



2007 Report Off-Center Evaluation Planting of Woody Plant Materials Becker, Minnesota

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INTRODUCTION

The Plant Materials Center (PMC), located at Bismarck, North Dakota, was established in 1954 as part of the U. S. Department of Agriculture's Soil Conservation Service, now the Natural Resources Conservation Service (NRCS). The Bismarck PMC serves the States of Minnesota, North Dakota, and South Dakota. Tree and shrub improvement has always been an integral part of the plant materials program in Minnesota. There is a need to evaluate how different trees and shrubs will perform in diverse soil and climatic conditions. The PMC currently has tree and shrub evaluation sites at eight locations in the three-state area, including three sites in Minnesota.

A long-term agreement, effective through August 9, 2010, has been developed with the University of Minnesota, Becker Research Farm, and the Anoka Sand Plain Association of Soil and Water Conservation Districts (SWCD). The Major Land Resource Area is 91, Wisconsin and Minnesota Sandy Outwash. Soils are a Hubbard-Mosford complex with leached coarse and medium sand outwash. Long-term average rainfall is 30.55 inches. The site is located on the north side of the Becker Research Farm, adjacent to the railroad tracks. A sign and kiosk identify the Anoka Sand Plain Plant Materials Evaluation and Demonstration Project. The first trees and shrubs were planted in 1996. The site was maintained with cultivation until 2003 when a 50/50 mix of Bad River blue grama and Pierre sideoats grama was seeded between the rows of Block I (Shrubs) and Block II (Medium Tall Trees). New entries planted each year are flagged and hand watered. Weed control is accomplished by cultivation between rows, and hand hoeing within rows. The seeded area is mowed. Wire cages are installed on entries with potential for deer and rabbit browsing. Measurements and notes are taken at the end of each growing season.

OBJECTIVES

1. Assemble and evaluate the adaptation and performance of selected woody plant materials for field and farmstead windbreaks, wildlife habitat, and streambank and lakeshore plantings in the Northern Great Plains.
2. Select and cooperatively release superior woody conservation plants for increase by commercial nurseries.

ACTIVITIES IN 2007

Approximately 105 accessions of 85 different species are currently being evaluated. Nine new entries of five plants each were planted on May 8, 2007. Species planted included 'Tiger Eyes' staghorn sumac (*Rhus typhina*), 9092141 nannyberry (*Viburnum lentago*), 'Sun Harvest' American hazelnut (*Corylus americana*), 'Midwest Premium' American plum (*Prunus americana*), 9082895 apricot (*Prunus armeniaca*), 9091969 Russian peashrub (*Caragana frutex*), 9091964 skunkbush sumac (*Rhus trilobata*), 9092140 Korean mountain ash (*Sorbus alnifolia*), and 9082739 ironwood (*Ostrya virginiana*). All plants were bareroot seedlings. The staghorn sumac was noted to be in poor condition at the time of planting. Potted replants were used to replace 1 dead 9091975 serviceberry (*Amelanchier lamarckii*), and 3 dead 9091976 arrowwood (*Viburnum dentatum*). Weed control and plot maintenance has always been very good. The short stature blue grama/sideoats grama cover between the tree rows in Blocks I and II is mowed occasionally during the growing season. The stand continues to become more dense over time, although the drill rows are still readily visible. A small plot of Tatanka buffalograss was seeded in 2000 on the south end of the native grass plots. It also established slowly but is now a good stand and is spreading by stolons. Entries planted for demonstration in 2002 in Block 1A include Red River prairie cordgrass, 9082679 slough sedge, 9063128 sweetgrass, and 9082714 cup plant. All are doing well. The sweetgrass especially has spread by rhizomes and completely filled in the row.



Nine new entries were planted in 2007. The planting site is always well prepared by staff at the Becker Research Farm.

Removal and pruning of natural die-back of some species (primarily shrubs), and cutting and removal of contaminant species and poor performing entries is done on a routine basis. Entries removed in 2005 because of poor performance included skunkbush sumac (I-7), Siberian peach (IA-6), elderberry (IA-6), and speckled alder (II-4). Entries removed in 2006 included sugar

maple (II-9) and white poplar (II-8). Dead or mostly dead entries that were removed in 2007 included two accessions of Japanese birch (9063152 and 9082631), and three accessions of silver buffaloberry (Sakakawea, 9063123, and 9019618).

