

# 2008-2009 Progress Report of Activities

## Bismarck Plant Materials Center

June 2009

### Who We Are

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.

### PMC Staff

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- Wayne Duckwitz, PMC Manager
- Mike Knudson, Forester
- Nancy Jensen, Agronomist
- Leslie Glass, Secretary/Webmaster
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### Our Conservation Priorities

Current work at the PMC focuses on ten major 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

### 'McKenzie' Black Chokeberry

Dwight Tober, Plant Materials Specialist

This North American native shrub species, also known as Aroniaberry (*Aronia melanocarpa*), is suitable for many agroforestry and conservation uses, including wildlife plantings, farmstead and field windbreaks, single-row wind barrier plantings, fruit production, and ornamental and recreational plantings. The glossy leaves, showy flowers, abundant fruit, and red fall color add to its visual appeal and desirability in the landscape. The health food industry promotes the nutritional value of the dark purple fruit packed with vitamins and disease-fighting antioxidants.



**Black chokeberry flowers**

(*McKenzie* Black Chokeberry continued from page 1.)



**Black chokeberry fruit**



**Leaves turn red in the fall**

'McKenzie' establishes readily, and is adapted to a diverse array of sites. It was cooperatively released as a cultivar with the NRCS Plant Materials Program; the ARS North Central Regional Plant Introduction Station at Ames, Iowa; the Central Lakes Agricultural Center at Staples, Minnesota; and the Agricultural Experiment Stations in Minnesota, North Dakota, and South Dakota. To learn more about this fruitful, healthful, and colorful new conservation plant release download the [McKenzie black chokeberry release brochure](#) (PDF; 264 KB) from the [Bismarck PMC Web site](#).

## Lodgepole Pine Project

Mike Knudson, Forester

Additional tall tree species for conservation use in the western Dakotas are a high priority. Lodgepole pine (*Pinus contorta*) has potential. This two-needled pine naturally occurs in the mountains of western North America, from southeastern Alaska to the Black Hills of South Dakota. It is known for its tall slender trunk and narrow crown. Native Americans used trees harvested from dense stands as poles for their lodges.

In the spring of 2008, seedlings of lodgepole pine were obtained from the North Dakota Forest Service Nursery at Towner, North Dakota. The seed sources were from British Columbia, Colorado, Montana, and Saskatchewan. The seedlings were planted in North Dakota at Hettinger, Carson, Dickinson, and at Hot Springs, South Dakota. Generally, growing conditions in 2008 were good. At the end of the growing season, tree survival averaged approximately 80 percent. The Colorado seed source had the best seedling survival.

It will be interesting to follow the progress of these lodgepole pine plantings. The PMC has done very few evaluations with this species. Only one source has been previously tested in the PMC's Off-Center Evaluation Planting sites. In 1988, a seed source from Edmonton, Alberta, was planted. However, 1988 was the start of a series of dry years, so the trees only survived at Highmore, South Dakota. Bismarck received slightly over 10 inches of precipitation that year. After fifteen years, the five surviving trees at Highmore averaged 16 feet tall.

## National Parks

Nancy Jensen, Agronomist

The National Park Service has a need to preserve the native resources and restore the parkland of various parks and monuments. Quantities of native seed are needed to restore areas disturbed by construction activities. The National Park Service has requested assistance from Plant Materials Centers (PMC) geographically close to parks with seed needs. The PMC is reimbursed for seed production and technical assistance of specific species and seed amounts.

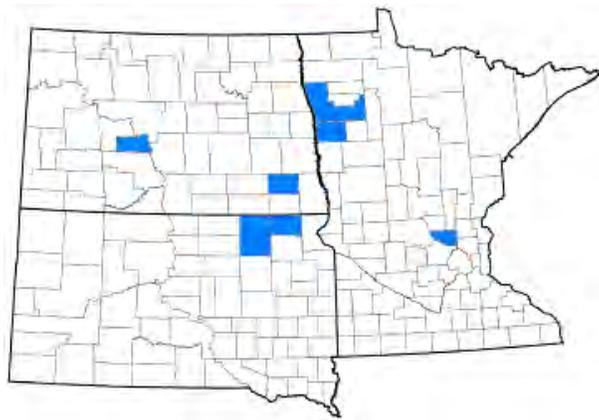
The Bismarck PMC currently has agreements with four National Parks; Little Bighorn Battlefield National Monument, Montana (4 species); Wind Cave National Park, South Dakota (12 species); Badlands National Park, South Dakota (6 species); and Theodore Roosevelt National Park, North Dakota (5 species). Most of the species are grasses. While some species are familiar at the Bismarck PMC, others are a new adventure and learning experience.

