of 2007 with prairie turnip seed planted alone as a dormant seeding. Additional plots will be planted in the spring and summer of 2008 for the planting date study. A goal of the study is to develop seeding recommendations. Future plans include evaluation of seeding rates to meet this goal.

Foundation Seed Update

by Wayne Duckwitz, Plant Materials Center Manager

The center had a busy 2007 with foundation seed production. Twenty-one fields were inspected and certified through the North Dakota State Seed Department. It seems that every year our weather patterns seem to favor the seed production of either warm-season species or cool-season species. This year we had above average harvests on most of the fields, both warm and cool-season. Foundation seed production was poor, however, on Red River germplasm prairie cordgrass, Bad River ecotype blue grama, and Bismarck Germplasm purple prairieclover.

On the upside, we had an excellent harvest on the new release of intermediate wheatgrass, 'Manifest'. Over 1,000 pounds of seed were harvested and are being cleaned, tested and allocated for seed increase. We look forward to seeing seed of Manifest, from commercial seed vendors, available for conservation plantings in the spring of 2010. The North Central Research and Extension Center at Minot, North Dakota, continues to be an important partner with the Bismarck PMC in foundation grass seed production. They currently are growing five grass species with the Bismarck PMC. They handle the field production and field management of these five species and the PMC cleans and allocates the seed to commercial seed growers. The demand for grass seed for increase has been a little stagnant in 2008 thus far, probably due to the high demand and prices of commodity grains. The Bismarck PMC Materials Center continues to keep foundation seed production as a high priority and is committed to doing their best at providing foundation seed to commercial seed growers so seed supplies are commercially available for various conservation uses.

Plant Materials Specialist Report

by Dwight Tober, Plant Materials Specialist

Improved rainfall conditions last summer helped field plantings and demonstration plantings become established in most of the region. Eighty-seven field plantings are currently being evaluated in all three States. Sweetgrass and white sage were distributed to numerous tribal cooperators. State plant materials committee meetings were held in each of the three States and action plans prepared. Long-range plans for each State have been updated. Common goals and priorities are found in each plan, which help the PMC coordinate and consolidate efforts. Priority actions identified in the plans include the following: evaluate native species for adaptability, and forage quality and quantity with respect to livestock grazing; evaluate and select additional native species for wildlife cover and habitat, including use as food plots; work with partners to promote cover crops for erosion control and soil health benefits; develop information regarding invasive species; assist others in developing information regarding recommended plant species to benefit pollinator species; target urban conservation uses of plant species for energy and water savings; and promote non-traditional and specialized uses of conservation plants such as alternative income crops, carbon sequestration, and bioenergy. National Park Service projects were off to a good start and the PMC has the opportunity to work with some new species and help develop initial establishment and seed production guidelines. The reimbursable monies help with overall program expenses. Technical assistance was provided to numerous field offices, landowners, and partners. Thanks to all the offices and partners that helped with seed collections and plant evaluations.

Other highlights include the following:

- Prairie landscaping continues to be a topic of high interest to the public. PMC staff conducted more than a dozen presentations to various groups in the last year. Minnesota and South Dakota have completed booklets on native landscaping.
- *Grasses of the Northern Plains, Cool-season Volume 1*, was completed in cooperation with Dr. Kevin Sedivec and North Dakota State University. This 90-page publication provides data summary from PMC plots and new information to the scientific community regarding growth patterns and related forage quality characteristics of 12 species of cool-season grass. This publication is available on the Bismarck PMC Web site. Volume 2 on warm-season grasses is in the works.
- The new brochure *Plant Materials for Salt-Affected Sites* is being requested. Presentations have been made at three workshops.
- A new fact sheet has been developed for providing information on tribal conservation technical assistance provided by the Bismarck Plant Materials Program. Tribal outreach accomplishments in 2007 have also been summarized (see article page 11).
- A brochure promoting native grass releases has been developed and distributed to seed growers and vendors. The new brochure was presented at the National Pheasants Forever meeting in Saint Paul, and the North Dakota Wildlife Society meeting in Grand Forks.
- The PMC provided seed and planted two new conservation field trials in South Dakota (see article page 5).
- Area 1 (Thief River Falls) in Minnesota hosted another successful Plant Materials Tour highlighting prairie restoration, Canada thistle control, planting blue grama between tree rows, and prairie landscaping.
- Foundation seed sales are down primarily due to changes in various conservation programs and improved commodity prices. The value of commercial production by seed growers, however, is up and estimated at over 12.5 million dollars in 2007 for Bismarck PMC releases.



