

Public Release Documentation

United States
Department of
Agriculture

Soil
Conservation
Service

'Affinity'
Northern White Cedar



**Rose Lake
Plant Materials
Center**

**East Lansing
Michigan**

NOTICE OF RELEASE OF 'AFFINITY' NORTHERN WHITE CEDAR
FOR CONSERVATION PLANTINGS

By

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ECOLOGICAL SCIENCES
Washington, D.C.

And

JASPER - PULASKI STATE NURSERY
INDIANA DEPARTMENT OF NATURAL RESOURCES
Medaryville, Indiana

The United States Department of Agriculture, Soil Conservation Service and the Jasper-Pulaski State Nursery of the Indiana Department of Natural Resources announce the release of 'Affinity' Northern white cedar, *Thuja occidentalis* L.

'Affinity' Northern white cedar is an intermediate tree, growing to 25 meters in height, with a narrow pyramidal to oblong crown and a long tapering bole supported by a shallow, wide-spreading root system. The leaves are yellow-green and persistent, on leading shoots 0.6 centimeters long, glandular, and long-pointed, and on lateral branches scale-like and flattened, 0.3 centimeters long, obscurely glandular pitted, with the foliage sprays often fanlike. Cones are from 0.3 to 1.3 centimeters in length, erect and oblong. Seeds are released in fall, but the cones often persist through winter. Bark is from 0.3 to 1.3 centimeters thick, reddish to grayish brown and fibrous.

'Affinity' is a multiple use plant intended for use in field and farmstead windbreaks and as a screen or border planting in recreational and urban development. 'Affinity' shows promise for use as a windbreak on organic soils. In much of its range, Northern white cedar is an important source of winter browse. In all, 84 wildlife species (47 birds, 34 mammals, and 3 herpetiles) were identified as using the various developmental stages of the Northern white cedar community.

'Affinity' Northern white cedar is a relatively fast-growing compact, upright tree with good seeding vigor. It was collected at the Jasper-Pulaski State Nursery in Medaryville, Indiana. 'Affinity' has been evaluated at the Rose Lake Plant Material Center and in extensive field plantings throughout the Great Lakes Region. Northern white cedar is a native species and is widespread throughout this region.

performance has been very good and indicates that 'Affinity' should be adapted throughout the Great Lakes Region in plant hardiness zones 3, 4, and 5. Northern white cedar grows naturally in wet sites and on poorly drained soils but is also adapted to well-drained sandy loams.

'Affinity' is released as an open-pollinated seed propagated cultivar. Approximately 184,000 to 567,000 seeds are produced per pound. A seed orchard for 'Affinity' is established at the USDA Soil Conservation Service Rose Lake Plant Materials Center in East Lansing, Michigan. Seed and foundation 2-0 nursery stock will be maintained as 'breeders' material for distribution to public and commercial nurserymen.

James B Newman

James Newman, Director
Ecological Sciences and Technology Division
USDA Soil Conservation Service
Washington, D.C.

8-23-93

Date

Homer R Hilner

Homer R. Hilner, State Conservationist
USDA Soil Conservation Service
East Lansing, Michigan

8-4-93

Date

Donald E Westefer

Donald Westefer, Director
Jasper-Pulaski State Nursery
Indiana Department of Natural Resources
Medaryville, Indiana

9/13/93

Date

Robert L Eddleman

Robert L. Eddleman, State Conservationist
USDA Soil Conservation Service
Indianapolis, Indiana

8-15-93

Date

Earl Cosby

Earl Cosby, State conservationist
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8/31/93

Date

All SCS programs and services are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

DATA TO SUPPORT RELEASE OF 'AFFINITY' NORTHERN WHITE CEDAR

Cultivar : 'Affinity'

Accession No. : PI 477011, Mich-1468

Common Name: Northern white cedar

Scientific Name: *Thuja occidentalis* L. **Symbol**: THOC2

Description: 'Affinity' Northern white cedar is an intermediate tree, growing to 25 meters in height, with a narrow pyramidal to oblong crown and a long, tapering bole supported by a shallow, wide-spreading root system. Leaves are yellow-green and persistent, on leading shoots 0.6 cm. long, glandular, and long-pointed, and on lateral branchlets scalelike and flattened, 0.3 cm. long, obscurely glandular-pitted, with the foliage sprays often fanlike. Cones are from 0.3-1.3 cm. in length, erect and oblong. Seeds are released in fall, but the cones often persist through winter. There are from 184,000 to 567,000 seeds per pound. Bark is from 0.3-1.3 cm. thick, reddish to grayish brown and fibrous.