# Prairie Sandreed

Nancy Jensen, Agronomist

Prairie sandreed (*Calamovilfa longifolia*) is a tall, warm-season grass with strong creeping rhizomes and coarse, tough-textured leaves and stems. It is native from portions of Canada, south to Kansas and Colorado, east to Illinois and Iowa, and west to Idaho. Releases of the species are currently available but become severely hindered by leaf and stem rust in eastern North Dakota and South Dakota, and western Minnesota.

The process of developing a release for these locations began in 2003. A total of 38 seed collections were made by PMC and field office personnel; Minnesota (15), North Dakota (5), and South Dakota (18). The seeds were propagated in the greenhouse and planted to a replicated evaluation block. The plants were evaluated from 2005-2008 for various characteristics including spread, leaf width, leafiness, disease, vigor, lodging and seed culm production. The data was analyzed in January of 2008 and superior plants were selected from the shaded counties in the map below. Leaf material of the selected plants was clipped in late July and forage was analyzed for various parameters including crude protein, fiber, and various minerals. Field evaluation of flowering time, and disease in 2008 reduced the number of selected plants in the breeder population to nine plants from seven locations. The plants will be propagated in the greenhouse from root or rhizome material dug from the evaluation plot. These plants will be planted to a crossing block for seed production in 2009.



Prairie sandreed field at the PMC

# Red River Germplasm Prairie Cordgrass Rhizomes

Wayne Duckwitz, Plant Materials Center Manager

Red River germplasm prairie cordgrass was released by the Bismarck PMC in 1998. It is a vigorous, widely adapted species with the potential for rapidly revegetating disturbed areas. It has great potential for use as a soil stabilizing plant and provides a tremendous amount of root mass to help hold soil in place. We have been very successful establishing prairie cordgrass rhizomes in many different demonstration plantings across the three States.

Rhizomes are ideal for plantings around dams, dikes, wetlands, lakes, and stream banks. They revegetate and protect these resources. When used in a riparian planting, cordgrass rhizomes greatly enhance the site by providing immediate growth of strong vigorous plants that may produce seed the first year. The plants usually spread rapidly and form a dense colony by the end of the second growing season. The rhizomes are easy to hand-plant with a planting bar or shovel. Obtaining good quality rhizome cuttings are important. Larger rhizome pieces with old stalk material will make planting easier and greatly increase the planting success.



Red River germplasm prairie cordgrass rhizome

*“Rhizomes are ideal  
for plantings around dams,  
dikes, wetlands, lakes, and stream banks.  
They revegetate and protect these resources.”*

If you have never planted bare root rhizomes of Red River germplasm prairie cordgrass, give them a try. It doesn't take many to provide an adequate population. Prairie cordgrass' quick spreading ability will get your revegetation efforts off to a good start. Bare root material is available at various conservation nurseries.

The publication, [Prairie Cordgrass Plant Guide](#), (PDF; 385 KB) is also very informative.

# Switchgrass for Biomass

Dwight Tober, Plant Materials Specialist

Switchgrass still appears to be one of the leading candidates in the Northern Plains and Midwest when talking grass species for cellulosic ethanol production. Commercial facilities are not yet available in the United States to make cellulosic ethanol. Studies by researchers at the University of Nebraska, Lincoln (Williams and Perrin, 2008) show average switchgrass yields at 2.23 tons/acre and average production costs at \$60/ton.

Various studies have indicated that each ton would have produced about 90 gallons of ethanol. Total costs including transportation, land, and other input costs are estimated to be about \$1.00 per gallon at current prices. By comparison, the authors indicated corn as an ethanol feedstock. At that time, it cost about \$1.25 per gallon, with corn priced at \$5 per bushel.

Switchgrass is a marginal crop on drier sites in the western Dakotas. Generally, 14 inches of average annual precipitation is used as a rule of thumb for sustained switchgrass forage production. Yields on recommended sites can vary dramatically depending on seasonal precipitation and soil fertility.

