

FIELD EVALUATION PLANTING: TECHNICAL REPORT – 1983

Project 38I316K

North Dakota State University, Dickinson Branch Experiment Station Dickinson,
North Dakota

Project Title:

Field Evaluation of Woody Plant Materials

Introduction:

There is a need to evaluate the performance of shrub and tree species/cultivars for windbreaks, wildlife, and recreational plantings under diverse soil and climatic conditions. To meet this need, field evaluation planting sites representative of the major land resource areas were located in the three states served by the center. These sites provide planting locations for assemblies of trees and shrubs to be evaluated under uniform culture and management.

Objective:

The objective is to assemble and evaluate woody plant materials for conservation use. Superior cultivars will be selected and released for increase by commercial nurseries.

Cooperators:

The Soil Conservation Service, Plant Materials Center, Bismarck, North Dakota, in cooperation with the North Dakota State University, Dickinson Branch Experiment Station, Dickinson, North Dakota.

Location:

This project is located one mile west of Dickinson, North Dakota, on the NDSU Dickinson Branch Experiment Station.

Legal description: NE ¼ 5, T139N., R96W., Stark County, North Dakota

Major Land Resource Area:

The site is located in Major Land Resource Area 054, Rolling Soft Shale Plain. This moderately dissected rolling plain is underlain by calcareous shales and sandstones. Strongly dissected areas of sharp local relief or badland topography border major streams and valleys in some areas. Elevation is 1,800 to 3,100 feet. Sixty percent of the area is rangeland.

Soils:

The soil type is a Parshall fine sandy loam. The Parshall series consists of deep, well drained soils formed in fine sandy loam alluvium on terraces and outwash plains and in upland swales. The surface layer and subsoil is dark grayish-brown fine sandy loam. The underlying material is dark grayish-brown fine sandy loam and loamy fine sand. Permeability is moderately rapid. The available water capacity is moderate. Organic matter is high and fertility is medium.

This soil is in North Dakota windbreak suitability Group 5. Included in this group are nearly level to hilly soils of the Flaxton, Lihen, Livonia, Parshall and Vebar series among others. These are well-drained, loamy and sandy soils. They are suited to windbreak and other plantings, but selection of species is limited. Erosion hazard is serious. The moderate available water capacity is the main limitation.

Climate:

For MLRA 054 the average annual precipitation is 13 to 19 inches; increasing from west to east for this semiarid area. Rainfall is highest from late spring to midsummer and very low during the rest of the year. Winter precipitation is snow. Average annual temperature is 40° to 45°F. Average freeze-free period is 110 to 135 days. The plant hardiness zone is 4a, with an average annual minimum temperature of -30 to -20°F.

Methods and Materials

Assembly:

Refer to Table 23 for a list of woody species planted from 1978 through 1983.

Planting Plan:

The planting site is approximately 500 feet long and 200 feet wide. The area is divided into four blocks. Each block consists of single row, non-replicated plots. Each plot contains a minimum of 5 plants. Row length is 100 feet and spacing between rows is 20 feet. Block 1 contains conifers spaced 5 feet within row. Block 2 contains shrubs and small trees spaced 5 feet within row. Block 3 contains medium sized trees, spaced 10 feet within row. Block 4 contains tall trees spaced 10 feet within row. All rows run from west to east.

Plot Preparation:

A clean, firm planting site is prepared annually by disking and harrowing.

Planting Method:

All tree and shrubs were hand planted using approved forestry methods.

Planting Date:

Refer to Table 23 for a list of woody species planted from 1978 through 1983.

Fertilization:

No fertilizer has been applied to planting area.

Weed Control:

No herbicide has been applied to any plot during year of establishment or in succeeding years. Weeds were controlled by clean cultivating between rows, within row, and in fallow areas. Six to seven tillage operations were performed each year in the months of May through August. Hand hoeing was done as needed to control weeds in rows.

Biological Control: Previous years: No animal repellent or insecticide was applied in 1978. In the fall of 1979, an animal repellent, Arasan 50, was sprayed on fruit trees to discourage rodent damage.

