



2017 Annual Report Woody Plant Materials Off-Center Evaluation Planting Dickinson Research Extension Center Dickinson, North Dakota

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INTRODUCTION

The Bismarck Plant Materials Center (PMC) 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 North Dakota State University, Natural Resources Conservation Service (NRCS), conservation district staff, and other agencies and 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. The 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 124 species of trees and shrubs. At the present time, 83 accessions and 72 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 2017. More detailed information is available from the Bismarck PMC. Contact Craig Stange or Wayne Markegard 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 – 2017

Information was collected on 36 selected entries on September 20, 2017. 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 very dry spring and growing season during 2017. Precipitation averaged 66% of normal.
- The blue grama grass that was seeded in 2016 between all tree rows in the older tree blocks (1-4) appeared to be establishing well.
- There were no new woody plant additions in 2017.



First year grass establishment in east plots 1-4 of the DREC location. This was seeded to blue grama in 2016, and continues to improve in 2017 despite extreme drought conditions. This appears to be a good strategy for reducing maintenance requirements and equipment damage.



Magenta crabapple in bloom on May 8. This is a hardy, early-blooming, pollinator-friendly species.



The first trees/shrubs were planted in the east block almost 40 years ago. Until 2016, these plots were maintained with between-row cultivation. In the past 4 years, 10 species have been removed, and considerable pruning maintenance has been done to improve the visual look and hopefully extend the life of some of the remaining species. Several of PMC released varieties will be maintained as future seed sources.



Mackenzie black chokeberry is a hardy shrub with exceptional fruit production under proper management. It produces highly nutritious fruit and is popular with many tree fruit growers in our region and across the country. It seems to be well acclimated to a variety of soils and moisture regimes and is relatively easy to harvest. Drought conditions reduced fruit set in 2017.

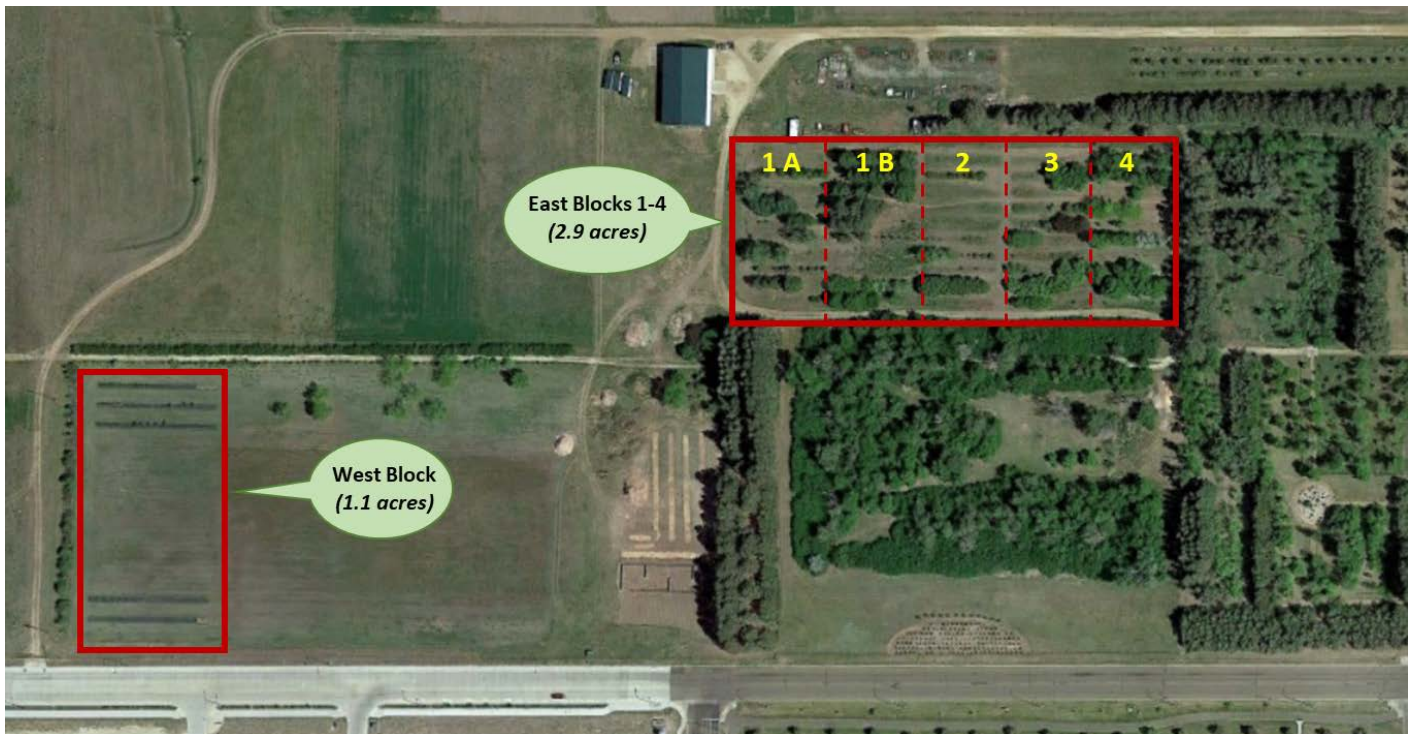


Gray birch is performing well at all off-center locations. Seed collected from older gray birch trees at the Becker, MN location has been propagated to grow transplants that will be available for field plantings in our 3-state area in 2019.

PLANNED ACTIVITIES - 2018

- Evaluate accessions as scheduled.
- No new woody plant species will be added in 2018.
- Some tree tube shelters may be replaced with wire cages.
- DREC and PMC staff will continue to assist with plot maintenance.

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, September 2017



	Block 1A		Block 1B		Block 2		Block 3			Block 4	
Row 1			ND-1729 Siberian larch							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		'McDermant' Ussurian pear		'Cardan' green ash	ND-1759 green ash
Row 3	14392 'Walker' poplar	'Canam' Walker poplar	ND-1765 Siberian larch								ND-1432 Ohio buckeye
Row 4	ND-3796 white poplar	'Raverdeau' poplar	ND-1763 ponderosa pine	ND-1565 bristlecone pine			'Konza' aromatic sumac		'Legacy' late lilac	ND-1879 honeylocust	'Carmine Jewel' dwarf cherry
Row 5	9082640 Gambel oak	9069090 quaking aspen	9057413 ponderosa pine	9069169 Siberian pine			'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		
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		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	9094442 gray birch			
Row 3	9094441 swamp white oak	'Prairie Expedition' Amer. elm				
Row 4						
Row 5						
Row 6						
Row 7						
Row 8						
Row 9						
Row 10						
Row 11						
Row 12	90944344 Douglas fir	90944345 Douglas fir				
Row 13	'Catskill' sand cherry					
Block 1						

*between row spacing for rows 1-3 is 25 feet, rows 3-12 is 27 feet, and rows 12-13 is 25 feet.