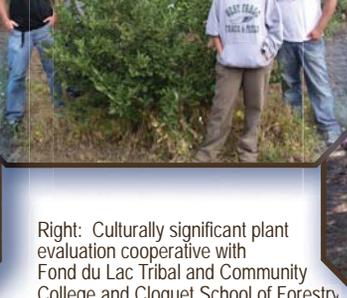
Left: Discussing prairie restoration at the Minnesota Area 1 Plant Materials Tour



Left: STEP employees touring PMC plots. Featured plant is 'McKenzie' black chokeberry to be released in 2008



Right: Workshop and seed collection at Badlands National Park

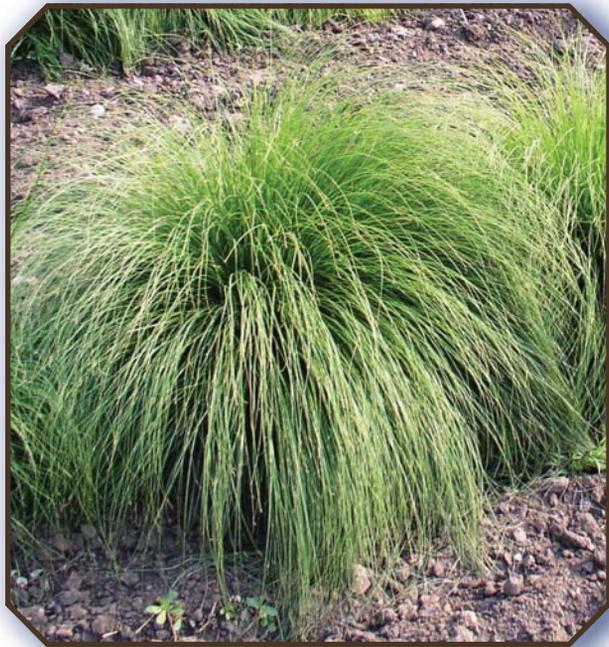


Right: Culturally significant plant evaluation cooperative with Fond du Lac Tribal and Community College and Cloquet School of Forestry



Prairie Dropseed

by Nancy Jensen, Agronomist



Prairie dropseed

Do you remember the mopy-haired character “Cousin Itt” from the TV sitcom “The Addams Family”? Prairie dropseed (*Sporobolus heterolepis*) reminds me of a shorthaired version of the creature. The leaves of this native, perennial, warm-season grass are narrow, long, and radiate from the center of the plant to the ground, forming a dense clump. The seed heads are also unique with their buttery popcorn scented flowers, delicate open branching, and shiny BB shaped seeds. Similar to “Itt”, it is not always the most noticeable species. Its palatability to livestock and its dislike of crowding removes or keeps it hidden on the lighter soils of the mixed grass community that it calls home.

Currently, three populations are under evaluation at the PMC. Seeds from several plants at single sites in North Dakota (Burleigh County), Minnesota (Mahnomon County), and South Dakota (Day County) were collected, grown in the greenhouse, and planted to an evaluation block. The North Dakota population was planted in 2000, Minnesota in 2002, and South Dakota in 2006. The variability in plant size and seed production continue to be measured. Studies were begun

in 2007 to evaluate the effects of seed size, age, and storage conditions on germination. Results of the study should give insight into planting date, storage requirements, and seed cleaning. Forage quality of the three populations will be measured in 2008. The final goal is to make one or more releases of prairie dropseed for prairie plantings and/or landscaping in the Northern Great Plains.



Prairie sandreed

Prairie Sandreed

by Nancy Jensen, Agronomist

Prairie sandreed (*Calamovilfa longifolia*) is a tall, warm-season grass that grows and spreads via underground rhizomes. The rhizomatous growth makes it a great species for soil stabilization, particularly on sandy soils. The Bismarck Plant Materials Center (PMC) is currently in search of a prairie sandreed that produces viable seed, has abundant forage, good rhizomatous growth, and is not plagued with leaf and stem diseases when planted in the eastern portions of the Dakota's and into Minnesota. An assembly of 291 prairie sandreed plants, growing at the PMC, has been evaluated for size, leafiness, and disease since 2004, along with ND-95 and the release 'Goshen' as checks. Plants originated from seed harvested from various counties in the three States. Disease was not prevalent in 2006 due to dry weather conditions, but many of the plants were blackened and lodged, due to disease in the wetter and more humid summer of 2007. Plants that showed good growth and little or no disease during the four years of evaluation will be moved to a crossing block in 2009, with hopes of making a select class release from the population in 2010.

2007 PMC Training

by Wayne Duckwitz, Plant Materials Center Manager



The group discusses native plants at Horizon Middle School

seedbed preparation, tree pests, and agroforestry products. The day ended with a tour of Lincoln-Oakes Nursery, followed by a treat of locally produced juneberry and chokecherry ice cream. We hope these training sessions provide a broad overview on the plant materials program and give a hands-on look at various plant related topics. We plan to hold the 2008 training in August 12-14. If you are interested in attending the training let your supervisor know.

