

Trees

NDSU Campus Arboretum

WALKING TRAILS that identify the diversity of trees on the NDSU Campus

Trees add shelter, shade and aesthetic beauty to our living environments.

The tree walking trails of the NDSU Campus Arboretum provide students, faculty, alumni and visitors with information on the identity and significance of trees growing on campus.


Two trails are planned. This is the Yellow Trail identifying 66 trees in the arboretum south of Centennial Boulevard.

In the future, a second trail will be designed to include additional trees in the arboretum north of Centennial Boulevard. This trail will be color-coded as the Green Trail. Trail colors emphasize the NDSU “Yellow and the Green.”

Each tree is identified by a number (1 to 66), which coincides with the numbered sequence of trees along the Yellow Trail on the pamphlet map.

The symbol of the state of North Dakota preceding a number identifies trees that are native in North Dakota.

Enjoy the walk, the NDSU Campus Arboretum trees and your visit to campus.



Prairie Statesman® Swiss Stone Pine - *Pinus cembra* 'Herman'

Trail designed and tree descriptions written by:

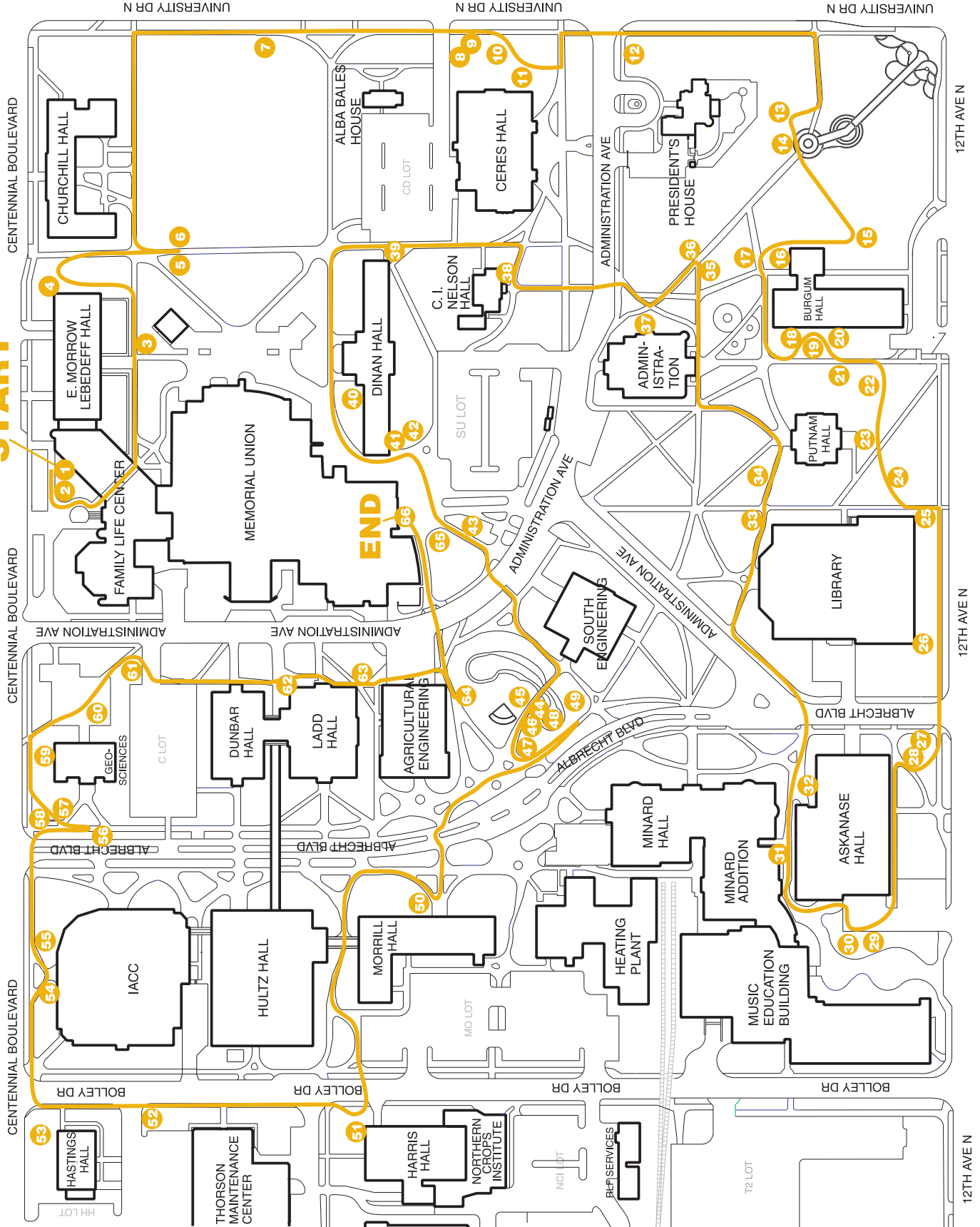
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This project was funded in part by a Student Government Improvement Grant.