Origin: 'Affinity' is a relatively fast-growing compact, upright tree with good seeding vigor. It was originally collected at the Jasper-Pulaski State Nursery in Medaryville, Indiana.

Uses: 'Affinity' is a multiple use plant intended for use in field and farmstead windbreaks and as a screen or border planting in recreational and urban development. 'Affinity' shows promise for use as a windbreak on organic soils. In much of its range, Northern white cedar is an important source of winter browse. In all, eighty-four wildlife species (47 birds, 34 mammals, and 3 herpetiles) were identified as using the various developmental stages of the Northern white cedar community.

Performance: A comparative evaluation (Project 26A060K) was established at the Rose Lake Plant Materials Center in 1980. Ten plants per accession for ten accessions were randomized and planted in along, single row to account for soil changes, slope and exposure. The three most promising accessions from the evaluation were 9005060, provided by the Wisconsin Department of Natural Resources (DNR), 9019783, from a commercial nursery, and 'Affinity' (477011) from the Indiana DNR. It was decided in 1987 to continue final evaluations leading to release of one of the three.

Concurrently, with on Center evaluations, field plantings were carried out with 9005060 and 'Affinity', the two most promising accessions for which a dependable seed source was identified. Overall, 'Affinity' was found to be superior to 9005060 in nearly 40 field plantings in Michigan, Indiana, and Wisconsin and was chosen for release.

'Affinity' compared most favorably to a number of similarly used species in various field plantings including silky dogwood (*Cornus amomum*), autumn olive (*Elaeagnus umbellata*), Sargent crabapple (*Malus sargentii*), Manchurian crabapple (*Malus baccata* v. *mandshurica*), amur maple (*Acer ginnala*), and others.

Adaptation: 'Affinity' should prove adapted throughout the Great Lakes region within the zone of natural occurrence for Northern white cedar. Thus, 'Affinity' should be adapted to plant hardiness zones 3, 4, and 5.

Soils: 'Affinity' Northern white cedar grows naturally in wet sites and on poorly drained soils but is also adapted to well-drained sandy loams.

Propagation: 'Affinity' is a seed propagated cultivar. Seedlings are easily grown by sowing untreated, cleaned seed in the fall. Average seedbed density should be about 530 seedlings per square meter. Sowing depth should vary between 0.3 to 0.8 centimeters. Half shade over the seed beds is recommended during the first growing season. Cones may be picked by hand or they may be flailed or stripped onto a sheet of canvas, burlap or plastic. Seeds should be collected between mid-September to late October. Kiln drying is needed to extract seed from large quantities of cones. Seeds of Northern white cedar have been opened by exposing them for 4 hours in an internal-fan type kiln to a temperature of 45 C and a relative humidity of 38%. Small quantities of cones can be opened by drying at room temperature for a longer time. After cones have been opened, seeds may be shaken out in a mechanical cone shaker and separated from the cone scales by fanning. Seeds should not be dewinged.

Method of Establishment: 'Affinity' Northern white cedar can be successfully established using 3-0 planting stock by following the normal planting procedures for bare-root trees. Weed, grass, and deer and rodent control is necessary for good establishment and uniform growth. This can be obtained through cultivation, mowing, and after the establishment year, application of approved herbicides. Spacing for windbreak planting is 183-305 cm (6-10 ft.).

Disease, Insect and Animal Damage: No serious disease or insect damage has been observed to limit 'Affinity' Northern white cedar's growth. Deer browse and rodent damage have been observed in some plantings.

Sources of Seed and Planting Stock: The USDA, Soil Conservation Service, Rose Lake Plant Materials Center, 7472 Stoll Road, East Lansing, Michigan 48823, will maintain breeder seed and foundation stock of 'Affinity' Northern white cedar. Breeder seed and foundation stock will be made available for distribution to public and commercial nurseryman.

References:

Young, J. A.; Young, C. G. 1992. Seeds of Woody Plants in North America. Dioscorides Press, Portland, Oregon. pp. 338-340.

USDA, Forest Service. 1974. Seeds of Woody Plants in the United States. Agricultural Handbook No. 450. pp. 805-809.

Harlow, W. M.; Harrar, E. S.; White, F. M. 1979. Textbook of Dendrology. Sixth Edition. McGraw-Hill, Inc., New York, New York.

Northern White-Cedar in Michigan: Workshop Proceedings. 1991. Sault Ste. Marie, Michigan, February 21-22, 1990. Ed. by D. O. Lantagne. Agriculture Experiment Station Research Report 512.