The annual Plant Materials Training was held on August 21-23, 2007. Twenty-four NRCS and SCD staff from Minnesota, North Dakota, and South Dakota participated in the three-day training session. The first day's agenda was spent on a Plant Materials Program overview, and how trainees can benefit from the program. Current studies and plant releases were discussed, and a tour of the PMC buildings, grounds, and production fields was given. Discussion on field office involvement in the Plant Materials Program, and a seed cleaning demonstration rounded out the first day.

The second day was spent in the field with hands-on training on grass, forb, tree, and shrub identification. A presentation on prairie landscaping and urban wildlife ended the day.

The last day's agenda had discussions on seed quality, plant selection, grass drill demonstration,

Skunkbush Sumac for the Dakotas

by Mike Knudson, Forester



Native skunkbush sumac in the Cave Hills of South Dakota

Skunkbush sumac is a deciduous native shrub that occurs mostly west of the Missouri River. The woody plant grows on dry hillsides, preferring well-drained soils. Sumacs are dioecious, so the fruit is found on the female plants. In the 1950s, a sumac collection was made in central Wyoming. This seed source was released as 'Bighorn' skunkbush sumac. It is not widely used in windbreak plantings in our region. It does have some disease problems when moved to areas of greater precipitation. The Bismarck Plant Materials Center (PMC) and various Field Office personnel have made collections of seed from the central and western Dakotas. Most collections from North Dakota came from Dunn, Oliver, Morton, and Slope Counties. The South Dakota collections are mainly from Corson, Sully, and Lyman Counties. Once the seed is cleaned, it needs to be treated with sulfuric acid before it can be stratified to get it to germinate. The PMC will begin growing seedlings from these sources in the spring of 2008.

Trying New Trees

by Mike Knudson, Forester



Dickinson, North Dakota Off Center Evaluation Planting (OCEP)

The Bismarck PMC has been planting a wide variety of trees and shrubs in Minnesota, North Dakota, and South Dakota since 1954. The evaluation of new species and seed sources is an ongoing process. Over the years, changing farm programs have had a big effect on the numbers of trees planted. The development of profitable crop residue management systems has resulted in fewer field windbreaks being planted.

Fifty years ago the selection of trees and shrubs available for planting included fewer choices than we have today. Though most landowners are planting fewer trees, they are still interested in healthy trees to plant around their building sites. There are people who are always looking for something new. Usually a healthier planting will develop with increased diversity. If an insect or

disease problem should occur, the damage caused will be less noticeable with increased diversity. If you have the same species planted in numerous rows, you are more likely to have a serious problem.

It has been the task of the PMC to identify additional trees and shrubs that will protect and benefit landowners. The PMC staff has been evaluating trees on a wide range of sites in the three-state area. Trees and shrubs have been planted at many of the Experiment Stations in the three States. Some of the plantings remained in place for many years, while others were phased out after a short time. Currently plants are being evaluated at the following locations:

- **Bottineau, ND**
81 accessions of 62 species - Maintained by the Bottineau Park Board and Turtle Mountain SCD personnel
Highly rated plants: American hazel, black chokeberry, ND-170 European cotoneaster
- **Dickinson, ND**
93 accessions of 65 species - Maintained by the Dickinson Research Extension Center staff
Highly rated plants: Siberian larch, aspen, nannyberry
- **Grand Rapids, MN**
91 accessions of 65 species - Maintained by the North Central Research and Outreach Center staff
Highly rated plants: Mongolian Scots pine, 'Indigo' silky dogwood, 'Hawkeye' red tatarian honeysuckle
- **Morris, MN**
129 accessions of 90 species - Maintained by the West Central Research and Outreach Center staff
Highly rated plants: American currant, 'Meadowlark' forsythia, European cranberry bush
- **Becker, MN**
105 accessions of 86 species - Maintained by the Sand Plain Experimental Research Farm and the Anoka Sand Plain Association of Soil Conservation Districts
Highly rated plants: black chokeberry, Hunter germplasm ponderosa pine, and red pine
- **Brookings, SD**
27 accessions of 26 species - Maintained by the Eastern South Dakota Soil and Water Research Farm staff
Highly rated plants: black chokeberry, arrow-wood viburnum, Hunter germplasm ponderosa pine, and common juniper

American Indian Partnerships

by Dwight Tober, Plant Materials Specialist

The Bismarck Plant Materials Center (PMC) is active in providing seed, plants, and technical information assistance to Tribes and Tribal land users. The majority of plant species provided are culturally significant. The PMC also provides seed and plants of other species for conservation purposes, including lakeshore stabilization, erosion control, and invasive species competition. Plant and seed requests are reviewed and approved by Minnesota, North Dakota, and South Dakota Plant Materials Committees. Most of the special plantings are community projects to demonstrate “how-to” on-site preparation, planting, maintenance, and harvest. Generally, special plantings are limited to 10 plants of each species. Cooperators are encouraged to prepare a clean-tilled, garden-like site, and to water and weed the plantings until they become established. Sweetgrass and white sage are rhizomatous and multiply rapidly on well-maintained sites. Since 2002, approximately 3,300 sweetgrass plants were distributed, primarily to individual Tribal cooperators and communities.