Yellow Trail (South of Centennial Boulevard)



Note! Yellow Trail begins north of Memorial Union, northeast side of Family Life Center. Parking is available for visitors at the WE pay lot (north side of Wallman Wellness Center) or the SU pay lot (southeast of Memorial Union).

Yellow Trail (south of Centennial Boulevard)

66 trees, 1.8 miles

1 | AMERICAN ARBORVITAE – *Thuja occidentalis* (2 trees)

A soft, fine-textured, scale-foliaged conifer. Native to eastern North America as far west as Minnesota. An under-utilized hardy, pyramidal tree species (20'–35') represented in landscapes by many selected cultivars of every size and shape, particularly dwarf forms. Cones are small, brown, 1/8"–1/2" and persist into winter.

2 | JAPANESE TREE LILAC – *Syringa reticulata* (3 trees)

A small tree growing 20'–25', native to Japan. Produces large, showy creamy-white flower panicles. This species has increased in landscape popularity, and at least six cultivars are available, including 'Ivory Silk.' Large, tan clusters of seed capsules add winter interest to trees.

3 | MINNEAPOLIS PARK ELM – *Ulmus americana* 'Minneapolis Park' (tree row)

A selected cultivar of American elm for its dense, compact, vase-shaped growth habit. Numerous 40'–60' specimens are still present on campus, unfortunately, it is not resistant to infection by Dutch elm disease so is no longer recommended for planting.

4 | IRONWOOD (syn. American Hop-hornbeam) – *Ostrya virginiana*

A native tree growing 25'–35' tall. Not commonly planted in landscapes, but in recent years is becoming available at nurseries. It is in the same family as birches, so it prefers cooler soils that are not drouthy. Its growth rate is fairly slow, but tree form is graceful, often pyramidal, changing to a more rounded outline as trees age. Staminate catkins are present, fruits are hop-like sacs. Golden-yellow autumn color. NDSU introduced an improved cultivar, 'Camdale' – Sunbeam™ in 2011. Mulch newly planted trees.

5 | COLORADO SPRUCE – *Picea pungens* (group of trees)

Sharp, prickly 1"–1 1/4" needled conifer native to the Rocky Mountains. Very popular, strikingly pyramidal, 30'–60' landscape tree for many years but several fungal diseases have become serious, especially when trees are spaced too closely in landscape sites. Several select blue-needled cultivars are available, including dwarf selections. Black Hills spruce and Meyer spruce are recommended as more disease resistant species for landscapes.

6 | SCOTCH PINE – *Pinus sylvestris* (group of trees)

A 2-needle pine native to Europe. Needles are typically 2"–3 1/2" long. It is characterized by coppery-orange flaky bark. This tree has been planted considerably in farmstead windbreaks, shelter belts and in landscapes. It is commonly sold as a Christmas tree.

7 | MEDORA JUNIPER – *Juniperus scopulorum* 'Medora' (several trees)

This has been the most popular Rocky Mountain juniper cultivar in this region for decades. Introduced at NDSU in 1954, very dense, 10'–15' tall, compact and columnar requiring no pruning to retain its form. Originated in North Dakota Badlands. Plant in full sun. Foliage has a bluish-gray hue. (See information, #31.)

8 | COMMON LILAC – *Syringa vulgaris* (several shrubs)

Very large shrub, native to southeast Europe that was much planted on Northern Plains homesteads due to its extreme winter hardiness, drought tolerance and adaptation to varied soil conditions. Long appreciated for its fragrant spring blossoms with various flower colors and a multitude of cultivars. Many of the improved French hybrid cultivars do not sucker extensively like the original species.

9 | SUGAR MAPLE – *Acer saccharum*

This excellent, dense, shapely tree (30'–60') is native from eastern North America as far west as Manitoba, Minnesota and South Dakota. Fairly large-leaved with three major lobes per leaf and it has hard wood and clear sap. It prefers moist but well-drained soils that are not alkaline in pH. Where such sites are available this maple deserves wider planting in eastern North Dakota. Fall foliage colors range from yellow through orange to red. Tapping trees yields the maple syrup used on pancakes.

10 | GREEN MOUNTAIN SUGAR MAPLE – *Acer saccharum* 'Green Mountain'

A spreading sugar maple cultivar selected in the Green Mountains of Vermont which has performed satisfactorily in NDSU trials. Fall color develops late and is somewhat variable.