1980 – 1981: On November 6, 1980 and October 29, 1981, Arasan 50 was applied to the trunks and lower limbs of fruit trees to deter rodents from damaging bark and cambium. Conifers also received this spray treatment to discourage animal browse. No insecticides were applied.

1982: No animal repellent was applied.

1983: No animal repellent was applied.

Irrigation: Each year, newly planted materials were watered with a portable tank. No water was added following year of establishment.

Crop Residue Management: No cover crop has been established.

Silvicultural Practices: A minimum of pruning was done in 1979 to reshape trees damaged by animals. Dead trees and broken branches were cut and removed each year for sanitation. Replacements were used when available.

Evaluations and Measurements: Previous years: Records of planting date, survival, vigor, canopy width, height, cold hardiness, animal damage, and unusual or outstanding features have been maintained since 1978.

1983: Climatic data recorded at Dickinson Branch Experiment Station, Dickinson, North Dakota is shown in Table 22.

Plant performance data was reported on September 7, 1983. Survival, vigor, canopy cover and height, and special remarks were recorded for all hardwoods and remaining conifers.

Results

Plant Performance: Mean data for individual accessions of trees and shrubs is shown in Table 23. The following accessions exhibit potential for further evaluation:

Accession Number	Genus/Species Origin/Source	Plot Location	Remarks
ND-1765 5980T	Siberian larch <u>Latix sibirica</u> USDA, FS, Shelterbelt Lab., Bottineau, ND	1/03/1-10	
ND-313 5996T	Red tatarian honeysuckle <u>Lonicera tatarica sibirica</u> USDA, ARS, Cheyenne, WY USDA, SCS, PMC, Bismarck, ND	2/01/1-10	
ND-1730 5994T	Red tatarian honeysuckle <u>Lonicera tatarica sibirica</u> Lincoln-Oakes Nursery, Bismarck, ND	2/01/11-20	
ND-628 5887T	Silverberry <u>Elaeagnus commutata</u> Wells, CO., ND	2/02/1-10	
'Midwest' 6003T PI-478000	Manchurian crabapple <u>Malus baccata mandshurica</u> Echo Manchuria Res. Sta. Morden, Manitoba, Canada	3/01/1-5	
WY-843 'Bighorn' 4646T PI-483445	Skunkbush sumac <u>Rhus trilobata</u> Basin, WY USDA, SCS, PMC, Bismarck, ND	2/02/11-20 2/04/1-10	

Accession Number	Genus/Species Origin/Source	Plot Location	Remarks
Red Splendor' 6004T	Flowering crabapple <u>Malus sp.</u> x Lee Nursery, Fertile, MN	3/01/6-10	
ND-14 6095T PI-478004	Harbin pear <u>Pyrus ussuriensis</u> Res. Sta. Morden, MB, Canada SCS, PMC, Bismarck, ND	3/02/6-10	
SD-134 6066T	Apricot <u>Prunus armeniaca</u> Brookings Co., Brookings, SD	3/04/1-5	
ND-416 6067T	Apricot <u>Prunus armeniaca</u> Burleigh Co., Bismarck, ND	3/05/6-10	
ND-1336 6088T	Chokecherry <u>Prunus virginiana</u> Mercer Co., Stanton, ND	3/06/6-10	
ND-1873 5648T	Amur maple <u>Acer ginnala</u> Lincoln-Oakes Nursery, Bismarck, ND	3/09/1-5	
SD-156 5890T	Green ash <u>Fraxinus pennsylvanica</u> Deuel Co., Clear Lake, SD	4/01/1-5	
'Cardan' MDN-12002 5895T PI-469226	Green ash <u>Fraxinus pennsylvanica</u> USDA, ARS, Mandan, ND Carlyle, MT	4/02/1-5	

ND-1759 5893T	Green ash SD-156 x MDN-12002 <u>Fraxinus pennsylvanica</u> USDA, SCS, PMC, Bismarck, ND	4/02/6-10
------------------	--------------------------------------------------------------------------------------------------	-----------