Biomass studies of switchgrass have been summarized in the PMC publication [Switchgrass Biomass Trials in North Dakota, South Dakota, and Minnesota](#) (PDF; 852 KB). Annual forage production yields with no fertilizer applied averaged 4 to 5 tons per acre on some sites. Plant performance for different varieties of switchgrass can vary greatly and is a factor of seed origin.

Northern origin plants are generally shorter and earlier maturing compared to southern origin plants, which are taller and later maturing. Northern seed sources moved more than 200 miles southward from their origin generally performed poorly, and biomass was significantly less than more southern origin sources.

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Williams, Brian, and Richard Perrin. 2008. UNL Study Reports on the Cost of Growing Switchgrass as Ethanol Feedstock, In: Center for Grasslands Studies Newsletter, University of Nebraska, Lincoln, p. 3.

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Switchgrass varies by origin, left is from North Dakota and right is from Kansas/Nebraska

*“Switchgrass still appears to be one of the leading candidates in the Northern Plains and Midwest when talking grass species for cellulosic ethanol production.”*

# Plant Materials References in eFOTG

Wayne Duckwitz, Plant Materials Center Manager

Did you know that there are currently over 70 Plant Material related documents available from the Bismarck PMC? We have been working to make these references a little easier to find.

If you go to the electronic Field Office Technical Guide (eFOTG) <http://www.nrcs.usda.gov/technical/efotg/> for your State and choose Reference Subjects - Plant Materials, you will find a hyperlink that will open a single PDF document titled *Plant Materials Technical References* (PDF; 36 KB). All technical reference publications published by the Bismarck Plant Materials Center and partners can be accessed via hyperlinks from this document.

The next time you are in the eFOTG take a look at Section I - Reference Subjects - Plant Materials. There may be valuable information to assist you in your conservation activities. The plan is to post all documents in a printer-friendly format, i.e., printable in color on standard size paper 8 ½ x 11 inches. This will make them a convenient reference handout at some of your meetings and workshops. We also plan to work with State Offices to identify which of these technical documents should be hyperlinked in conservation practice standards and related documents.

## Trees for the Prairie

Mike Knudson, Forester

The Northern Plains supported only a small percentage of the woody plants when it was first settled. Most of the people who currently live in this region appreciate the value of trees and shrubs. Tree improvement has always been a goal of the PMC. The PMC staff has had the lead role for the agency in finding a wider selection of trees and shrubs to grow in the Northern Plains. Since the early 1970s, the PMC staff has been planting selected trees and shrubs in a large number of Off-Center Evaluation Plantings in the three-State area. The table below lists these locations. The number of accessions planted at these sites has varied from about 10 to more than 400. Some of the plants only survived a short time, while many others are still thriving. If you live near one of these plantings, stop and have a look.

Off-Center Evaluation Plantings		
West Central Experiment Station, Morris, MN	1978	ongoing
Northwest Experiment Station, Crookston, MN	1980	removed 2008
Fugle's Mill Demonstration Site, Rochester, MN	1986	arboretum
North Central Experiment Station, Grand Rapids, MN	1989	ongoing
Sand Plain Experimental Research Farm, Becker, MN	1998	ongoing
Central Lakes College, Staples, MN	2000	Terminated
McKenzie Slough Game Management Area, ND	1972	Game Management Area
Sweet Briar Recreation Area, Mandan, ND	1972	arboretum
Herman Farm, Brinsmade, ND	1973	shelterbelt
NDFS-Bottineau Park Board, ND	1974	ongoing
Williston Experiment Station, ND	1979	shelterbelt
Dickinson Experiment Station, ND	1978	ongoing
Apple Valley, Waterfowl Management Area, Moffit, ND	1998	removed 2008
Lake Andes National Wildlife Refuge, SD	1978	wildlife
Central Research Station, Highmore, SD	1978	partially removed 2008
Buffalo Gap National Grassland, Cottonwood, SD	1979	terminated
Soil & Water Research Farm, Brookings, SD	2000	ongoing