11 | HOPA CRABAPPLE – *Malus* x 'Hopa'

The first of the popular Rosybloom crabapples, named by the late Dr. N.E. Hansen at South Dakota State University. 'Hopa' is susceptible to the apple scab fungus and its pink flowers fade quite rapidly. Superior cultivars with similar hardy Redvein x Siberian crabapple parentage are available. Hopa crabapple is included on the tour because of its historical significance in hardier crabapple breeding.

12 | BUR OAK – *Quercus macrocarpa*

The only native oak species in North Dakota. It is a very hardy, long-lived, rugged stunted tree growing 35'–65' tall. It has good drought and alkaline pH tolerance, and is deep rooted. Due to its tap root system, bareroot trees were fairly difficult to establish, but now trees are often sold container grown with improved transplant success. Fall foliage coloration is mediocre.

13 | PRAIRIE STATESMAN® SWISS STONE PINE – *Pinus cembra* 'Herman' (3 trees)

A five-needle pine species native to the European Alps and Carpathian Mountains is one of the hardiest and most beautiful of the pines. This NDSU introduction was selected for its more compact, dense and narrower growth habit. Needles are an excellent green with a slight bluish hue. It is now available in the nursery trade and produces a singularly outstanding 30'–40' specimen tree to feature in the landscape.

14 | GRAY DOGWOOD (tree form) – *Cornus racemosa* (about 20 small trees)

Gray dogwood is normally grown as a large shrub. However, plants are sometimes trained to a single stem (tree form) for landscape planting. Attractive displays of white flowers and white fruits (drupes) borne on pink pedicels add ornamental value. NDSU has introduced a cultivar named 'Jade' – Snow Mantle®. Height may reach 12'–14'.

15 | HOPTREE – *Ptelea trifoliata*

A small tree growing 10'–18' with trifoliolate (3 leaflets) per leaf. Native in eastern North America and all the way west to Minnesota, Colorado, Arizona and Mexico. Sometimes called Wafer-ash. Flowers are greenish-white and not showy, but the masses of rounded winged seeds are conspicuous and persist into winter, becoming tannish-brown. In certain sites, seedlings may become invasive. Southern seed sources are deficient in hardiness.

16 | PAGODA DOGWOOD – *Cornus alternifolia*

Small tree native from Minnesota all the way to the East Coast. Unlike other dogwoods, this species has alternate leaves near twig ends. Branching occurs in an interesting pagoda or layered fashion. Produces clustered, creamy flowers followed by dark bluish 1/4" berry-like drupes displayed on top sides of branches. Do not plant in drouthy sites or established trees may die back and lose vigor.

17 | AMERICAN LINDEN – *Tilia americana*

This tree is native in North Dakota and eastern North America all the way to the East Coast. It is a large tree growing 50'–65' tall with rather heart-shaped leaves. It performs well in moist sites and the heavy clay soils of the Red River Valley. Trees grow semi-pyramidal in form, rounding somewhat as they age. Buds are often reddish in winter and flowers are pale yellow and fragrant. Important bee tree for honey production. Seeds are winged nutlets.

18 | AMUR CHOKECHERRY – *Prunus maackii*

This hardy Asiatic species is sometimes called Manchurian cherry or Amur cherry. It does not sucker like our native chokecherry and produces similar but shorter creamy flower racemes. Fruits also resemble those of chokecherry. Its best attribute is showy coppery to cinnamon brown bark which variably peels somewhat like birch trees. Trees grow 20'–30' tall but it is often not very long-lived due to trunk canker and other maladies, causing its popularity to wane somewhat. To date it resists black knot disease.

19 | DISCOVERY JAPANESE ELM – *Ulmus davidiana* var. *japonica* 'Discovery'

A named cultivar of Japanese elm introduced from seed obtained from the Morden Research Station in Manitoba. Some authorities still list the species as *U. japonica*. It produces a 30'–40' tree with an oval to vase-shaped canopy with smaller leaves than American elm. It is reputed to be highly resistant to Dutch elm disease and several other pest problems. It is available and performing well in North Dakota plantings.

20| THORNLESS COCKSPUR HAWTHORN –

Crataegus crusgalli var. *inermis*

This species is native to Quebec, south to North Carolina and west to Kansas. The species is very thorny and questionably winter hardy in the Northern Plains, but this variety is thornless and sufficiently winter hardy. It is the most attractive, ornamental hawthorn for this area. Leaves are emerald-green and very glossy. Trees grow 18'–24' tall, covered with white flowers in spring. Fruits are $\frac{3}{8}$ "– $\frac{1}{2}$ " rosy-red pomes which do drop and thus are somewhat messy. Trees produce an interesting horizontally-layered branch habit. The cultivar 'Cruzam' – Crusader® is essentially identical.



