Release Notice of New Cultivar

United States Department of Agriculture
Agricultural Research Service

476982

and

United States Department of Agriculture
Soil Conservation Service

Announce the Release of 'Oahe' hackberry

The United States Department of Agriculture, Agricultural Research Service and the Soil Conservation Service announce the naming and release of 'Oahe' hackberry for conservation and amenity plantings in the northern Great Plains.

Description: 'Oahe' hackberry (Celtis occidentalis L.) is a medium to large tree that may attain a height of 30-35 feet (9.1-10.7 m) on favorable soils. The crown is irregularly oval with dense foliage and numerous, slender branches. The bark is light gray with corky ridges. The leaves are ovate to ovate-lanceolate, 5-11 cm long and 2-5 cm wide. The leaf margins are coarsely serrate and terminate in an acuminate tip. The base is oblique or obliquely cordate. The bright green upper surface is glabrous or slightly scabrous while the lower surface is paler and pubescent, especially on the veins. 'Oahe' is polygamo-monoecius with staminate flowers occurring in fascicles towards the base of the new growth while the perfect and pistillate flowers occur above in the axils of leaves. Ripening in September - October, the fruit is a fleshy, dark purple drupe that is borne on a peduncle. The globular drupe, 8-10 mm in diameter is relished by birds and other wildlife.

Origin: In 1937 open-pollinated seed was collected from trees planted on a farm near Gettysburg, South Dakota. These trees probably were derived from native hackberry growing in the vicinity along the Missouri River. Seedlings grown from the open-pollinated seed were planted in a windbreak at the North Dakota State University Experiment Station in Dickinson, North Dakota in about 1939. Four trees, superior in height and crown form, were selected in this windbreak and open-pollinated seed was collected from them in 1953. Eleven seedlings grown from this seed were planted in 1958 in a test planting at the USDA, Agricultural Research Service, Northern Great Plains Research Center, Mandan, North Dakota. All of these trees have performed well and open-pollinated seed collected from them has been used to grow seedlings for field plantings and will constitute the breeder seed for 'Oahe' hackberry.

Uses: 'Oahe' hackberry is a seed propagated cultivar recommended for use as a medium to large tree in farmstead and field windbreaks, and wildlife habitat and natural area plantings.

Performance: 'Oahe' hackberry has been evaluated in farmstead plantings in North Dakota, South Dakota, western Minnesota and adjacent states. It has performed moderately well on deep, fine to moderately fine textured, well drained soils under climatic conditions typical of the northern Great Plains. The rate of growth and form of hackberry are adversely affected by drought, injury caused by rodents, and herbicides.

Soils: 'Oahe' hackberry is recommended for planting on the soils that are described in Soil Conservation Service, Technical Guide, as Windbreak Suitability Group *1* (deep, fine to moderately fine textured, well drained) through *5* (deep, loamy and sandy well drained) in North Dakota and South Dakota. Refer to Soil Conservation Service Technical Guides for windbreak suitability group descriptions.

Climate, Elevation and Topography: The average annual precipitation of the area of adaptation for 'Oahe' ranges from *14* to *26* inches *(35.7* to *66.0* cm), increasing from west to east, with the highest amount occurring during the growing season. Winter precipitation is snow, which accumulates in drifts of varying depths modifying the micro-climate in windbreaks. The average annual temperatures range from *40* to *50* degrees F *(4.4* to *10* degrees C), average frost-free period is *100* to *160* days. The plant hardiness zones include 3b and *4a* with average annual minimum temperatures that range from -30 to *-20* degrees F *(-34.4* to *-28.9'* C) (USDA, ARS *1960).* The elevation ranges from 1,000 to *4,000* feet *(300* to *1200* m) increasing from east to west. The glacial plain is nearly level to gently rolling with hilly to steep slopes bordering the Missouri River and its major tributaries and streams.

Propagation: 'Oahe' hackberry is a seed propagated cultivar.

Collection of Fruit: Fruit normally ripens in September through October. Mature fruit can be picked by hand from trees as late as midwinter.