ND-364 5867T	Russian olive <u>Elaeagnus angustifolia</u> Burleigh Co., Menoken, ND	4/06/1-5
-----------------	-----------------------------------------------------------------------------	----------

The following accessions failed to survive:

ND-3804 30937T	Black locust <u>Robinia pseudoacacia</u> Darby, MT	1/7/1-10
-------------------	----------------------------------------------------------	----------

Project No.: 38I316K

**Table 22: 1983 Weather Summary – Official Station, North Dakota State University
Dickinson Branch Experiment Station, Dickinson, North Dakota**

Month	Temp. (Mean)	Normal Temp. (Mean)	Deviation From Norm.	Total Precip.	Normal Precip.	Deviation From Norm.
January	23.0	9.3°F	13.7	0.35 in.	0.34 in.	0.01 in.
February	27.1	16.2	10.9	0.05	0.40	-0.35
March	28.4	25.4	3.0	0.95	0.57	0.38
April	37.3	40.5	- 3.2	0.32	1.73	-1.41
May	48.3	53.0	- 4.7	1.15	2.53	-1.38
June	60.1	62.2	- 2.1	3.43	3.69	-0.26
July	70.3	68.6	1.7	2.81	2.08	0.73
August	73.9	67.4	6.5	1.16	1.86	-0.70
September	55.0	55.9	- 0.9	1.06	1.51	-0.45
October	44.3	45.0	- 0.7	0.25	0.85	-0.60
November	30.4	28.3	2.1	0.65	0.45	0.20
December	<u>-2.8</u>	<u>15.6</u>	<u>-12.8</u>	<u>0.41</u>	<u>0.41</u>	<u>0.00</u>
Annual	41.28	40.6	- 0.68	12.59	16.42	-3.83

Last Killing Frost
Frost Free Days

1983
126

May 15

First Killing Frost

September 19

Total seasonal precipitation (average): 12.59 inches

Total seasonal precipitation (April-August) 1983: 9.93 inches

USDA, SCS, PMC, Bismarck, North Dakota

210 - Project No.: 38I316K

Project Title: Field Evaluation of Woody Plant Materials (FEP)

Location: North Dakota State University, Dickinson Branch Experiment Station, Dickinson, North Dakota

Major Land Resource Area: 054

202 - Soil Series Texture: Parshall fine sandy loam

201 - Year of Record: 1983

211-PLOT LOCATION	304-MATL-PLTD	(Establishment, material planted)
23, 1-ACC-NO	(Prime-PMC-control number, 306-AGE	(Age of stock)
02-PLANT-SYMBOL	(PI number) 305-NO-PLTS	(Number of plants)
12-COMMON-NAME	310-NO-PLT-SRV	(Number of plants surviving)
04-GENUS-NAME	363-PCT-SRV	(Percent survival)
05-SPECIES-NAME	337-VI	(Vigor, plant)
29, 30-COLL-SITE-STATE, COUNTY	(Origin/source) 347-CO	(Resistance to cold)
209-TRANS-DATE	(Transplant date) 358-BSL-ARA	(Basal area, cm)
201-YR-REC	(Year of record) 359-CAN-COV	(Canopy cover, cm)
212-YR-PLT	(Year planted) 360-PLT-HT	(Plant height, cm)
	-AD	(Animal damage)
	364-REMARKS	

Table 23. 38I316K Field Evaluation of Woody Plant Materials – Dickinson, ND - 1983