21| BOXELDER MAPLE – *Acer negundo*

Most people call this tree boxelder, but many do not realize it is a maple, hence the name above. Since it produces 3 to 5 leaflets, or occasionally 7 to 9, it is pinnate compound, compared to the simple, lobed leaves of many maple species. This native North Dakota tree grows 25'–40' tall and is extremely winter hardy. It was much planted in the past but is a mediocre tree in aesthetic qualities and is highly susceptible to damage by 2,4-D herbicide spray drift. Trees are also rather unkempt and variable in form with gnarled trunks.

22| MUGO PINE (TREE FORM) – *Pinus mugo* var. *uncinata* (2 trees)

A botanical variety of Mugo Pine that grows more tree-like with a single trunk. It is native to Europe, especially in the Alps and Pyrenees. This small tree fits the scale for residential landscape sites. The cultivar 'Tan-nenbaum,' introduced at South Dakota State University, is an excellent 16'–25' selection that is available at nurseries and recommended for planting.



23| COMMON HACKBERRY – *Celtis occidentalis*

A native North Dakota tree, closely related to American elm, but completely resistant to Dutch elm disease. When trees become large (50'–65'), they often develop an umbrella shape not unlike that of American elm. It is a tough, reliable tree for difficult conditions in the Plains states. A psyllid attacks the leaves, causing nipple galls, reducing aesthetic qualities, but generally not affecting tree vigor or performance. A few cultivars are recently becoming available.

24| NORWAY MAPLE – *Acer platanoides*

This maple is native to Europe but much planted in the United States. Leaves are dark green with five major lobes and milky white sap. There are numerous green and red-purplish leaved cultivars, but most lack sufficient winter hardiness in zones 3 and 4. Winter stem dieback and sunscald injury are common. When successful, trees grow 35'–45' tall, with rounded crowns. The hardiest cultivar for the Northern Plains is 'Pond'-Emerald Lustre®. Although planted, only scattered purplish-leaved cultivars are successful.

25| DAKOTA PINNACLE® ASIAN WHITE BIRCH –

Betula platyphylla 'Fargo'

Columnar to narrowly pyramidal birch growing to 30'–45' introduced at NDSU. It has become quite popular due to its dense, compact stature. Bronze birch borer can attack this tree, particularly if trees are stressed by drought or difficult growing sites, such as parking lots. Trees should be mulched to provide cooler, moister soils which birches prefer. Golden fall color develops and bark becomes whitish.

26| SIBERIAN LARCH – *Larix sibirica* (syn. *L. russica*)

Very hardy deciduous conifer native to Russia and Siberia. Appears to be the preferred larch species in the Northern Plains. Trees are quite pyramidal and the needle-like foliage is very soft, bright green and turns golden-yellow in autumn. This tree has been planted in shelter plantings and merits greater use as a landscape tree.

27| BLACK HILLS SPRUCE – *Picea glauca* var. *densata*

Native spruce in the South Dakota Black Hills region. It is recommended for the Northern Plains and is better adapted than the typical species (White spruce) native to Minn. and across Canada to the eastern U.S. Needles are $\frac{3}{8}$ "–1" long, usually green, rarely bluish-gray, and not prickly to the touch like Colorado Spruce. Trees are densely pyramidal and more disease resistant than Colorado Spruce.

28| ROYAL RED MAPLE – *Acer platanoides* 'Royal Red'

A reddish-purple leaved cultivar of Norway maple. Scattered trees have been successful in the Northern Plains but it is subject to winter dieback and sunscald injury. Plant only in favored sites at your own risk if you desire a purple-foliaged tree.

29| THORNLESS HONEY-LOCUST –

Gleditsia triacanthos var. *inermis*

Native 30'–60' tree from Pennsylvania west to Nebraska. Very fine-textured foliage, pinnate to bipinnate compound leaves consist of many leaflets. The species often bears long, thick thorns and as members of the pea family, produce large, brown fruit pods. Both are very objectionable, so modern day cultivars were selected for improved thornless and podless (male) qualities. Most cultivars lack sufficient hardiness in zones 3 and 4, but NDSU introduced a hardier cultivar named 'Harve' – Northern Acclaim® which is recommended throughout the Northern Plains. No messy leaves to rake, due to their fine-texture; yellowish fall color. (See information, #64.)

