



# **2013 Report and 2014 Work Plan Woody Plant Materials Off-Center Evaluation Planting Dickinson Research Extension Center Dickinson, North Dakota**

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## **INTRODUCTION**

The Bismarck Plant Materials Center continues to work with partners to evaluate performance of different tree and shrub species at three off-center locations in the three-state area of Minnesota, South Dakota, and North Dakota, including this site at Dickinson. These locations provide off-center field evaluation planting sites representative of major land resource areas in each state. We appreciate the cooperation and support from the Dickinson Research Extension Center, in allowing us to utilize some of their land and personnel resources to conduct this research.

The Dickinson Research Extension Center is the only active PMC off-center evaluation planting site in North Dakota and is the driest of the three sites. It provides an opportunity to formally evaluate plant materials under uniform soil, culture, and management conditions, and generates needed information for selection of conservation plants that will perform well in this area. It also provides a single easily-accessible location where area NDSU, NRCS and conservation district staff, as well as other agencies and the general public, can compare and review the plant adaptability of many species for use in windbreaks, critical area plantings, stream-bank stabilization projects, and urban agroforestry plantings.

The plots are located south of Interstate Highway 94, at the west edge of Dickinson. The soil type is a Parshall fine sandy loam, which is in North Dakota Conservation Tree and Shrub Group 5. NRCS originally signed an agreement with the Dickinson Research Extension Center (DREC), formerly the North Dakota Experiment Station, at Dickinson in 1977, and the PMC started evaluating tree and shrubs at the site in 1978. Since that time, the PMC staff and field office staff have planted 118 species of trees and shrubs. At the present time, 97 accessions and 69 species are under evaluation. The care and attention that the site has received over the years is the main reason for its continuation and success.

This summary does not contain the complete list of woody plants being evaluated. It contains only those plants that were evaluated in 2013. A separate Technical Report containing all data is available at the NRCS Area Office in Dickinson, or the Bismarck PMC. Contact Craig Stange at the PMC for additional species information.

A summary report of all trees and shrubs tested at four sites in western North and South Dakota was completed in 2010 by PMC staff and published as "Trees and Shrubs Tested in Western North Dakota and South Dakota." Copies of this report are available from the PMC upon request.

## OBJECTIVES

1. Evaluate the adaptation and performance of woody plant materials for conservation purposes.
2. Select superior performing strains of woody plant material and conduct advanced evaluation and progeny testing.
3. Establish seed and plant increase of selected accessions.
4. Develop, release and promote improved plant materials for public use.

## PROGRESS AND ACTIONS – 2013

The following species varieties/species were added in the west tree block area:

- Manchurian ash, accession 9094417 from Big Sioux Nursery, W1/2/1-5
- Sycamore, accession 90944176 from Lincoln Oakes Nursery, W1/2/6-10
- American hazel, accession 9094418 from Big Sioux Nursery, W1/1/11-15
- 'Berry Blue' honeyberry (haskaps), accession 9094419 from Jeffries Nursery, W1/1/1-5
- 'Cinderella' honeyberry (haskaps), accession 9094420 from Jeffries Nursery, W1/1/6-10

Tree shelters were installed on the ash and sycamore to provide protection from deer and other predators. An inventory was completed and the planting plan was updated. Grass strips between the rows of trees were kept mowed during the growing season.

Two staff from DREC and two from the PMC spent a day on plot maintenance with the PMC tractor, mower, and brush blade pruning back suckers, pruning lower limbs and knocking down wormwood. The pruning allows better access under the tree canopies but puts the tree trunks and root collars more at risk. Additional maintenance of this type is needed.

Information was collected on 25 selected entries on September 6, 2013. Crown spread and plant height were recorded along with observational notes relative to disease and insect damage, drought and cold tolerance, fruit production, survival, vigor, and predator damage. This area experienced a wet spring followed by a relatively dry summer and wet fall during the 2013 growing season. All of the species added in 2013 appeared to be establishing well, showing good vigor.