## Virginia Wildrye

Nancy Jensen, Agronomist

Virginia wildrye (*Elymus virginicus*) is a native, cool-season, perennial bunchgrass. It is found typically in bottomlands, low prairies, stream banks, edges of woods, and woody draws. It grows 2-3 feet tall and has straight, stiff heads and awns. Canada wildrye, a similar species, has curved, drooping heads and awns. Development of a Virginia wildrye release adapted to the Northern Great Plains for wildlife, pasture, hay, and range seedings, riparian planting and conservation cover has begun at the PMC. Thirty-two seed collections were in 2007 from the shaded counties in the map below. Additional collections from sites not previously sampled are needed in 2009. The PMC is again requesting your assistance. One or two collections from each county are adequate. Seed collections from 2008 and 2009 will each be assigned an identification number (accession) and placed in cold, dry storage until 2010. Seed will be planted in the greenhouse in 2010 and the seedlings will then be planted to a field evaluation block at the PMC. Thanks to all who have or will be contributing seed collections. Envelopes for future seed collections can be acquired from the PMC.



## Training at the PMC

Mark Kulig, Area Program Specialist, St. Peter, Minnesota

First, I would like to thank you for the opportunity to attend the Plant Materials Center Training and Tour in August 2008. As a past DC, I had worked with numerous plantings (both tree and grass), but had never had the opportunity to tour the PMC. It is a fantastic facility with extremely knowledgeable and dedicated staff. My understanding is that past training consisted of only two days, but now it has been expanded to three. I feel that this is an appropriate time frame for the amount of items covered. Having this extra day also allowed the instructors to follow up during days two and three to help reinforce some of the plant ID portions. Some of the major topics covered included: plant operations, current studies, plant ID (grass/tree), request process for plants/seeds, new release process, seed cleaning, site management and a grass drill/seedbed demo. It was a perfect mix of both classroom and field training. I especially found the plant ID and seeding demo informative, since pictures/text do not capture all that is necessary relative to plant characteristics and drill components. From this session, I have gained a great insight into how the new plant release process works from seed trials, to harvest, to release. I plan to utilize this information in my current position as Area Program Specialist to promote this program throughout Area 6.

## Assemblies Being Evaluated at the PMC

Nancy Jensen, Agronomist

SPECIES	COLLECTIONS		SELECTION CRITERIA	PROJECTED RELEASE YR.	USE
	YEAR	NO.			
<b>Prairie sandreed</b> ( <i>Calamovilfa longifolia</i> )	2003	38	disease resistance, rhizome spread, leafiness, seed production, flowering date, forage quality	2010	sandy soils
<b>Sand bluestem</b> ( <i>Andropogon hallii</i> )	2003-2004	21	leafiness, seed production, flowering date	2011	sandy soils, rangeland, landscape
<b>Indiangrass</b> ( <i>Sorghastrum nutans</i> )	2005	41	leafiness, texture, flowering date, color, plant form, forage quality, seed production	2012	forage, landscaping
<b>Prairie dropseed</b> ( <i>Sporobolus heterolepis</i> )	1998-2005	3	seed production, plant form, forage quality, seed germination and seedling vigor	2012	prairie restoration, wildlife, landscaping
<b>Prairie junegrass</b> ( <i>Koeleria macrantha</i> )	2006-2007	97	seed production, forage quantity and quality, flowering date	2013	early forage, prairie restoration
<b>Prairie turnip</b> ( <i>Pediomelum esculentum</i> )	2002-2006	48	no selection, planting date, establishment techniques	None	cultural garden, prairie restoration
<b>Virginia wildrye</b> ( <i>Elymus virginicus</i> )	2008-2009	32 (2008)	forage production, flowering date, disease resistance, longevity, plant form and size	2014	wildlife, tree rows, shady sites
<b>Skunkbush sumac</b> ( <i>Rhus trilobata</i> )	2006-2007	24	growth rate, fruit production, disease, form	2017	wildlife, riparian plantings

## Warm-season Grass Publication

Dwight Tober, Plant Materials Specialist

Which species of warm-season grass has the highest crude protein in late August? What variety of big bluestem has the best digestibility? Does prairie sandreed provide good wildlife cover? What about digestibility for little bluestem? All these questions, and more, can be answered when *Grasses for the Northern Plains, Growth Patterns, Forage Characteristics, and Wildlife Values, Volume II – Warm Season* is completed in the summer of 2009. Information was collected from PMC plots at two study sites in North Dakota, three in South Dakota, and two in Minnesota. Numerous agencies, organizations, landowners, and volunteers assisted with the project. This warm-season guide compares information collected over a 12-year period for 36 varieties of 8 grass species. Distribution will be similar to the cool-season publication with all NRCS field offices, and interested Extension Offices in the three-state area receiving a supply. Publication and printing is being done by North Dakota State University, and it will be available electronically. Keep this new guide in mind for upcoming field days and range tours in 2009!