30| SUNBURST HONEY-LOCUST –

Gleditsia triacanthos var. *inermis* 'Suncole'

Very borderline in hardiness, this exotic cultivar produces butter yellow foliage from late May to mid-August. Only scattered trees of this cultivar survive North Dakota winters and it is not generally recommended for planting. Plant at your own risk!



31| ROCKY MOUNTAIN JUNIPER – *Juniperus scopulorum* (3 trees)

This native North Dakota tree inhabits western North America from Alberta to Texas and British Columbia to Oregon, including the North Dakota Badlands. This species retains its summer color in winter, not turning brownish like the eastern species, *J. virginiana* – Eastern Red-cedar. The former is also denser branched. Trees grow semi-pyramidal in form, 15'–30' tall, with scaly (soft) and awl-shape (prickly) foliage types. Fruits are $\frac{1}{8}$ ", dark blue berry-like cones. Very hardy and drought tolerant; used in shelterbelts. Trees need full sun. Numerous cultivars available. (See information, #7.)

32| SIBERIAN ARBORVITAE – *Thuja occidentalis* 'Wareana' (3 trees)

The hardiest cultivar of American arborvitae. Virtually never winter-burns! Slower growing than the species, dense, broadly-pyramidal with thick leathery, scaly foliage which is bright green with a tinge of blue. This adapted hardy evergreen deserves greater acceptance for planting in many landscape sites, but deer browsing may damage or kill trees, unfortunately.

33| GREENSPIRE LITTLELEAF LINDEN – *Tilia cordata* 'Greenspire' (2 trees)

The species, littleleaf linden, is native to Europe. 'Greenspire' was the earliest cultivar introduced by Princeton Nurseries in 1961, and may still be the best one today. There are outstanding trees in our area. Trees grow very pyramidal in form, rounding somewhat as they age. Fall color is yellowish.

34| SWAMP WHITE OAK – *Quercus bicolor*

Tree species native from Quebec to Ga., west to Mich. and Ark. It has become readily available in the nursery trade, but it requires neutral to acid soils, thus, iron chlorosis is a major problem in alkaline pH soils of the Northern Plains, with many failing to survive. Plant at your own risk! Leaf lobes are more superficial, not deeply cut like on bur oak. Leaves are very pubescent beneath and tend to cling on young trees into winter. Some yellow fall color.



35| SCHUBERT CHOKECHERRY (syn. Canada Red Cherry) – *Prunus virginiana*

A cultivar of chokecherry (*P. virginiana*) which is native in North Dakota. Leaves of the species remain green all summer. 'Schubert' was selected at the historic Oscar H. Will Nursery in Bismarck, North Dakota. Leaves emerge green and after a few weeks change to purple. This colorful cultivar (20'–25') became a very popular landscape choice, even though it suckers objectionably, like the species. In addition, over the past 15 years, chokecherry has become increasingly ravaged by the fungal disease black knot. Therefore, planting chokecherry and its cultivars is becoming more questionable.

36| REDMOND LINDEN – *Tilia americana* 'Redmond'

Strikingly pyramidal deciduous tree. Numerous outstanding specimens from Fargo area to south and east. Selected and named at Plumfield Nurseries, Fremont, NE, in 1927. Interestingly, it is very borderline in hardiness north of Highway 200 in North Dakota. Little or no fall color develops, but this linden performs well in heavy clay soils of the southern part of the Red River Valley. Trees grow 40'–50' tall.

37| PYRAMIDAL ARBORVITAE – *Thuja occidentalis* ‘Pyramidalis’ (4 trees)

A very columnar, cylindrical cultivar of American arborvitae growing 15’–22’ feet tall. Used to emphasize vertical aspects in landscape design. Several other cultivars of nearly identical form are available, including ‘Rushmore,’ ‘Brandon’ and ‘Skybound.’ ‘Skybound’ was developed at Boughen Nurseries in Manitoba and is rated the best in color and hardiness.

38| BLACK WALNUT – *Juglans nigra*

Native tree in eastern United States as far west as Minnesota and Texas. Seedlings grown from northern seed sources are hardy in the Northern Plains, but not if grown from southern seed sources. Walnut veneer is valuable wood. Leaves are pinnately compound and 10”–20” long. Nuts are somewhat astringent but used in pastries. Quite often planted because few nut trees are winter hardy in the Northern Plains. Seedlings often come up in yards when squirrels bury the nuts. Trees grow 35’–55’ tall.

39| AMUR MAPLE – *Acer tataricum* subsp. *ginnala*

A small tree (15’–22’) native to Asia with 3-lobed leaves. Very winter hardy and much appreciated for its scarlet-red autumn colors. It may suffer iron-chlorosis in alkaline pH soils and in some sites seedling regeneration may be problematic. Numerous cultivars. ‘Embers,’ ‘Ruby Slippers’ and ‘Redwing’ all produce red seeds and red fall color, which amplify their landscape value.