***First year of establishment in the west plots area on the west end of the DREC location. This was seeded to blue grama grass in 2012, prior to applying the fabric and adding plants in 2013. This appears to be a good strategy for reducing maintenance requirements and eliminating 'cultivator blight'.***



***Tree shelters are utilized on species most susceptible to deer browse and other predator damage.***



***First accessions of trees in east plots were established 35 years ago. These plots have been maintained with between-row cultivation. This is the area of focus for removal or pruning maintenance in the near future. Several species of released varieties will be maintained as future seed sources.***

### **RECOMMENDED MAINTENANCE (AFTER CONSULTATION WITH DREC AND PMC STAFF)**

Removal of:

- All honeysuckle (8 accessions). Most have been in the test plots over 25 years. No future study is anticipated. There is concern by public and land management agencies that these honeysuckle species can easily spread offsite and contaminate natural areas.
- Removal of 3 crabapple accessions. They are 35 years old and mostly dead. Keep the healthiest specimens as a seed source.
- Removal of the 'Regal' Russian almond accession. Recent measurements evaluated suckers, since the original plant material died and was replaced by root sprouts. Superior plants have already been selected and it has been released and incorporated in the NRCS Field Office Technical Guide. A seed orchard is established at the PMC. May want to establish another off site seed source.
- Removal of Survivor Germplasm false indigo. This plot is full of contaminant shrubs spread by birds. Original plants have died and measurements are on the suckers. It has been released and is in the



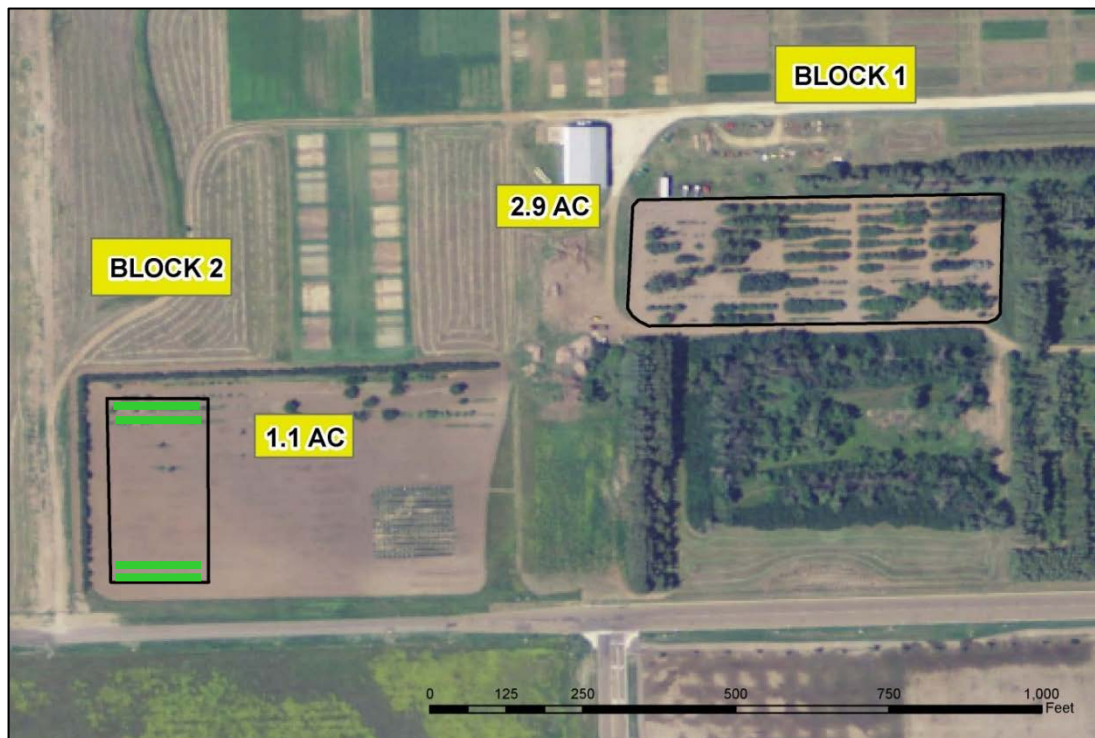
NRCS Field Office Technical Guide. A seed orchard of this release is established at the PMC. May want to establish another off site seed source.