Prepared by: The data to support the release of 'Affinity' Northern white cedar was assembled by the Rose Lake Plant Materials Center, USDA-SCS, East Lansing, Michigan.

All SCS programs and services are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Evaluation of Thuja occid ntalis for Windbreaks

26A060K

1/
1980 Evaluation Data—

Accession No.	Alter- ate No.	Source	Ht. (cm.)	Wd. (cm.)	Vig- or	Fol- lage	Sur- viv.	Rank
9019783	MICH-1990	Evergreen Nurs.	55	35	Ex.	Dense	100%	1
477011	MICH-1468	Rose Lake PMC	47	29	Ex.	v. good	100%	2
9005060	MICH-1841	Rose Lake PMC	53	33	Ex.	Dense	N/A	3
	MICH-1985	Wisconsin DNR	39	33	Fair	Fair	N/A	4
	MICH-1984	Big Flats PMC	46	37	Ex.	Dense	Poor	5
	MICH-1981	Ohio DNR	29	20	Poor	Poor	Good	6
	MICH-1983	Big Flats PMC	31	23	Fair	Comp.	Poor	7
	MICH-1977	Van Pines Nurs.	24	20	Fair	Fair	Poor	8
	MICH-1992	Rose Lake PMC	36	21	Poor	Sparce	Poor	9
	MICH-1995	New York DNR					0%	10

1/ Planting established on May 7, 1980. Summary made on October 22, 1980. Planting is located at the Rose Lake Plant Materials Center, East Lansing, MI.

Evaluation of *l'huja occidentalis* for Windbreaks

26A060K

1986 Evaluation Data ^{1/}

Accn. No.	Alt. No.	Vig-or.	Fol. Abun.	Fol. Dens.	Dis. Resis.	Inset. Resis.	Amt. Seed	% Sur.	Rank
	MICH-1992	<u>2/</u> 4	<u>2/</u> 5	<u>3/</u> 5	<u>3/</u> 1	<u>3/</u> 1	<u>2/</u> 8	60	
	MICH-1983	3	3	3	1	1	5	30	
9005060	MICH-1841	3	3	3	1	1	6	100	1
	MICH-1985	3	4	4	1	1	8	80	
9019783	MICH-1990	3	3	3	1	1	7	100	2
	MICH-1975							0	
	MICH-1984	3	<u>4</u>	3	1	1	7	60	
477011	MICH-1468	3	3	4	1	1	6	100	3
	MICH-1981	3	3	3	1	1	8	70	
	MICH-1977	3	3	3	1	1	7	20	

1/ Planting established on May 7, 1980. Summary made on September 26, 1986. Planting is located at the Rose Lake Plant Materials Center, East Lansing, MI

2/ Rating: 1 = excellent; 3 = good; 5 = fair; 7 = poor; 9 = very poor.

3/ Rating: 1 = no damage; 3 = little damage; 5 = moderate damage; 7 = severe damage; 9 = very severe damage.

Evaluation of *Thuja occidentalis* for Windbreaks .

26A060K

1987 Evaluation Data 1/ .

Accn. No.	Vigor		Fol. Abun.	Fol. Dens.	Dis. Resis.	Insect. Resis.	Ht. (cm.)	Wd. (cm.)	% Surv.	Rank
	<u>7/1</u>	<u>10/29</u>	<u>7/1</u>	<u>7/1</u>	<u>8/18</u>	<u>8/18</u>	<u>10/29</u>	<u>10/29</u>	<u>10/29</u>	
9005060	<u>2</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>1</u>	256	135	100	1
9019783	2	3	2	2	1	1	233	116	100	2
477011	3	4	3	3	1	1	217	114	90	3

1/
Planting established on May 7, 1980. Summary made on October 29, 1987. Planting is located at the Rose Lake PMC, East Lansing, MI. All accessions except 9005060, 1019783 and 477011 were removed from evaluation during spring 1987.

2/
Rating: 1 = excellent; 3 = good; 5 = fair; 7 = poor; 9 = very poor.

3/
Rating: 1 = no damage; 3 = little damage; 5 = moderate damage; 7 = severe damage; 9 = very severe damage.