Information was collected on selected entries on August 15, 2007. Measurements and notes were taken on crown spread and plant height; disease and insect damage; drought and cold tolerance; fruit production; survival; vigor; and animal damage. Growing season precipitation for the year was fairly close to long-term average, except for June which was almost 3 inches short for the month and caused some drought stress. Some of the new entries did not do well. Survival was 60 percent on the American hazelnut, American plum, and apricot. The hazelnut and plum are new releases from the Missouri Plant Materials Center. Survival on the staghorn sumac was only 20 percent, but it was noted that the stock did not look good when planted. Replacements will be made in 2008. Thirty-five accessions/entries were evaluated in 2007.

Data is summarized annually and documented in the Bismarck PMC Technical Report. Anyone who desires a copy of the latest data summary information can contact me at (701) 530-2075, or at Dwight.Tober@nd.usda.gov. The report is about 25 pages in length. The latest report has been printed for 2006.



A mixture of blue grama and sideoats grama was planted between the older shrub rows.

NEW RELEASES

Data collected from this site was used to support the formal release of two new shrubs in 2005 cooperatively with the Minnesota Agricultural Experiment Station. ‘Silver Sands’ sandbar willow and ‘Survivor’ false indigo were planted in 1996. They both had 100 percent survival (with replacements) and good to excellent vigor and overall plant performance ratings. Rabbits did browse the sandbar willow quite extensively the first two years. Both species are subject to natural die-back due to winter or drought conditions. A release brochure was completed in 2006 and is available on the Bismarck PMC homepage (<http://Plant-Materials.nrcs.usda.gov>) for these two new releases, or it can be ordered from the Bismarck PMC. ‘Prairie Red’ hybrid plum was released as a formal cultivar in 2006. It is known for a high percentage of large, sweet fruit and less suckering than the American plum. It was planted at the Becker site in 2006. ‘Prairie Red’ was also cooperatively released with the Minnesota Agricultural Experiment Station. ‘McKenzie’ black chokeberry is being proposed for cultivar release in 2008. It has done well at this site and is being compared with ‘Viking’ and ‘Nero’.

SUMMARY OF ACCOMPLISHMENTS

Selected accessions/cultivars that have performed well at the Becker site and show promise for additional testing and/or promotion for conservation use include the following:

9019586 green ash	‘Oahe’ hackberry
‘Centennial’ cotoneaster	‘Scarlet’ Mongolian cherry
‘McDermant’ Ussurian pear	‘Freedom’ honeysuckle
‘Indigo’ silky dogwood	9082632 Mongolian peashrub
9082891 common ninebark	9082712 bittersweet
‘Silver Sands’ sandbar willow	9082687 American black currant
Schubert chokeberry	‘Survivor’ false indigo
9069162 Dahurian larch	9069129 Amur chokecherry
ND-170 cotoneaster	9082667 gray birch
9069168 Siberian larch	323957 chokeberry
9082619 Siberian larch	‘Midwest’ Manchurian crabapple
9076730 silver maple	9069164 Scots pine
9063148 corktree	9076729 gray dogwood
9076737 black cherry	‘Arnold’s Red’ honeysuckle
9057406 rugosa rose	9069172 Scots pine
9019605 sand cherry	9082711 winterberry euonymus
9057406 rugosa rose	9069163 Dahurian larch
9082888 American hazelnut	9069162 Dahurian larch

Data from this planting has been used to document the cooperative release of the cultivars listed below. These cultivars are generally available from local conservation nurseries and are used in conservation plantings throughout the Northern Great Plains and Upper Midwest. Several more releases are anticipated in the near future. Information gathered concerning plant performance assists cooperating nurseryman and plant researchers in determining the range of adaptation of many other accessions/cultivars also included in the test planting.

Formal Releases with Supporting Documentation from the Becker Site

'Legacy' late lilac	1999
'Silver Sands' sandbar willow	2005
'Survivor' false indigo	2005
'Prairie Red' hybrid plum	2006

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