40| WHITE MULBERRY – *Morus alba*

A small- to medium-sized tree (20’–35’) native to China, but now naturalized in America. Leaves vary markedly on trees, from simple unlobed to variably lobed. The yellowish-green flowers lack any showiness, but the ½”–1” fruits are composed of multiple fleshy drupes, usually ripening red to purplish and edible to humans and birds. This species is very borderline in winter hardiness. The hardiest is the botanical form *tatarica* – Russian Mulberry. Occasionally, a very small weeping cultivar is found in the Northern Plains, named ‘Pendula’ – Weeping Mulberry. White Mulberry is a very invasive species, and only male tree cultivars are recommended to avoid seeding. This tree is used to feed silkworms in the silk industry. It grows quite rapidly, and is largely a curiosity in North Dakota.

41| TATARIAN MAPLE – *Acer tataricum* (several trees)

Small tree native to Eurasia which grows 18’–25’ tall. The species has doubly serrate leaves, not distinctly 3-lobed like the Amur maple, a subspecies. The species is reported to be more tolerant of alkaline pH soils, thus less sensitive to iron chlorosis sometimes observed on Amur maple. Four superior cultivars include ‘GarAnn’ – Hot Wings®, ‘Patdell’ – Pattern Perfect, ‘Rugged Charm’ and ‘Actar’ – Summer Splendor™. Recommended for landscape planting.

42| SELKIRK CRABAPPLE – *Malus* x ‘Selkirk’

A hardy, attractive, rosy-pink flowering crabapple introduced at the Morden Research Station in Manitoba. Trees leaf out reddish green, but change to green. Trees produce a spreading, somewhat vase-like form. Fruits are red and very glossy, 4/5” diameter and rather messy as they drop. Fairly disease tolerant.

43| OHIO BUCKEYE – *Aesculus glabra* (3 trees)

Native species from Pennsylvania to Alabama and west to Nebraska and Kansas normally producing 5-leaflets per palmate compound leaf. Ohio buckeye, the state tree of Ohio (20’–40’), usually suffers from physiological leaf scorch and defoliates prematurely in late summer, thus producing little autumn color. Improved hybrid cultivars are now recommended for planting, namely ‘Bergeson’ – Prairie Torch®, a NDSU introduction, ‘Homestead,’ a SDSU introduction and ‘Autumn Splendor,’ a University of Minnesota selection. All of these produce red-purple to red-orange fall coloration and have vastly superior foliage qualities. Most buckeyes have a rounded tree canopy but the three trees at this site are a NDSU selection with a more upright, semi-pyramidal form. Variably yellow flowers add tree interest.

44| WEEPING NORWAY SPRUCE – *Picea abies* ‘Pendula’

An exotic pendulous cultivar of Norway spruce native to Europe. It is borderline in hardiness so may winterburn. Sometimes grown unstaked as a trailing form. Where successful, they are conversation specimens in the landscape.

45| PRAIRIE HORIZON® MANCHURIAN ALDER – *Alnus hirsuta* ‘Harbin’

Alders are moisture-loving trees, members of the birch family and rarely planted in the Northern Plains. This alder is native to Manchuria, where the environmental conditions are similar to the Northern Plains. Thus,

Manchurian alder was the most drought tolerant alder species evaluated in NDSU trials. This NDSU introduction is a rapid grower, produces lush foliage, purplish male catkins, clusters of brown, cone-like strobiles and gray, beech-like bark, all of which make for an interesting ornamental tree. Trees grow 25’–32’ tall. Mulch trees for cooler soil and better moisture supply.

46| SIENNA GLEN® FREEMAN MAPLE – *Acer* x *freemanii* ‘Sienna’

Over the past 15 years, numerous hybrid Freeman Maple cultivars have been released. These maples are hybrids between red maple (*A. rubrum*) and silver maple (*A. saccharinum*), with the goal of capturing the red fall color of red maple and the faster growth of silver maple in one hybrid tree. Time will be required for thorough evaluation of the different cultivars in the Northern Plains. This cultivar was released by Arbor LLC in Minnesota for such qualities as a central leader, pyramidal growth habit, orange-red fall color, resistance to sunscald and frost cracking and more arrowhead shaped leaves.