Above: Culturally significant native plants established on the Standing Rock Reservation



Above: Children from “Horses on the Prairie”, a UTTC summer learning program, collecting native plants for demonstration at the college



sage for community propagation beds at White Earth Reservation

Plant Materials Provided in 2007

630 SWEETGRASS PLANTS FOR 25 PLANTINGS
 180 WHITE SAGE PLANTS FOR 15 PLANTINGS
 369 VARIOUS OTHER PLANTS FOR 12 PLANTINGS



prepared site at Prairie Island Reservation

Technical assistance, plant materials distribution, and evaluations are ongoing with Tribal partners. Activities in recent years include:

- United Tribes Technical College (UTTC): provided plants, medicine wheel assistance, class presentations, demonstration plantings
- Sisseton-Wahpeton Tribal College: provided plants, prairie restoration assistance
- Rosebud Reservation and Sinte Gleska University: provided plants, workshops, medicine wheel assistance
- Standing Rock Reservation and Sitting Bull Tribal College: provided plants, PMC tour
- Fort Berthold Reservation: native landscaping presentation, native landscaping demonstration planting
- Mille Lacs Reservation: provided plants, plant identification assistance, lakeshore stabilization assistance
- White Earth Reservation: provided plants, field plantings, provided technical information on native seed harvest, plant identification and inventory, lakeshore stabilization assistance
- Fond du Lac Tribal and Community College and Fond du Lac Reservation: provided plants, medicine wheel assistance, plant presentation, outdoor classroom assistance
- Red Lake Reservation: tour and technical assistance

Benjamin Allen at the PMC

by Leslie Glass, Secretary

Benjamin Allen, a sophomore at Alcorn State University (ASU) in Mississippi, reported for duty at the Bismarck PMC on May 27, 2007. Benjamin was raised on a farm in Silver City, Mississippi. Benjamin was hired by NRCS as a Soil Conservationist, under the Student Temporary Experience Program (STEP), which is a federal program that employs students in any occupation, on a temporary basis. This developmental position is designed to provide a variety of training experience in the application of soil and water conservation practices. This knowledge and experience is gained through direct involvement, working closely with individuals in a variety of professions in natural resources conservation. While in North Dakota, Benjamin assisted the PMC staff with various plant studies, seed production, weeding, and harvesting. He assisted many NRCS staff and Soil and Water Conservation District staff members on various projects. Benjamin received exposure to agronomy, forestry, rangeland, soil science management, field office operations, and many other areas of natural resources conservation. He received training in plant identification, soil identification, and soil survey. He had opportunity to travel and be directly involved in National Park projects such as native prairie seed collections at the Theodore Roosevelt National Park in North Dakota and the Badlands National Park in South Dakota. Benjamin is pursuing a degree in Agriculture Economics and would like to learn more about soil survey. Benjamin is returning to North Dakota to work for the NRCS Fargo Field Office as a Student Trainee Soil Conservationist, under the Student Career Experience Program (SCEP).



Benjamin Allen taking perennial food plot field notes

PMC Staff Participate in 2008 North Dakota Envirothon

by Leslie Glass, Secretary



Leslie's Team #15 at station 3 of the Lewis & Clark Soils Trail Test

Two Bismarck PMC employees, Nancy Jensen, Agronomist and Leslie Glass, Secretary, recently had the opportunity to participate in the 2008 North Dakota Envirothon which was held at Crystal Springs Camp on May 8-10, 2008. The Envirothon is a problem-solving, natural resource competition for high school students. Students receive real life, hands-on training in the areas of forestry, soil, water, wildlife, and are given a current environmental issue. Natural resource professionals, dedicated citizens, and teachers offer their time to work with these students to develop the critical thinking skills necessary to

make wise decisions in the future concerning natural resource and environmental issues. Nancy and Leslie were trail guides during this competition and were each assigned to a team of five students. Trail guides remain with their team throughout the three-day competition and are responsible for getting the team to their designated testing stations on time. There were four trail tests: Wildlife, Forestry, Aquatics, and Soils. Each trail included eight testing stations. Twenty-four North Dakota NRCS employees volunteered for this event as guides, monitors, timers, and judges. The winning team qualified to participate in the Canon Envirothon, the world's largest environmental competition to be held at the Northern Arizona University in Flagstaff, Arizona, on July 28 - August 3, 2008.



Helping People Help the Land

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