- Other species to consider for removal:
  - Pie cherry
  - Siberian salt tree
  - Winterberry euonymus

#### **PLANNED ACTIVITIES - 2014**

- Evaluate accessions as scheduled.
- Plant new accessions:
  - Gray birch
  - Swamp white oak
  - 'Catskill' sand cherry
- If timing is appropriate, seed the areas of the old test plantings (east plots) to a non-competitive grass as a way to minimize maintenance and reduce weed pressure, after marked accessions have been removed.

**PMC Plots: East block (1) and west block (2). Green lines are installed fabric strips.**



Plot layout (east plot) of species being evaluated at the Off Center Evaluation Planting at Dickinson, ND, June 2013



	Block 1A		Block 1B		Block 2		Block 3				Block 4	
Row 1			ND-1729 Siberian larch		ND-313 red tatarian honeysuckle	ND-1730 red tatarian honeysuckle	‘Midwest’ Manchurian crabapple		‘Red Splendor’ crabapple		SD-156 green ash	ND-1734 green ash
Row 2	9082885 aspen	9082619 green ash	SL-383-T Siberian larch		9082684 smooth sumac	9008183 Sheridan source chokecherry	ND-1731 Siberian crabapple		‘McDermant’ Ussurian pear		‘Cardan’ green ash	ND-1759 green ash
Row 3	14392 Walker poplar	Canam Walker poplar	ND-1765 Siberian larch		ND-26 honeysuckle/ ND-452 honeysuckle	ND-170 cotoneaster	‘Freedom’ honey- suckle	9063143 red tatarian honey- suckle	Survivor Germplasm false indigo	‘Arnolds Red’ honey- suckle	ND-647 black ash	ND-1432 O.buckeye /9092162 pie cherry
Row 4	ND-3796 white poplar	Raverdeau poplar	ND-1763 ponderosa pine	ND-1565 bristlecone pine	9082711 winterberry euonymus	‘Regal’ Russian almond	‘Konza’ aromatic sumac	‘Scarlet’ Mongolian cherry		‘Legacy’ late lilac	ND-1879 honeylocust	‘Carmine Jewel’ dwarf cherry
Row 5	9082640 Gambel oak	9069090 quaking aspen	9057413 ponderosa pine	9069169 Siberian pine	ND-11 amur honeysuckle	‘Centennial’ cotoneaster	‘Sakakawea’ silver buffaloberry		‘Magenta’ crabapple		9063116 black ash	9091968 Kentucky coffeetree
Row 6	9087732 bur oak	Assiniboine poplar	9069172 Scots pine	9092231 lodgepole pine	9057406 rugosa rose	9082638 western blue elderberry	9076726 tatarian maple		9091969 Russian peashrub		9063115 green ash	9076724 Russian olive
Row 7	9063141 eastern cottonwood		9094406 Princeton elm	ND-3803 white poplar	9076737 black cherry	‘McKenzie’ chokeberry	9082891 common ninebark		9082653 skunkbush sumac		Prairie Harvest hackberry	9069166 Russian olive
Row 8	Hunter ponderosa pine	Bridger- Select juniper	9091967 pin cherry	Riverview Germplasm black currant	9063142 Japanese cherry	9082713 Siberian peach	‘Prairie Red’ plum		ND-629 amur maple		‘Oahe’ hackberry	
Row 9	9069164 Scots pine	9069168 Siberian larch	9063148 corktree	ND-21 nannyberry	‘Homestead’ Arnold hawthorn		ND-1873 amur maple		ND-686 Pekin lilac		SD-75 hackberry	
Row 10	9082641 pinyon pine	9082889 mugo pine	9069081 littleleaf linden	9063126 Japanese elm	/common juniper	salt tree/ bittersweet	9069129 amur chokecherry			9094355 roughleaf dogwood	9094356 Meyers spruce	
	Block 1A		Block 1B		Block 2		Block 3				Block 4	

**Plot layout (west plot) of species being evaluated at the Off Center Evaluation Planting at Dickinson, ND**

	Block 1					
Row 1	'Berry Blue' honeyberry	'Cinderella' honeyberry	9094418 American hazel			
Row 2	9094417 Manchurian ash	9094416 sycamore				
Row 3						
Row 4						
Row 5						
Row 6						
Row 7						
Row 8						
Row 9						
Row 10						
	Block 1					

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