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
1/01/1-10	ND-1729 5979T	LASI*	Siberian larch <u>Larix sibirica</u> NDFS State Nursery Towner, ND	05/16	78	78 79 80 82 83	PLBR	1-0	10	9 10 10 8 6	90 100 100 80 60	3 --- 4 8 7	--- --- 1 --- 3	21 22 33 29 33	62 44 55 46 74	Repl-plt #9 #1 mowed off, mod. rodent dam.
1/02/1-10	SL-383-T Pallet No. 2392 5976T	LASI*	Siberian larch <u>Larix sibirica</u> USDA, FS, Shelterbelt Lab., Bottineau, ND Denbigh Ex. Forest	05/16	78	78 79 80 82 83	PLBR	1-0	10	10 10 10 9 9	100 100 100 90 90	3 --- 4 6 6	--- --- 1 --- 3	17 24 43 47 61	68 49 62 69 119	 #1 mowed off, mod. rodent dam.
1/03/1-10	ND-1765 5980T	LASI*	Siberian larch <u>Larix sibirica</u> USDA, FS, Shelterbelt Lab., Bottineau, ND	05/17	78	78 79 80 82 83	PLBR	2-0	10	10 10 10 10 10	100 100 100 100 100	3 --- 4 5 5	--- --- 1 --- 2	17 33 55 63 79	44 48 81 122 148	 Mod. rodent dam., Best accession of larch
1/04/1-5	ND-1763 6043T	PIPO*	Ponderosa pine <u>Pinus ponderosa</u> USDA, FS, Shelterbelt Lab., Bottineau, ND 757-5 Todd Co., SD	05/16	78	78 79 80 82 83	CONT	1-1	5	5 4 5 4 4	100 80 100 80 80	1 --- 4 7 5	--- --- 5 --- 3	14 14 46 74 88	53 34 61 134 111	Repl-plt #3 Animal damage

34904T		<u>Acer saccharinum</u> Bismarek, ND																			
211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pet Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks					
1/08/6-10	ND-3886 3519T	ACSA2	Silver maple <u>Acer saccharinum</u> Bismarek, ND	06/01	83	83	CONT		5												
2/01/11-10	ND-313 5996T	LOTAS*	Red tatarian honeysuckle <u>Lonicera tatarica sibirica</u> USDA, ARS, Cheyenne, WY USDA, SCS, PMC, Bismarek, ND	05/17	78	78 79 80 82 83	PLBR	2-0	10	9 9 10 10 10	90 90 100 100 100	1 --- 3 4 3	--- --- --- --- 3	47 62 98 162 181	48 72 73 136 166	Repl-plt #9 Good fruit mod-sev insect defoliation					
2/01/11-20	ND-1730 5994T	LOTAS*	Red tatarian honeysuckle <u>Lonicera tatarica sibirica</u> Lincoln-Oakes Nursery, Bismarek, ND	05/17	78	78 79 80 82 83	PLBR	2-0	10	10 10 10 10 10	100 100 100 100 100	1 --- 1 4 3	48 66 104 181 204	51 84 90 160 197	Good vigor slight insect def. good fruit prod.						
2/02/11-10	ND-628 5877T	ELCO*	Silverberry <u>Elaeagnus commutata</u> Wells Co., ND	05/17	78	78 79 80 82 83	PLBR	2-0	10	10 10 10 10 10	100 100 100 100 100	1 --- 1 5 5	29 83 124 151 192	52 94 97 145 170	Suckering						
2/02/11-20	WY-843 'Bighorn' 4646T	RHTR	Skunkbush sumac <u>Rhus trilobata</u> USDA, SCS, PMC, Bismarek, ND	05/17	78	78 79 80	PLBR	2-0	10	7 10 10	70 100 100	2 --- 3	52 107 152	43 78 82	Repl-plt #16, 17, 18						

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	No Plt Srv	100	3	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
2/03/11-10	ND-26 11852T	LONIC	Honeysuckle <u>Lonicera</u> sp. USDA, ARS Mandan, ND	05/2	79	79 80 81 83	PLBR	2-0	10	10 10 10 10	100 100 100 100	3 3	---	35 60 79 136	42 51 87 145	Leaf spot witches broom on plts #3, 5, 8 mod. ins. defol. Grasshoppers
2/03/11-15	ND-452 19978T	LOXYM*	Honeysuckle <u>Lonicera xylosteum</u> <u>mollis</u> USDA, ARS, Cheyenne, WY USDA, SCS, PMC, Bismarek, ND	05/2	79	79 80 81 83	PLBR	2-0	5	5 5 5 5	100 100 100 100	---	---	37 71 99 169	39 47 88 168	Witches broom (1, 2, 3) Slight leaf spot Leaf blight
2/04/11-10	WY-843 'Bighorn' 4646T	RHTR	Skunkbush sumac <u>Rhus trilobata</u> USDA, SCS, PMC, Bismarek, ND Bighorn Co., WY	05/2	79	79 80 81 83	PLBR	2-0	10	10 10 10 10	100 100 100 100	---	---	30 73 78 181	34 43 64 137	Few pests
2/04/11-20	PM-ND-283 6079T	PRTE*	Russian almond <u>Prunus tenella</u> ND Fish & Game Dept. USDA, SCS, PMC, Bismarek, ND	05/08	80	80 81 82 83	PLBR	2-0	10	10 7 10 8	100 70 100 80	5 ---	---	23 28 54 119	68 44 69 108	Repl-plt #11, 15, 20 Few pests