47| GINKGO (syn. Maidenhair Tree) – *Ginkgo biloba*

Very historic, rare tree species native to China. Thought to be extinct, but a small group of native trees have been found in China. Ginkgo is quite borderline in hardiness even in USDA zone 4, but a few trees are found in eastern North Dakota. This tree is planted in many parts of the United States and has very few pest or soil related problems. It is deciduous and in warmer climate zones fall color is a good yellow. There are numerous cultivars, most of which are male and have not been trialed in North Dakota. Female trees produce a fleshy, naked seed about 1” in diameter which is messy upon drop. It is very interesting to note that perfectly preserved fossilized leaves of Ginkgo have been collected in western North Dakota. It apparently was native here in prehistoric times.

48| PRAIRIE RADIANCE® WINTERBERRY EUONYMUS – *Euonymus bungeanus* ‘Verona’ (4 tree group)

This winter hardy, small ornamental tree was introduced in NDSU’s woody plant improvement research program in 1998. It is readily available at nurseries and grows 10’–16’ tall. Quality foliage is produced which turns a showy rosy-pink to red in autumn. It also produces many pink colored fruit capsules by mid-August which split open in September to expose reddish seeds. These attributes, plus silvery-gray bark, all contribute to a landscape effective small tree. The species is native to China.

49| PRAIRIEFIRE CRABAPPLE – *Malus* x ‘Prairiefire’

A University of Illinois introduction with beautiful red flower color that does not fade like Hopa or Red Splendor crabapples do. It is very disease resistant and produces an airy, more open growth habit. Unfortunately, this cultivar is somewhat borderline in hardiness in early years. Do not fertilize or water in late summer or early fall; allow tree to harden off naturally for winter. Fruits are ¾”–1½” diameter, reddish-purple, persistent.

50| MONGOLIAN OAK – *Quercus mongolica* (2 trees)

Rare, neglected, winter hardy, 26’–35’ oak species from Mongolia. Leaves are semi-glossy with blunt to wavy-round leaf lobing. Fall color is variable, rosy-pink often changing to coppery-bronze. Hardiness and growth rate in NDSU evaluations are similar to our native bur oak. With very limited adaptation of eastern oak species in the Northern Plains, hopefully nurseries will begin to grow and sell this rarely available species in the future.

51| PEKIN LILAC – *Syringa pekinensis*

A small tree, similar to the Japanese tree lilac, growing 20’–25’ tall. NDSU has introduced and patented a superior cultivar of this species named ‘SunDak’ – Copper Curls®. Its special attributes include showy, orange-coppery, peeling bark and large, attractive creamy-white flower panicles. Leaves are much smaller and narrower than leaves on Japanese tree lilac. Some authorities now list Pekin lilac, native to China, as a subspecies of Japanese tree lilac. Like the latter, large tan clusters of seed capsules add winter interest, especially when covered with hoar frost. NDSU’s Copper Curls® is available and very winter hardy; other named cultivars in the nursery trade have not been hardy in North Dakota.

52| PRAIRIE GEM® USSURIAN PEAR – *Pyrus ussuriensis* ‘MorDak’ (2 trees)

A superior selection introduced at NDSU of the Ussurian pear, an extremely winter hardy species native to northeast Asia. Prairie Gem® grows in a very tailored, dense form, at first oval, then globose, and finally vase-like with age. White flowers blanket the tree in spring. Foliage is dark emerald-green and semi-glossy, turning yellow in autumn. Trees grow 20’–25’ tall. Prefers soils not alkaline in pH.

53| RED SPLENDOR CRABAPPLE – *Malus* x 'Red Splendor'

A popular hardy crabapple introduced by Bergeson Nursery, Fertile, Minnesota. Pink-flowers unfortunately fade more quickly than desired. Trees grow to 25' tall with a spreading, vase to umbrella growth habit. The major advantage of this cultivar is the shiny, 3/5" cherry-like fruits that cling tenaciously on the tree over winter. They are eaten by birds and create no mess. Average disease resistance.

54| TECHN ARBORVITAE – *Thuja occidentalis* 'Techny' (2 trees)

An old, very winter hardy cultivar of American arborvitae that grows 15'–22' tall. Very dark green scale-like foliage. Often used for screens and hedges, but really grows too tall for hedge use, unless sheared regularly. A new slower growing dense cultivar is preferable, named 'Bailjohn' – Technito®. Its height is about 8'–12'.

55| FAIRVIEW SUGAR MAPLE – *Acer saccharum* 'Fairview'

Several trees of this cultivar have performed quite well to date on campus. It is densely branched and broad-oval in form, introduced by a nursery in Oregon. Fall color is yellowish-orange. Trees grow 30'–40' tall.