## Benefits of Seed Collecting

Mike Knudson, Forester



Seed collecting is a win-win situation for both Field Office and PMC personnel. The collection of seed or vegetative material is the beginning of plant selection and improvement of potential species for revegetation of disturbed areas. The seed or vegetative material collected provides the PMC staff with sources to test and increase. Superior plant material from the collections is released and made available to the public for solutions to conservation problems.

Often, inadequate information is available about the distribution and phenology of native plants. Phenology is a branch of science that maintains a record of dates and sequence of occurrence of different growth stages of plants. The timing of seed collection is crucial to ensure that the seeds collected are viable and have good germination vigor. During the collection process, the local populations need to be located and growth needs to be monitored to successfully collect seeds or vegetative material at the optimum stage of development. This is a great opportunity for local collectors to become familiar with their own plant communities. The collector learns which soils and sites support the desired species. It often becomes apparent which plants are found in association with the desired plant. Finally, seed collecting can be fun! It can be something you do while you are hiking, fishing, or otherwise enjoying the outdoors. It is a great time to be outside.

## Prairie Harvest, A Hardier Hackberry

Dwight Tober, Plant Materials Specialist

‘Oahe’ hackberry, originating from central South Dakota, performs well in South Dakota and the southern portion of Minnesota. However, winter dieback is often noted when Oahe is planted north of this region. A northern source hackberry (ND-3878) was selected from a large replicated evaluation planting at the ARS Northern Great Plains Research Laboratory at Mandan, North Dakota. It averaged 26 feet tall at seventeen years of age, compared to Oahe at 19 feet. The original seed for this accession was collected by James Ayen from a natural stand of hackberry growing in a wooded area of the Red Lake River near Fisher in northwestern Minnesota. The landowner is Roger Wagner who operates a nursery and landscaping business on the site. Minnesota NRCS Area 1 staff helped collect seed in October 2008 from the original site. Cleaned seed was sent to nurseries in Minnesota and North Dakota for seedling production. Documentation will be prepared this winter and official release is scheduled for summer 2009. It will be released as a Selected Class Germplasm. Anticipated release cooperators will include NRCS, ARS, and the Agricultural Experiment Stations in Minnesota and North Dakota. It is anticipated that bare root seedlings will be available from conservation nurseries by 2011.



**Breeder seed trees of the new northern source hackberry**

## Prairie Junegrass

Nancy Jensen, Agronomist



Prairie junegrass (*Koeleria macrantha*) is a very early cool-season bunchgrass that is one of the most widely distributed of American grasses. It is also found in Eurasia and South America. It grows on prairies, meadows, and open woods. The culms range from 6-20 inches tall. It can be good forage for livestock and wildlife early in the growing season.

No named variety of prairie junegrass is currently available for conservation planting in the Northern Great Plains. The PMC began development of a release in 2006. Ninety-seven seed collections (accessions) from North Dakota, Minnesota, and South Dakota were made by PMC and field office personnel in 2006 and 2007.

The collections were seeded in the greenhouse in February 2008. Seedlings produced were planted to a field plot at the PMC on May 21, 2008. Ninety-four of the 97 collections produced seedlings in the greenhouse and were included in the field plot. Each collection is represented nine times in the planting. Various characteristics for each plant will be evaluated for the next three to five years. These include forage and seed production, flowering date, disease, size, vigor, forage quality, and overall health. Selection of superior plants is based on the results of the field evaluations. The superior plants will then be vegetatively divided and planted to a crossing block for seed increase. A release available to the public in the next five to seven years is the final goal.

## Foundation Seed Update at the PMC

Wayne Duckwitz, Plant Materials Center Manager

Foundation seed production continues to be an important workload at the PMC. Twenty foundation seed production fields were harvested in 2008. Harvests were good for most species. All the 2008 seed has been cleaned and tested. We continue to work with commercial seed growers interested in obtaining seed. A new 'Mandan' Canada wildrye field was planted last year, and we are hoping for the first harvest in 2009. Four new foundation fields are planned for 2009: 'Pierre' sideoats grama, Bismarck germplasm stiff sunflower, Bismarck germplasm narrow-leaved purple coneflower, and Bismarck germplasm purple prairieclover.