Extraction and storage of fruit: Twigs and trash can be removed by screening or fanning, and the fruit can be depulped by wet maceration. Depulping aids in germination. *100* pounds *(45* kg) of fruit will yield *40* to *75* pounds *(18* to *34* kg) of cleaned seed with an average of *4,820* seeds per pound. Dry clean seed stores well in sealed containers at *41* degrees F *(5.0* degrees C), (Bonner *1974).*

Pregermination treatments: Hackberry seeds exhibit dormancy that can be overcome with stratification at *41* degrees F *(5.0* degrees C) in moist sand or peat for *60* to *90* days, (Bonner *1974).* Fermenting the fruit for three days at room temperature and depulping prior to stratification stimulates after ripening and improves germination, (Taylor *1941).*

Nursery practice: Fall sowing of untreated seeds and spring sowing of stratified seeds are both satisfactory. Seeds should be covered with ½ inch *(13* mm) of soil at a bed density of *10* to 15 seedlings per square foot *(110* to 150/m^2). Planting stock should be *2-0* with a height of *12-24* inches *(30* to *60* cm) and a caliper at one inch *(25.4* mm) above the root collar of *3/16* to *1/2* inch *(5-13* mm).

Dormancy: Sweating of planting stock is needed to break bud. Before planting, the plants should be laid down and covered with wet packing material for 10 days. A layer of plastic will help retain moisture and maintain humidity. Warm temperatures, *50-60* degrees F *(10-16* degrees C), will hasten the breaking of the buds.

Sources of Seed and Planting Stock: The USDA, Agricultural Research Service, Northern Great Plains Research Center, Box *459,* Mandan, ND, *58554* in cooperation with the USDA, Soil Conservation Service, Plant Materials Center, P.O. Box *1458,* Bismarck, ND, *58502* will maintain breeder seed and foundation stock of 'Oahe' hackberry. Certified seed (source identified and selected class) will be available from growers approved by the State Certified Seed Departments. Standards for all classes of seed are published in the North Dakota Tree and Shrub Certification Standards (ND State Seed Department *1974).*

T. B. Kinney

Administrator

NOV 2 2 1982

Date

Agricultural Research Service
United States Department of Agriculture
Washington, D.C.

Thomas G. Schaffer

Director

11/16/82

Date

Ecological Sciences Division
United States Department of Agriculture
Soil Conservation Service
Washington, D.C.

J. Michael Nethery

State Conservationist

10/25/82

Date

United States Department of Agriculture
Soil Conservation Service
Bismarck, North Dakota