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltld	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
2/05/1-10	ND-11 5993T	LOMA6	Amur honeysuckle <u>Lonicera maackii</u> Res. Sta. Morden, MB, Canada	05/07	81	81 82 83	CONT	0-1	10	10 10 6	100 100 60	---	---	20 42 50	19 44 54	Slight insect defol. (grasshoppers)
2/05/1-20	ND-3891 35201T	HIRH*	Sea buckthorn <u>Hippophae rhamnoides</u> Lawyer Nursery, Plains, MT	06/01	83	83	PLBR		5							
2/06/1-5	ND-995 PI-303584	SAHU	Prairie willow <u>Salix humilis</u> USDA, PI Sta., Ames, IA	05/12	82	82 83	PLBR - CONT	1-2	5	4 4	80 80	4 4	---	58 155	66 125	Mod. grasshopper damage.
2/06/6-10	PI-370126	SALIX	Willow <u>Salix sp.</u> USDA, PI Sta, Ames, IA	05/12	82	82 83	PLBR - CONT	0-1	5	5 4	100 80	4 3	---	33 106	48 133	Good growth, Few pests
2/07/1-10	ND-624 6094T	PTTR	Common hoptree <u>Ptelea trifoliata</u> Ramsey Co., ND USDA, SCS, PMC, Bismarck, ND	05/12	82	82 83	PLBR	2-0	10	9 9	90 90	5 3	---	24 37	33 64	Good growth
2/08/1-5	'Indigo' Mich-765 PI-468117	COAM2	Silky dogwood <u>Cornus amomum</u> USDA, SCS, PMC, East Lansing, MI	06/01	83	83	PLBR		5							

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
2/08/6-10	'Roselow' Mich-1339 5026T	MASA*	Sargent crabapple <u>Malus sargentii</u> USDA, SCS, PMC, East Lansing, MI	06/01	83	83	PLBR		5							
3/01/1-5	'Midwest' 6003T	MABAM*	Manchurian crabapple <u>Malus baccata</u> <u>mandshurica</u> Echo Manchuria/Res. Sta. Morden, MB, Canada USDA, SCS, PMC, Bismarck, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	3	60	2	---	16	60	Repl-plt#2, 5
										5	100	---	---	27	64	
										5	100	3	---	58	85	
										5	100	3	---	144	169	Fall webworm plt #1, few pests, Good vigor
										5	100	2	2	183	211	
3/01/6-10	'Red Splendor' 6004T	MABA*	Flowering crabapple <u>Malus sp. x</u> Lee Nursery, Fertile, MN	05/17	78	78 79 80 82 83	PLBR	2-0	5	5	100	2	---	48	66	
										5	100	---	---	76	117	
										5	100	2	---	108	143	
										5	100	3	---	181	256	
										5	100	3	3	214	278	Good growth, good fruit prod. Few pests
3/02/1-5	ND-1731 6001T	MABA*	Siberian crabapple <u>Malus baccata</u> Lincoln-Oakes Nursery, Bismarck, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	4	80	2	---	58	68	Repl-plt #3
										5	100	---	---	84	95	
										5	100	3	---	125	125	
										5	100	3	---	178	249	
										5	100	2	3	228	321	Good growth & vigor, few pests