Evaluation of *Thuja occidentalis* for Windbreaks

26A060K

1988 Evaluation Data ^{1/}

Accn. No.	Vigor		Fol. Abun.	Fol. Dens.	Dis. Resis.	Insct. Resis.	Amt. Seed	Ht. (cm.)	Wd. (cm.)	% Surv.
	<u>7/1</u>	<u>10/12</u>	<u>7/1</u>	<u>7/1</u>	<u>7/1</u>	<u>7/1</u>	<u>8/30</u>	<u>10/12</u>	<u>10/12</u>	<u>10/12</u>
9005060	3	<u>2/</u> 3	<u>2/</u> 2	<u>2/</u> 2	<u>3/</u> 2	<u>3/</u> 2	<u>2/</u> 5	268	142	100
9019783	3	3	3	3	2	2	5	254	129	100
477011	4	4	4	3	3	2	4	235	121	100

1/ Planting established on May 7, 1980. Summary made on October 12, 1988. Planting is located at the Rose Lake PMC, East Lansing, MI.

2/ Rating: 1 = excellent; 3 = good; 5 = fair; 7 = poor; 9 = very poor.

3/ Rating: 1 = no damage; 3 = little damage; 5 = moderate damage; 7 = severe damage; 9 = very severe damage.

Evaluation of *Thuja occidentalis* for Windbreaks

26A060K

1989 Evaluation Data ^{1/}

Accn. No.	Vigor		Fol. Abun.	Fol. Dens.	Dis. Resis.	Insect, Resis.	Amt. Seed	Ht. (cm.)	Wd. (cm.)	% Surv.
	<u>7/17</u>	<u>10/16</u>	<u>7/17</u>	<u>7/17</u>	<u>7/17</u>	<u>7/17</u>	<u>10/16</u>	<u>10/16</u>	<u>10/16</u>	
9005060	3	<u>2/</u> 3	<u>2/</u> 2	<u>2/</u> 3	<u>3/</u> 1	<u>3/</u> 1	<u>2/</u> 8	294	154	100
9019783	2	3	2	3	1	1	6	291	134	100
477011	4	5	4	4	2	1	8	263	126	80

1/ Planting established on May 7, 1980. Summary made on October 16, 1989. Planting is located at the Rose Lake PMC, East Lansing, MI.

2/ Rating: 1 = excellent; 3 = good; 5 = fair; 7 = poor; 9 = very poor.

3/ Rating: 1 = no damage; 3 = little damage; 5 = moderate damage; 7 = severe damage; 9 = very severe damage.

Evaluation of *Thuja occidentalis* for Windbreaks

26A060K

1990 Evaluation Data ^{1/}

Accn. No.	Vigor 6/13	Fol. Abun. 6/13	Dis. Resis. 11/1	Insect. Resis. 11/1	Ht. (cm.) 11/1	Wd. (cm.) 11/1	Amt. Seed 11/1
9005060	^{2/} 3	^{2/} 2	^{3/} 1	^{3/} 1	373	192	^{3/} 8
9019783	2	2	1	1	357	164	9
477011	3	2	1	1	332	170	8

^{1/}

Planting established on May 7, 1980. Summary made on November 1, 1990. Planting is located at the Rose Lake PMC, East Lansing, MI.

^{2/}

Rating: 1 = excellent; 3 = good; 5 = fair; 7 = poor; 9 = very poor

^{3/}

Rating: 1 = no damage; 3 = little damage; 5 = moderate damage; 7 = severe damage; 9 = very severe damage.

INDIANA (cont.)

CO/COOP	DATE PLANTED	CULTIVAR/ NUMBER ACCESSION	COMMON NAME	LRA	SOILS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	199
Johnson A:H. Meyer	4/13-14/83	9005060 471011	North. white cedar North. white cedar	111	Crosby sil							4 -	3 2	2 2					
Knox Steve Hoke	4/10/81	9005060 Imperial	North. white cedar Carolina poplar	115	Sylvan sil					1 1	1 -								
Knox Claude Seger	4/11/82	9005060 477011 Midwest	North. white cedar North. white cedar Manchurian crabapple	115	Alvin fsl Bloomfield lfs						2 2 -	2 2 -							
Knox Tom Thompson	3/26/87	Indigo Roselow 9005060 477011	silky dogwood Sargent crabapple North. white cedar North. white cedar	115	Alford sil											- - - -	1 1 1 1	3 3 3 3	
LaGrange Pigeon River State Game Area	4/21/83	9005060 477011	North. white cedar North. white cedar	98	Boyer ls							4 2	4 2	4 2	4 2				
Mogan Green Twp. Sch.	4/14/84	477011	North. white cedar	111	Fox complex 1 Ockley 1								1	2					
Newton Kentland Park	4/25/83	Imperial 9005060 477011	Carolina poplar North. white cedar North. white cedar	98	Rensselaer sil							3 2 1	3 2 1	3 2 2	3 2 2				
St. Joseph Lee Clingenpeel	4/11/81	T05032 Midwest 9005060	Mich-1704 crabapple Manchurian crabapple North. white cedar	98	Oshtemo sil						1 1 -	1 1 1	1 2 1	1 2 1	2 1 1				
St. Joseph Dill Miller	5/7/81	T05098 Midwest 9005060	Mich-1704 crabapple Manchurian crabapple	98	Oshtemo sil	1 - -					1 - -	1 1 1	1 1 1	1 1 1	1 3 2				
St. Joseph David Miller	3/14/86	Imperial 9005060 477011	Carolina poplar North. white cedar North. white cedar	111	Alida sil											- - -	3 2 3	3 4 5	1 1 1
Wabash Carl Eppley	4/4/89	Imperial 477011 9005060	Carolina poplar North. white cedar North. white cedar	111	Miami sil														E E E
Whitley Arthur Faylor	4/17/89	Indigo Midwest Roselow 9005032 9005060 477011	silky dogwood Manchurian crabapple Sargent crabapple crabapple - Magenta North. white cedar North. white cedar	111	Sloan s														E E E E E E