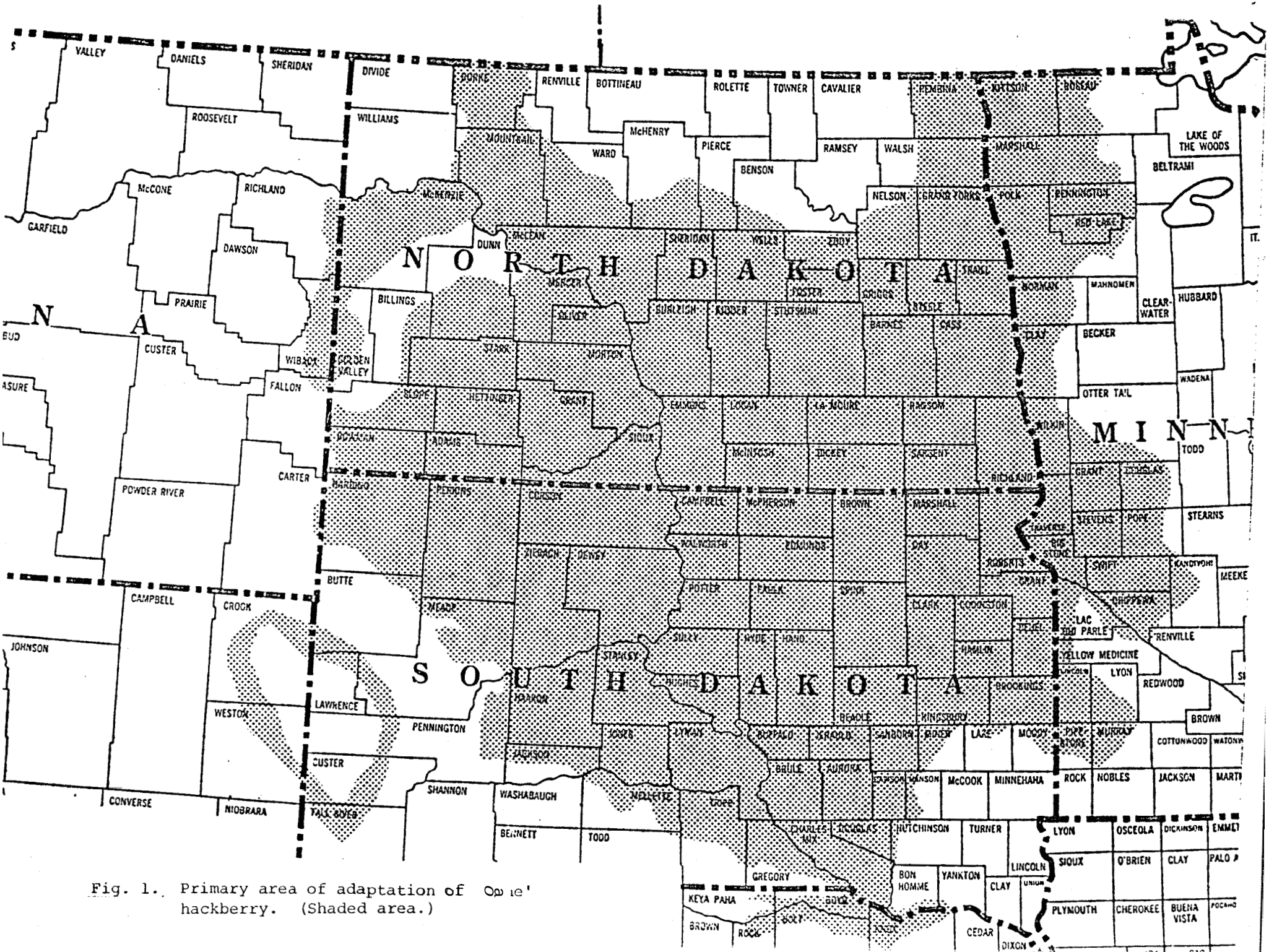

Fig. 1. Primary area of adaptation of [illegible]
hackberry. (Shaded area.)

LEGEND. DATA TO SUPPORT RELEASE OF 'OAHE' HACKBERRY
USDA - SOIL CONSERVATION SERVICE - AGRICULTURAL RESEARCH SERVICE
PROJECT PLAN NO. 381500K

001 - ACC. NO. (Accession Number)

004 - GENUS

005 - SPECIES

504 - ST (State)

506 - MLRA (Major Land Resource Area) (Austin, 1965)
Map - USDA-SCS, tlyattsville, MD. 1978
053A Northern Glaciatcd Plains
053B Central Dark Brown Glaciated Plains
054 Rolling Soft Shale Plain
055A Northern Black Glaciated Plains
055B Central Black Glaciated 1'1ains
055C Southern Black Galciated Plains
102A Rolling Till Prairie

507 - SOIL (Soil Series - USDA-SCS-National Coop. Soil Survey)

509 - TEX (Soil Texture - USDA-SCS-National Coop. Soil Survey)
(L-Loam, SIL-Silt Loam, SICL-Silty Loam, SIC-Silty Clay, FSL-Fine Sandy Loam, SL-Sandy Loam)

- WSG (USDA-SCS-Tech. Guide - Windbreak Suitability Group)
(1-Moist Soils, 2-Wet Soils, 3-Silty and Loamy Soils, 4-Clayey Soils, 5-Sandy Soils)

505 - COUNTY (County Name)

- FLD OFFICE (USDA-SCS Field Office)

503 - COOP (Soil Conservation District - Cooperator)

520 - DATE-PLT (Date of Planting)

501 - YR-RC (Year of Record)

- AGE (Years)

518 - NO-PLTS (Number of Plants)

- NO-PLTS-SRV (Number of Plants Surviving)

532 - PCT-SRV (Percent Survival)

522 - HT (Plant Height, Feet)

- ACT-HT/YR (Plant Height ÷ Age, Periodic Annual Increment-Actual Feet)

- WSG-HT (Expected Height at 20 Years, Feet)
(USDA-SCS-Tech. Guide - Windbreak Suitability Group)