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
3/02/6-10	ND-14 1095T	PYUS*	Harbin pear <u>Pyrus ussuriensis</u> Harbin, Manchuria/Res. Sta. Morden, MB, Canada USDA, SCS, PMC, Bismarck, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	6 --- 1 3 1	--- --- --- --- 2	27 56 91 195 243	76 111 139 272 335	Good growth & vigor
3/03/1-5	SD-132 6064T	PRAR*	Apricot <u>Prunus armeniaca</u> USDA, SCS, PMC, Bismarck, ND Brookings Co., SD	05/17	78	78 79 80 82 83	PLBR	2-0	5	2 5 5 5 5	40 100 100 100 100	1 --- 3 5 3	--- --- --- --- 2	57 98 165 159 256	111 135 147 183 313	Repl-pts #2, 3, 4 Good recovery from rodent injury, multi-stemmed
3/03/6-10	SD-133 6065T	PRAR*	Apricot <u>Prunus armeniaca</u> USDA, SCS, PMC, Bismarck, ND Brookings Co., SD	05/17	78	78 79 80 82 83	PLBR	2-0	5	1 3 3 3 3	20 60 60 60 60	5 --- 4 6 5	--- --- --- --- 2	66 78 163 185 280	79 67 152 185 275	Repl-pts #6, 7, 8, 10 Good recovery multi-stemmed
3/04/1-5	SD-134 6066T	PRAR*	Apricot <u>Prunus armeniaca</u> USDA, SCS, PMC, Bismarck, ND Brookings Co., SD	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 4	100 100 100 100 80	2 --- 1 7 5	--- --- --- --- 3	67 158 230 124 235	104 204 258 146 239	Resprouts- multi-stemmed

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pet Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
3/04/6-10	'Mantoy' 6069T	PRAR*	Apricot <u>Prunus armeniaca</u> USDA, SCS, PMC, Bismarck, ND USDA, ARS, Mandan, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	3 5 5 5 5	60 100 100 100 100	2 --- 4 6 4	--- --- --- --- 3	57 151 195 195 283	68 150 185 212 267	Repl-plt#6, 10 Resprouts-multi- stemmed, good recovery except plt#3, 4
3/05/1-5	ND-1178 6070T	PRAR*	Apricot <u>Prunus armeniaca</u> Walsh Co., ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	4 5 5 4 4	80 100 100 80 80	2 --- 3 7 5	--- --- --- --- 3	55 165 198 168 278	99 165 207 161 249	Repl-plt #2 Multi-stemmed
3/05/6-10	ND-416 6067T	PRAR*	Apricot <u>Prunus armeniaca</u> USDA, SCS, PMC, Bismarck, ND Burleigh Co., ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 3	100 100 100 100 60	1 --- 1 7 5	--- --- --- --- 3	62 149 232 142 257	103 192 225 137 273	Rodent damage Multi-stemmed
3/06/1-5	ND-423 6068T	PRAR*	Apricot <u>Prunus armeniaca</u> USDA, SCS, PMC, Bismarck, ND Stark Co., ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	3 5 5 5 5	60 100 100 100 100	5 --- 5 7 6	--- --- --- --- ---	25 69 132 155 163	58 116 163 190 240	Repl-plt#4, 5 Plts #2-4 are Multi-stemmed (are all resprouts) Wind dam. on plt #1.
3/06/6-10	ND-1336 6088T	PRVI	Chokecherry <u>Prunus virginiana</u> Mercer Co., ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	2 --- 2 3 2	--- --- --- --- 2	28 98 181 259 327	74 154 196 313 349	Slight powdery mildew. good vigor.

