



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

*Dwight Tober, Plant Materials Specialist
Rachel Bergsagel, Biological Technician
USDA-Natural Resources Conservation Service, Bismarck, North Dakota*

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 seven locations in the three-state area, including three sites in Minnesota.

A long-term agreement, effective through July 28, 2008, has been developed with the University of Minnesota, West Central Research and Outreach Center at Morris, Minnesota. The Major Land Resource Area is 102A, Rolling Till Prairie. Soils are a Barnes-Buse loam complex and long-term average rainfall is 25.39 inches. The site is located about one-half mile east of the livestock buildings. The first trees and shrubs were planted in 1978. The agreement was renewed in 1993 for 15 years. Evaluation of the conifer block was discontinued in 1995 due to poor adaptation to the heavy soils. A major renovation took place in 1997 when dead and poor performing entries were removed to make room for new plant material. The site was maintained with cultivation until 2002 when a 50/50 mix of Bad River blue grama and Pierre sideoats grama was broadcast seeded on the bare ground. New entries planted each year are flagged and mulched with wood chips. Weed control is accomplished by spot spraying with glyphosate and broadleaf herbicides. Measurements and notes are taken annually in August.

OBJECTIVES

1. Assemble and evaluate the adaptation and performance of selected woody plant material 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 129 accessions of 90 different species are currently being evaluated. Eight new entries of 5 plants each were planted in Blocks I and II on May 8, 2007. These included 9082739 ironwood (*Ostrya virginiana*), 9091969 Russian peashrub (*Caragana frutex*), 'Midwest Premium' American plum (*Prunus americana*), 'Sun Harvest' American hazelnut (*Corylus americana*), 9082895 apricot (*Prunus armeniaca*), 9092141 nannyberry (*Viburnum lentago*), 9092140 Korean mountain ash (*Sorbus alnifolia*), and 'Cathedral' hybrid elm (*Ulmus x cathedral*). All plants were bareroot seedlings.



New entries were planted on May 8.

Weed control and maintenance have been consistently good. The short stature blue grama/sideoats grama cover between the tree rows is mowed occasionally during the growing season. 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 by staff at the Research and Outreach Center. Several entries in the plots have been flagged for future removal and include 'Centennial' cotoneaster, 'Scarlet' Mongolian cherry, 'Regal' Russian almond, 'Silver Sands' sandbar willow, ND-170 cotoneaster, 'Konza' sumac, black locust, and Russian olive. Most of these are scheduled for removal because they are at the end of their productive life span, and room is needed for new entries. Entries that were removed by hand in the spring of 2007 because of poor performance included both accessions of aspen

(9082886, 9082885), 'Prairie Red' hybrid plum, serviceberry (9091975), and mugo pine (9082889).

Staff at the Morris NRCS field office, and the Research and Outreach Center helped collect data on selected entries on August 14, 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. Precipitation during most of the growing season was above normal except for July which was about 3 inches below the long-term average. The new entries were off to a slow start with lower than average vigor ratings, except for the 'Cathedral' elm which was rated good. The olive hybrid planted in 2006 continues to have impressive performance and was rated excellent in vigor and had an average height of more than five feet. Many of the mature entries continued to perform well. There are also some accessions declining in health and overall vigor because of disease and natural die-back as they approach the end of their life span. Many of the newer entries planted in the last several years had slight to severe rabbit and/or deer browse. The fruit species generally sustained the most damage. Forty-seven accessions/entries were evaluated in 2007.

Data is summarized annually and documented in the Bismarck PMC Annual Technical Report. Anyone who desires a copy of the latest data summary information can contact me at



**'Silverscape' olive hybrid has performed well
and is over five feet tall in two years.**

(701) 530-2075, or at Dwight.Tober@nd.usda.gov. The report is about 30 pages in length. Mike Knudson compiled a report in 2003 titled *A Quarter Century of Tree Planting Trials at the Morris, Minnesota Field Evaluation Planting* which contains complete data summary information inclusive to all species tested at this site. This 38-page report can also be requested through me or the Bismarck Plant Materials Center (701) 250-4330.

NEW RELEASES

Data collected from this site was used to support the formal release of two new shrubs formally released in 2005 cooperatively with the Minnesota Agricultural Experiment Station. ‘Silver Sands’ sandbar willow was planted in 1990, and ‘Survivor’ false indigo was planted in 1987. They both had 100 percent survival, good to excellent vigor, and overall plant performance ratings for at least the first 10 years. Both species are subject to natural die-back due to winter or drought conditions. A release brochure for these two new releases was completed in 2006 and is available on the Bismarck PMC homepage (<http://Plant-Materials.nrcs.usda.gov>), 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 Morris site in 1985 and removed in 1999. It performed well overall. ‘Prairie Red’ was cooperatively released with the Minnesota Agricultural Experiment Station. ‘McKenzie’ black chokeberry is proposed for formal cultivar release in 2008. It was evaluated from 1989–1997 and performed well.

SUMMARY OF ACCOMPLISHMENTS

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

‘Cardan’ green ash	‘Oahe’ hackberry
9057409 American hazel	ND-686 Pekin lilac
9082687 black currant	9082712 bittersweet
ND-2103 European cranberry	9076722 European white birch
‘McDermant’ Ussurian pear	‘Freedom’ honeysuckle
‘Indigo’ silky dogwood	‘Regal’ Russian almond
ND-3744 Korean barberry	ND-21 nannyberry
‘Silver Sands’ sandbar willow	‘Scarlet’ Mongolian cherry
SD-156 green ash	ND-1731 Siberian crabapple
ND-64 black ash	‘Konza’ aromatic sumac
SD-211 hackberry	9076719 Scots pine
‘Legacy’ late lilac	‘Homestead’ Arnold hawthorn
‘Streamco’ purpleosier willow	‘Meadowlark’ forsythia
ND-170 cotoneaster	ND-1753 green ash
ND-2102 apricot	9076718 Scots pine
SD-75 hackberry	9082631 Japanese birch
9063148 corktree	ND-2507 pygmy caragana
ND-686 Pekin lilac	‘Arnold’s Red’ honeysuckle
‘Survivor’ false indigo	

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 Morris Site

‘Cardan’ green ash	1979
‘Oahe’ hackberry	1982
‘Sakakawea’ silver buffaloberry	1984
‘Scarlet’ Mongolian cherry	1984
‘Centennial’ cotoneaster	1987
‘McDermid’ Ussurian pear	1990
‘Homestead’ Arnold hawthorn	1993
‘CanAm’ hybrid poplar	1995
‘Regal’ Russian almond	1997
‘Legacy’ late lilac	1999
‘Silver Sands’ sandbar willow	2005
‘Survivor’ false indigo	2005
‘Prairie Red’ hybrid plum	2006

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