- EXP-HT/YR (Periodic Annual Increment-Expected Feet)
(Plant Height 20 Years ÷ 20, USDA-SCS-Tech. Guide - Windbreak Suitability Group)

553 - CRN-SPD (Crown Width, Feet)

- CS/YR (Crown Width ÷ Age, Feet)

554 - DBH (Diameter at 4.5 Feet, Height-Inches)

526 - WD-COMP (Weed Competition)
(I-slight, 3-moderate, 9-severe)

TABLE 1 DATA TO SUPPORT RELEASE OF 'OAHE' HACKBERRY
PROJECT PLAN NO. 38F500K
USDA - SOIL CONSERVATION SERVICE - AGRICULTURAL RESEARCH SERVICE
004 - GENUS CELTIS
005 - SPECIES OCCIDENTALIS
001 - ACC. NO. 5725T, MDN-12003, 'OAHE'
504 - ST - 46 - SOUTH DAKOTA
517 - PURPOSE - WNBR - FIELD PLANTINGS

506 MLRA	507 SOIL	509 TEX	WSG	505 COUNTY	FLD	503 COOP	520 DATE PLT	501 YR RCAGE	518 NO PLTS	NO PLT SRV	532 PCT SRV	522 HT	ACT HT/ YR	WSG HT	EXP HT/YR	553 CRN SPD	CS/ YR	554 DBH	525 WD COMP
102A	Estellinc	SIL	3	Brookings	Brookings	Crosser, L.	05-01-74	81 7	-	54	-	12	1.9	22	1.1	10	1.4	4	3
102A	Kranzburg	SICL	3	Codington	Watertown	Larson, E.	05-05-68	81 13	60	58	97	19	1.5	22	1.1	12	0.9	4	3
102A	Sversdrup	SL	5	Roberts	Sisseton	Nelson, L.	05-22-70	81 11	177	166	94	13	1.2	20	1.0	10	0.9	3	3
102A	Forman-Aastad		3-1	Roberts	Sisseton	White Rock Hutterian Breth. Assn.	05-29-68	81 13	110	100	91	26	2.0	24	1.2	22	1.7	6	1
055B	Forman	L	3	Clark	Clark	Arne, D.	04-21-71	81 10	25	22	88	18	1.8	19	0.95	16	1.6	7	1
055C	Houdek	SIL	3	Aurora	Mtchell	Matzner, A.	04-21-73	81 8	25	24	96	12	1.5	19	0.95	7	0.9	-	3
055B	Forman	L	3	Marshall	Britton	Bremmon, E.	05-02-74	81 7	147	137	93	11	1.6	19	0.95	8	1.1	1	3
055B	Williams	L	3	Brown	Aherdeen	Bokelheid, E.	04-19-68	81 13	40	38	95	15	1.2	19	0.95	8	0.6	3	3
055B	Sinai	SIC	4	Marshall	Britton	Keintz, C.	05-13-70	80 11	73	66	90	12	1.1	15	0.75	6	0.6	2	9
055C	Helca-Letcher	SL	2-9	Spink	Redfield	Weisman, E.	04-27-73	81 8	175	170	97	13	1.6	19	0.95	10	1.3	3	3
							Total		832	781									
							Mean	10			94	15.2	1.5			10.9	1.1	3.7	3.2

Table 2 DATA TO SUPPORT RELEASE OF 'OAHE' HACKBERRY
PROJECT PLAN NO. 38F500K
USDA - SOIL CONSERVATION SERVICE - AGRICULTURAL RESEARCH SERVICE
004 - GENUS CELTIS
005 - SPECIES OCCIDENTALIS
001 - ACC. NO. 5725T, MDN-12003, 'OAHE'
504 - ST - 38 - NORTH DAKOTA
517 - PURPOSE - WNBR -FIELD PLANTINGS