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
3/07/1-5	ND-1732 6090T	PRVI	Chokecherry <u>Prunus virginiana</u> Lincoln-Oakes Nursery Bismarck, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	2 --- 3 4 4	--- --- --- --- 2	18 77 112 247 317	67 141 169 293 331	Fall webworm Slight aphid dam. shothole, leaf blight
3/07/6-10	'Schubert' 12608T	PRVI	Chokecherry <u>Prunus virginiana</u> USDA, ARS, Mandan, ND USDA, SCS, PMC, Bismarck, ND	05/17	78	78 79 80	PLBR	2-0	3	2 2 2	66 66 66	5 --- 7	--- --- ---	22 20 53	39 30 75	Repl-plt #8, 9 Repl-plt #8, 9, 10 Slight fall webworm, elm cont. on plt #4
3/08/6-10	ND-629 5645T	ACGI	Amur maple <u>Acer ginnala</u> Res. Sta. Morden, MB, Canada	05/2	79	79 80 81 83	PLBR	2-0	5	5 0 4 4	100 --- 80 80	--- --- --- 3	--- --- --- 1	31 --- 39 184	47 --- 58 183	
3/09/1-5	ND-1873 5648T	ACGI	Amur maple <u>Acer ginnala</u> Lincoln-Oakes Nursery, Bismarck, ND	05/2	79	79 80 81 83	PLBR	2-0	5	5 5 5 5	100 100 100 100	--- 3 --- 2	--- --- --- 1	49 86 128 220	66 91 132 227	Good seed prod.
3/09/6-10	ND-686 6225T	SYAMJ*	Japanese tree lilac <u>Syringa amurensis</u> <u>japonica</u> ND Game & Fish Dept.	05/2	79	79 80 81 83	PLBR	2-0	5	5 2 2 3	100 40 40 60	--- 7 --- 5	--- --- --- 3	22 45 47 102	71 81 85 117	Repl-plt #4

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
3/10/1-5	ND-3773 21576T	SALIX	Willow <u>Salix</u> sp. Norman Co., MN USDA, SCS, PMC, Bismarck, ND	05/12	82	82 83	PLBR	0-1	5	3 2	60 40	7 8	--- 3	11 13	22 33	
3/10/6-10	Mich-433 5049T	SAPE	Laurel willow <u>Salix pentandra</u> USDA, SCS, Rose Lake PMC, East Lansing, MI	05/12	82	82 83	PLBR	0-1	5	5 5	100 100	5 5	--- 3	13 32	38 62	
4/01/1-5	SD-156 5890T	FRPE	Green ash <u>Fraxinus</u> <u>pennsylvanica</u> Deuel Co., SD	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	1 --- 2 3 3	--- --- --- --- 2	16 39 68 171 221	79 111 134 232 296	Slight leaf scorch
4/01/6-10	ND-1734 5891T	FRPE	Green ash <u>Fraxinus</u> <u>pennsylvanica</u> Lincoln-Oakes Nursery, Bismarck, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	2 --- 4 4 4	--- --- --- --- 2	11 31 57 143 173	63 95 113 222 268	Competition from shelterbelt at N-end.
4/02/1-5	'Cardan' MDN-12002 5895T (F-1)	FRPE	Green ash <u>Fraxinus</u> <u>pennsylvanica</u> USDA, ARS, Mandan, ND Wibaux Co., MT	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	2 --- 3 3 2	--- --- --- --- 2	9 52 91 228 255	71 105 154 308 348	Good vigor

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Plt	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
4/02/6-10	ND-1759 5893T	FRPE	Green ash <i>Fraxinus pennsylvanica</i> SD-156 x MDN-12002 USDA, SCS, PMC, Bismarck, ND	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	1 --- 3 4 3	--- --- --- --- 2	12 48 93 176 242	77 124 158 246 326	Competition from shelterbelt at N-end.
4/03/1-5	ND-647 5887T	FRNI	Black ash <i>Fraxinus nigra</i> Res. Sta. Morden, MB, Canada	05/17	78	78 79 80 82 83	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	1 --- 6 4 4	--- --- --- --- 3	4 13 37 126 147	28 58 83 243 319	Heat stress leaf scorch
4/03/6-10	ND-1432 5658T	AEGL	Ohio buckeye <i>Aesculus glabra</i> Res. Sta. Morden, MB, Canada	05/17	78	78 79 80 82 83	PLBR	2-0	5	3 3 3 1 1	60 60 60 20 20	8 --- 9 6 6	--- --- --- --- 4	1 4 14 45 50	7 14 12 65 70	Repl-plt #7
4/04/1-5	ND-1879 11850T	GLSI	Chinese honeylocust <i>Gleditsia sinensis</i> Woodward, OK USDA, ARS, Mandan, ND	05/08	80	80 81 82 83	PLBR -- CONT	2-1	5	1 2 5 5	20 40 100 100	9 --- 4 2	--- --- --- 2	10 4 43 75	15 25 68 118	Repl-plts #1, 3, 5 Good vigor
4/04/6-10	ND-548 5969T	JUMA*	Manchurian walnut <i>Juglans mandshurica</i> Res. Sta. Morden, MB, Canada	05/17	78	78 79 80 82 83	PLBR	2-0	5	4 3 3 3 3	80 60 60 60 60	3 --- 8 6 7	--- --- --- --- 6	4 24 43 168 202	19 40 46 110 133	Leaf scorch Low vigor girdling