MICHIGAN (cont.)

CO/COOP	DATE PLANTED	CULTIVAR/ NUMBER ACCESSION	COMMON NAME	LRA	SOILS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Tuscola	4/19/82	9005060	North. white cedar	99	Tobico lfs						1	1	1	1	1	1	1	1	1
Ken Hofmeister		477011	North. white cedar								1	2	1	1	2	2	2	5	
		Midwest	Manchurian crabapple								-	1	1	1	2	2	2	5	
Tuscola	4/19/82	9005060	North. white cedar	99	Tappan 1						1	3	2	2	2	2	2	5	
Randy Russel		477011	North. white cedar								1	2	2	2	3	3	2	5	
		Midwest	Manchurian crabapple								-	1	1	1	1	2	2	5	
Van Buren	4/20/81	9005060	North. white cedar	91	Plainfield s					2	2	2	2	2	2	2	2		
SCD Nursery	5/1/84	9005060	North. white cedar	97									1	2	2	2	2	3	
		477011	North. white cedar										-	1	1	1	2	3	
Washtenaw	4/17/76	Indigo	silky dogwood																
Gary L. Shadley		Indigo	silky dogwood	98	Pewamo cl	1	1	1	1	1	1	1							
		477011	North. white cedar		'76-1	2	2	2	2	2	2	2							

477011 NORTHERN WHITE CEDAR DATA

1990

WISCONSIN

CO/COOP	DATE PLANTED	CULTIVAR/ NUMBER ACCESSION	COMMON NAME	LRA	SOILS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Kewaunee Terry Vandermuse	4/24/86	9005060 477011	North. white cedar North. white cedar	95A	Hortonville sil										~ -	3 3	3 3	3 3	
Lincoln FFA Merrill Public Schools	4/26/84	Roselow 9005060 477011	Sargent crabapple North. white cedar North. white cedar	90	Magnor sil								1 1 -	2 2 3	1 4 4				
Marquette lien Soda	5/1/80	T05032 Midwest 477011	Crabapple MI-1704 Manchurian crabapple North. white cedar	91K	Gotham lfs				2 2 2	2 2 2									
Winnebago Al-N-Rae Farms, Inc.	4/29/82	9005060 477011	North. white cedar North. white cedar	95B	McHenry sil						3 2	3 2	3 2	1 1	2 1	1 1	1 1	1 1	
Winnebago Douglas Gunz	4/30/82	9005060 477011	North. white cedar North. white cedar	95A	Korobago sil						1 1	1 2	1 3						
Winnebago Larry Longwirth	5/3/82	9005060 477011	North. white cedar North. white cedar	95A	Lorenzo l						4 1	4 2							

Evaluation of *Thuja occidentalis* for Windbreaks

FEP Summary ^{1/}

State	Accession Number	Plantings	Rating
Indiana	477011	11	<u>2/</u>
	9005060	10	2
Wisconsin	477011	6	2
	9005060	5	3
Michigan	477011	12	2
	9005060	5	2

1/
 Field Evaluation Plantings established between April 6, 1973 and April 28, 1989 in Indiana, Wisconsin and Michigan. Summary made November 1990.

2/
 Rating prior to January 1, 1990: 1 = excellent; 3 = fair; 5 = poor.
 Rating after January 1, 1990: 1 = excellent; 3 = good; 5 = fair; 7 = poor; 9 = very poor.