The increasing growth of the City of Bismarck is making it difficult to complete our prescribed burns on the warm-season grass seed production fields. A stalk shredder was purchased to help manage field residue. All fields were shredded last fall. Fire was a valuable management tool used for our warm-season grass seed production and we will see if there are any future negative impacts to seed production. The North Central Research Extension Center located at Minot, North Dakota, continues to be a vital partner in assisting the PMC in growing foundation grass seed. They currently have foundation fields of five varieties: Pierre sideoats grama, 'Nordan' crested wheatgrass, 'Dacotah' switchgrass, 'Lodorm' green needlegrass, and Itasca germplasm little bluestem. This partnership is important as it provides the needed isolation requirements and additional acreage to rotate more than 22 grass and forb foundation seed production fields.

'Manifest' intermediate wheatgrass, our most recent forage grass cooperatively released with the ARS Northern Great Plains Research Station at Mandan, North Dakota, currently has no commercial seed growers. Unfortunately, this means seed will not be commercially available for conservation plantings until a grower is found. We have 900 PLS pounds of foundation seed available of Manifest. We will continue to work with growers to promote the forage benefits of Manifest in hopes of generating grower interest in the near future.

Field Offices should find seed of most varieties and species available for conservation plantings in 2009.

## Direct Seeding in North Dakota

Mike Knudson, Forester

Most woody plant seeds from temperate regions mature in the fall, and as a rule, do not germinate under natural conditions until the following spring or later. Seeds planted in the spring will not germinate until the following year. Many woody seeds do best when planted in the late summer or fall. Direct seeding of tree and shrub seed has been suggested as an alternative means of getting woody plants established in both grassland and cropland. Since the early 1990s, this technique has been successful in Iowa and southern Minnesota. Some Natural Resource Districts in eastern Nebraska have had success using a machine planter. These areas generally receive at least 30 inches of precipitation.

Numerous plantings have been made in North Dakota with varying success. In 1999 and 2000, the PMC staff planted five species of shrubs in grassland in Sheridan County, near McClusky. The only successful plot was the fall seeding of silver buffaloberry. In October 2000, a planting was made along the Pembina River near Walhalla, North Dakota. Presently, the most abundant tree surviving is boxelder, which seeded naturally from surrounding mature trees. Weed competition has been an issue. A planting was also made about five years ago in a CRP field in Nelson County. Silver buffaloberry seed that was spot seeded in July germinated and emerged the following spring. Currently, there are excellent patches of buffaloberry established. The most recent trials of direct seeding were made in November 2004 at two sites in western North Dakota. One of the sites in Stark County had very few seedlings. The second site had a few seedlings, but weed competition was extreme.

Direct seeding of woody plants can be successful. Moisture availability, however, is very critical. One can seed into a site with good moisture, but germination may occur many months later when there is no soil moisture or rainfall to sustain the seedlings. The success of direct seeding of trees and shrubs appears to be directly related to total precipitation. The method usually works in areas with at least 30 inches of precipitation. In areas with less precipitation, it may or may not be successful. If the local climate is in a moist phase, seedlings may establish, especially some native shrubs. However, as the prairies go through a dry phase, the grasses are likely to out-compete the woody plants.

## Adapted Seed Sources, What Does That Mean?

Wayne Duckwitz, Plant Materials Center Manager

There are many questions asked, and often a lot of misinformation is circulating regarding the use of adapted species and varieties in conservation plantings. What does adapted and performance tested really mean?

I look at it as a sense of confidence. Someone has taken the time to test the plant material. They have determined if the plant is adapted to specific area and site conditions, the performance is documented and provides information on how well the plant will perform in a given area. If a variety is recommended in the NRCS Field Office Technical Guide, generally testing has been done to prove that it will perform well in your area. Many of you are very knowledgeable about species of grass, forbs, trees, and shrubs that do well in your conservation plantings. These species and varieties are promoted because you have had past success with this material and feel confident in recommending the material. This is very similar to performance testing.

With this in mind, the PMC continues to test, evaluate, and release new material and take the guess-work out of using any new plant material for conservation plantings.