506 MLRA	507 SOIL	509 TEX	WSG	505 COUNTY	FLD OFFICE	503 COOP	520 DATE PLT	501 YR RC	AGE	518 NO PLTD	NO PLT SRV	532 PCT SRV	522 HT	ACT HT/ YR	WSG HT	EXP HT/YR	553 CRN SPD	CS/ YR	554 DBH	525 WD COMP
055B	Forman-Aastad	L	3-1	Sargent	Forman	Hoistad, U.	05-12-70	81	11	50	48	96	11	1.0	20	1.0	9	0.8	1.5	3
055B	Forman-Aastad	L	3-1	Sargent	Forman	Wucherpfenning, D.	05-24-74	81	7	254	229	90	2	0.3	20	1.0	2	0.3	-	9
055B	Aastad	L	1	Sargent	Forman	Arneson, D.	05-27-74	81	7	113	71	63	5	0.7	20	1.0	3	0.4	0.5	9
055B	Forman-Aastad	L	3-1	Sargent	Forman	Bergh, R.	05-04-74	81	7	485	210	43	7	1.1	20	1.0	6	0.9	1.0	1
054	Tally-Parshall	FSL	5-1	Bowman	Bowman	Krinke, N.	05-20-72	81	9	1.72	160	93	9	1.0	16	0.8	7	0.7	1.2	1
054	Morton	SIL	3	Hettinger	New England	Sorenson, R.	05-17-67	81	14	25	11	44	14	1.0	19	0.95	12	0.8	2.1	3
053A	Williams	SIL	3	Divide	Crosby	Olson, H.	05-04-73	81	8	25	15	60	1	0.1	19	0.95	0.3	.04	-	9
053B	Mandan	SIL	3	Burleigh	Bismarck	Riskedahl, B.	05-25-74	81	7	71	55	77	13	1.8	19	0.95	7	1.0	1.6	1
053B	Williams	L	3	Burleigh	Bismarck	Alm, I.	05-17-67	81	14	123	74	60	6	0.4	19	0.95	3	0.2	-	9
053B	Williams	L	3	Burleigh	Bismarck	Hinkle, R.	05-17-74	81	7	210	174	83	8	1.1	19	0.95	6	0.9	0.7	3
								Total		1528	1047									
								Mean	9			69	7.6	0.9			5.5	0.6		

TABLE 3 DATA TO SUPPORT RELEASE OF 'OAHE' HACKBERRY
PROJECT PLAN NO. 38F500K
USDA - SOIL CONSERVATION SERVICE - AGRICULTURAL RESEARCH SERVICE
004 - GENUS CELTIS
005 - SPECIES OCCIDENTALIS
001 - ACC. NO. 5725T. MDN-12003. 'OAHE'
504 - ST - 38 - NORTH DAKOTA
517 - PURPOSE - WNBR -FIELD EVALUATION PLANTINGS

506 MLRA	507 SOIL	509 TEX	WSG	505 COUNTY	503 COOP	520 DATE PLT	501 YR RC	AGE	518 NO PLTS	NO PLT SRV	532 PCT SRV	522 HT	ACT HT/ YR	WSG HT	EXP HT/YR	553 CRN SPD	CS/ YR	554 DBH	525 WD COMP
053B	Mandan	SIL	3	Burleigh	USDA, SCS, PMC, Bismarck, ND Lincoln-Oakes Nursery Fld. D-11	05-68	81	13	50	26 1/	100	19	1.5	19	0.95	14	1.1	5.2	1
053B	Savage	SIL	3	Burleigh	USDA, SCS, PMC, Bismarck, ND NDG&F, McKenzie Slough GMA 1/02/S-N	05-15-72	81	9	6	6	100	11	1.2	19	0.95	14	1.5	-	1
054	Stady	L	6	Morton	USDA, SCS, PMC, Bismarck, ND Sweet Briar Rec. Area, Morton Co., ND	05-12	81	9	5	5	100	17	1.9	12	0.6	11	1.2	-	1
055A	Barnes	L	3	Bottineau	USDA, SCS, PNC, Bismarck, ND NDSU, Bottineau, ND	05-15-74	81	7	5	4	80	10	1.4	20	1.0	11	1.5	-	1
							Total		66	41 1/									
							Nean	9.5			95	14	1.5			13	1.3		1
Parent Trees																			
054	Williams	SIL	3	Morton	USDA, ARS, Mandan, ND	58	81	23	5	5	100	29	1.2	19	0.95	17	0.7	-	1

1/ Twenty-four (24) alternate plants removed in 1972.