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pld	306 Age	305 No Plts	310 No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
4/05/1-5	ND-1170 6009T	MOAL	Mulberry <u>Morus alba</u> Burleigh Co., ND	05/17	78	78	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	1 --- 7 3 3	--- --- --- --- 5	89 178 241 420 482	119 182 236 325 404	Mod. frost injury
4/05/6-10	ND-363 5866T	ELAN	Russian olive <u>Elaeagnus</u> <u>angustifolia</u> Burleigh Co., ND	05/17	78	78	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	2 --- 3 4 4	--- --- --- --- 2	70 150 179 240 332	68 147 158 296 343	Shelterbelt comp. on S-end
4/06/1-5	ND-364 5867T	ELAN	Russian olive <u>Elaeagnus</u> <u>angustifolia</u> Burleigh Co., ND	05/17	78	78	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	1 --- 1 2 2	--- --- --- --- 2	89 211 291 375 477	88 180 255 400 477	Good vigor
4/06/6-10	ND-1735 5874T	ELAN	Russian olive <u>Elaeagnus</u> <u>angustifolia</u> Lincoln-Oakes Nursery, Bismarck, ND	05/17	78	78	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	2 --- 4 4 3	--- --- --- --- 2	79 172 226 335 386	80 172 217 441 396	Shelterbelt compet. On S-end
4/07/1-5	ND-541 5868T	ELAN	Russian olive <u>Elaeagnus</u> <u>angustifolia</u> Haakon Co., SD	05/17	78	78	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	1 --- 4 3 3	--- --- --- --- 2	88 185 251 390 479	80 166 236 360 476	Good vigor and growth
04/07/6-10	PM-ND- 1843 11840T	ELAN	Russian olive <u>Elaeagnus</u> <u>angustifolia</u> Res. Sta. Morden, MB, Canada	05/08	80	80	PLBR	2-0	5	5 5 5 5 5	100 100 100 100 100	5 --- 4 4 4	--- --- --- --- 2	45 45 144 230	47 68 153 214	Shelterbelt comp. on S-end
										310						

211 Plot Location	23 Accession Number	02 Plant Symbol	04 05 Genus/Species Origin/Source	209 Trans Date	212 Yr Plt	201 Yr Rec	304 Matl Pltd	306 Age	305 No Plts	No Plt Srv	363 Pct Srv	337 V I	347 C O	359 Can Cov	360 Plt Ht	364 Remarks
4/09/1-10	'Oahe' MDN-12003 T05725	CEOC	Hackberry <u>Celtis occidentalis</u> USDA, ARS, Mandan, ND	05/08	80	80 81 82 83	PLBR	2-0	10	10 9 8 8	100 90 80 80	--- --- 6 6	--- --- --- ---	15 2 40 57	61 14 48 92	
4/10/1-10	PM-SD-75 5713T	CEOC	Hackberry <u>Celtis occidentalis</u> Potter Co., SD	05/07	81	81 82 83	PLBR	2-0	10	10 7 6	100 70 60	--- 6 3	--- --- 2	2 28 87	37 44 92	
4/11/1-5	ND-3890 35200T	ELAN	Russian olive <u>Elaeagnus</u> <u>angustifolia</u> Lawyer Nursery, Plains, MT	06/01	83	83	PLBR		5							