***“If a variety is recommended in the NRCS Field Office Technical Guide, generally testing has been done to prove that it will perform well in your area.”***

## Field Plantings

Dwight Tober, Plant Materials Specialist

Field office assistance is greatly appreciated in the establishment and evaluation of field plantings in the three-State area. We were real close to a 100 percent return on the evaluation forms by the deadline date of October 2008.

Herbaceous plants are evaluated for three years and woody plants for five years. All field plantings are trees and shrubs at this time. Success of the plantings varies for many different reasons. Weed competition and animal damage have generally been the main limiting factors. The low rainfall conditions in many areas in previous years had a major impact on survival of new plantings. Survival and performance ratings were generally up this year. I think in part, it is due to better weed control and improved moisture conditions throughout most of the three-State area.



**New field planting of black cherry in northwest Minnesota is off to a good start**

The information listed below is a general summary of the overall performance of species currently being evaluated. The numbers in parentheses are the number of currently active plantings. A minimum of 25 plants are tested at each site.

**Amur chokecherry** (6) - An introduced tall shrub species. Many more plantings failed and have been terminated. Survival in remaining plantings is generally less than 50 percent. Spring dormancy has been a problem in establishment. Not drought-tolerant. Overall performance was poor.

**Roundleaf hawthorn** (19) - Five accessions from South Dakota were composited to form this source. Generally doing well with good performance and survival over 80 percent. Deer and rabbits are probably the biggest problems. Established well even in dry conditions.

**Chokecherry** (9) - A vigorous, more disease resistant selection from central North Dakota. Selected from a large evaluation nursery. Overall survival and performance has been good. Disease problems not noted. Survival over 80 percent. Selection originally came from Sheridan County, North Dakota.

**Gray dogwood** (4) - Seed source from north central Minnesota. Fair survival and performance. Grows slower than redosier dogwood. Performed best on better moisture sites.

**American black currant** (23) - Seed source from northeast South Dakota. Survival and establishment has been excellent. Good growth and fall color. Field review scheduled for 2009. Possible release in 2010.

**Black cherry** (18) - Minnesota seed source. Excellent survival (90 percent) and growth rates so far. First planted in 2008 so winter injury will be evaluated in spring 2009. Minimal animal damage. Potential alternative for green ash.

**Pin cherry** (17) - North central Minnesota seed source. Survival (70 percent) and performance ratings less than black cherry so far. First planted in 2008, so winter injury will be evaluated in spring 2009. Animal browse reported.

*“Field office assistance is greatly appreciated in the establishment and evaluation of field plantings in the three-State area.”*

# Plant Materials Specialist Report

Dwight Tober, Plant Materials Specialist

Better overall moisture conditions and increased planting success was a positive note in 2008. Black cherry planted in the spring of 2008 is looking good so far in field plantings, but still needs to go through a winter to test winter hardiness. 'McKenzie' black chokeberry was officially released together with the ARS Plant Introduction Station at Ames, Iowa, and numerous other partners. This release has generated more interest than usual because of the health food interests. Aroniaberry, as it is also known, may be the new Echinacea!

The 3-day formal PMC training went well with almost a full classroom. The weather was perfect for most of the outdoor activities. Minnesota NRCS helped sponsor a very well received Invasive Species Conference with more than 400 people in attendance. Minnesota NRCS Area 1 hosted another very successful plant materials tour in August. They also provided many hands and stepladders to help pick seed of the new northern source hackberry on a nice fall day in October. Picking hackberry seed is a slow process and the extra help was appreciated.

The Bison (South Dakota) field office coordinated a range field day, which included a tour of the plant material conservation field trial on the Jim Lyon ranch. The Elk River (Minnesota) field office hosted an area workshop, which included a tour of the tree plots, an exhibition of prairie restoration seeding, and native landscaping. Foundation seed sold in 2008 totaled 1705 PLS pounds, distributed to eight different growers. National Park Service projects were completed on schedule and hundreds of pounds of seed were produced for planting back in the parks where it originated.

The PMC had a summer work force of four seasonal employees who did a super job of keeping fields weeded, irrigation pipe moved, and everything in order. These tasks were a high priority because there were a number of training sessions and tours this year, including visits by NRCS Chief Arlen Lancaster and Secretary of Agriculture Ed Shafer.



**NRCS Chief Arlen Lancaster presents the National Park Service Special Recognition Award to the Bismarck PMC, one of 15 PMCs to receive the award**



**Landowner discusses new tree planting on the MN Area I plant materials tour**



**L to R: Ed Shafer, Secretary of Agriculture, Mike Collins, ASTC, Wayne Duckwitz, PMC Manager, and Dwight Tober, PM Specialist**

We appreciate the seed collections of Virginia wildrye that were received from various field offices. We will be collecting again in 2009, so if you missed out last year you have another chance. Thanks to everyone who helped measure trees and did weed control on the Off-Center Evaluation Plantings. The information obtained from these plots is invaluable when recommending new species or varieties for the NRCS electronic Field Office Technical Guide (eFOTG), or releasing new varieties. PMC staff developed numerous new publications and brochures. *Grasses of the Northern Plains, Volume II: Warm-Season*, expected to be completed this summer, is a major effort with North Dakota State University. The Tri-State Advisory meeting was held at Watertown, South Dakota, with good discussion of various plant materials issues. Better integration of plant materials references into the electronic Field Office Technical Guide was an action item. Staff of Big Sioux Nursery at Watertown led the group on a tour of their excellent facility. Many PMC releases are being produced by the nursery. All three States' plant materials committees were well attended with good discussion and partner participation. The local source seed issue in Minnesota is creating discussion for field offices, seed growers, and the Bismarck PMC. Native seed growers are affected by this mandate. Bioenergy and biofuel projects are popular. We are cooperating with Central Lakes Agricultural Center at Staples, Minnesota, on a bioenergy project involving four Bismarck PMC releases including 'Manifest' intermediate wheatgrass, 'Forestburg' switchgrass, Red River germplasm prairie cordgrass, and Survivor germplasm false indigo. Plots will be established this spring.

## Four-Wing Saltbush

Nancy Jensen, Agronomist



Four-wing saltbush (*Atriplex canescens*) is a native “half-shrub” of the semi-arid regions of the West that is tolerant of alkaline and saline conditions. It is browsed by livestock and wildlife and is nutritious even in the winter due to its evergreen habit. The species has separate male and female plants, with only the females yielding seed.

A population, originating from seed collected in 1999 at the SDSU Cottonwood Range and Livestock Research Center in Jackson County, South Dakota, is currently growing and producing seed at the PMC. Seed set and quality have been good and the plants are vigorous. In 2008, seed was distributed for field evaluation to the western North Dakota field office of Beach in Golden Valley County. The South Dakota collection (9082680) and ‘Natrona’, a release from Wyoming, were planted in two separate 4-5 acre plots as 20 percent of a grass seeding mix. Plants were established in both plots and will continue to be monitored in the next few years.

Seed availability of four-wing saltbush for range seeding is limited. Seed harvest techniques are the greatest challenges in seed production. All seed at the PMC has been collected by hand stripping in the late fall and the residue clipped. One year of growth produces woody, branched stems that appear too large for combine harvesting.

‘Wytana’ is a variety developed at the Montana PMC. It is a cross with *Atriplex canescens* and Gardner’s saltbush *Atriplex gardneri* (Moq.) D. Dietr., much shorter, finer stemmed, and less leafy than *Atriplex canescens*. At the Bismarck PMC, harvesting techniques will continue to be evaluated for the South Dakota collection. If an acceptable harvest technique can be found the population will be considered for release.

## Russ Haas Retires

Dwight Tober, Plant Materials Specialist



The Bismarck Plant Materials Center (PMC) hosted a retirement open house for Russ Haas on April 1, 2009. During his 37-year career with the Plant Materials Program, he spent the last 10 years as Technical Advisor to the National Park Service. Russ spent 24 years working at the Bismarck PMC as both Manager and Plant Materials Specialist. He was instrumental in greatly expanding the program and facilities at the plant center. His accomplishments included the release of 28 conservation plants, more than 900 field plantings, and dozens of regional and national publications during his tenure at Bismarck. Photos from the files of numerous projects in the three-state area brought back memories of working with many field offices and conservation partners over the years.

Jennifer Heglund, Assistant State Conservationist, presented Russ the National Meritorious Service Award for his outstanding service to the plant materials discipline, both regionally while at Bismarck and nationally as the Technical Advisor for the National Park Service. Friends and co-workers who attended the open house shared stories and wished him well in retirement. A plant materials decorated “blueberry” cake was a special treat. Russ plans to spend his extra time now with family and grandkid’s activities, restoring old cars, and continuing some level of plant materials adventures.



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