**56| AMERICAN ELM** – *Ulmus americana*
(several large trees south along Albrecht Blvd.)

The North Dakota state tree! Very important native tree species (50'–70') prior to the arrival of Dutch elm disease. Virtually no other tree provides the classic vase to umbrella, cathedral-like form along streets and avenues so popular in the past across America. Golden-yellow autumn color. Very hardy and well adapted to a wide range of soils, sites and environmental conditions. The American elm may return to our landscapes because at least six highly Dutch elm disease resistant cultivars have been introduced. NDSU introduced 'Lewis & Clark' – Prairie Expedition® in 2004 and it is available at local nurseries.

57| VANGUARD CRABAPPLE – *Malus* x 'Vanguard' (2 trees)

A vase-shaped crabapple introduced at the University of Minnesota producing quality rosy-pink flowers. The popularity of crabapples may wane somewhat due to their short period of bloom in spring and increased disease pressures.

58| KINDRED GREEN ASH – *Fraxinus pennsylvanica* 'Kindred'
(several trees)

An ash cultivar introduced by the late Ben Gilbertson, Kindred, North Dakota. It produces glossy green leaves, but is probably no longer available in the nursery trade. Numerous male cultivars became popular for planting, including 'Marshall's Seedless,' 'Summit,' 'Bergeson,' 'Patmore' and the NDSU introductions 'Wahpeton' – Dakota Centennial® and 'Rugby' – Prairie Spire®. Green Ash and its cultivars are rarely planted since 2009. (See information on the species, #61.)

59| COMMON BUCKTHORN – *Rhamnus cathartica*

A small tree native to Europe that has become a highly invasive, objectionable tree in America. Trees grow 15'–24' tall. It has been banned from planting in numerous states. It has dark green, 1½"–2½" oval to ovate, subopposite leaves. Trees produce blackish, berry-like drupes in great abundance and birds drop the weedy seeds everywhere. The leaves freeze off green in autumn. Twigs develop modified spines. Refrain from planting this tree!

60| WHITE POPLAR – *Populus alba* (2 trees)

This poplar, with 3-lobed leaves, is native to Eurasia. Its leaves are dark green and glossy above, whitish and felt-like hairy beneath. Bark on young trunks and branches is light greenish-gray to near white. It has never gained popularity because trees sucker objectionably and also disperse a lot of cottony seed. Depending on site, trees may grow quite large to over 50'. In stressful sites, premature decline often occurs. Some of the best specimens of this species are found in river bottoms and valleys in western portions of the Great Plains.

**61| GREEN ASH** – *Fraxinus pennsylvanica*

A native North Dakota species which has been over-planted in shelterbelts, farmstead windbreaks and as an urban boulevard and residential landscape tree. Its bright green, pinnate compound leaves usually contain 5 or 7 leaflets. When Dutch elm disease took its toll on American elms, people began to overplant green ash and its various cultivars. With the eminent threat of the emerald ash borer arriving in the Northern Plains, green ash trees have largely fallen out of favor for planting, including black ash, Manchurian ash and white ash species as well. The Northern Plains will be hit very hard if an emerald ash borer infestation occurs, due to large numbers of ash and cultivars growing in this region. (See cultivar information, #58.)

62| COLUMNAR EUROPEAN ASPEN – *Populus tremula* 'Erecta'
(several trees)

The European aspen is the Eurasian counterpart of our native North American Quaking aspen (*P. tremuloides*). This very narrowly erect cultivar was found in a forest in Sweden, and has been available in the nursery trade in the United States and Canada for several decades. The very light greenish-gray bark is also of interest in the landscape. Unfortunately, a new disease, called bronze leaf disease, is threatening aspens and aspen hybrids in Canada and the Northern Plains and may reduce their landscape value in the future.

63| SILVER MAPLE – *Acer saccharinum*

A large, rapid growing maple with deeply cut 3-lobed leaves popularly planted in the region. It is native in eastern North America as far west as Minnesota, Kansas, and Louisiana. Sometimes called soft maple, due to its softer wood compared to the sugar or hard maple. Trunks not pruned properly typically develop double leaders causing V-crotches which split easily in storms. Fall color is yellow. This tree is somewhat over-planted and is very susceptible to iron chlorosis decline in alkaline pH soils of the Plains. Several cultivars are available, including lacy, cut-leaved selections.

64| NORTHERN ACCLAIM® THORNLESS HONEY-LOCUST – *Gleditsia triacanthos* var. *inermis* 'Harve'

This is the recommended male cultivar of this species for planting in the Northern Plains because it was selected for winter hardiness. This NDSU introduction is available from nurseries. The cultivar 'Wandell' – Perfection™ also appears to be hardy in limited NDSU trials. The cultivars 'Imperial' and 'Skyline' are also commonly planted but increasingly borderline in hardiness as you progress northwest across North Dakota. (See information, #29.)

65| AUSTRIAN PINE – *Pinus nigra*

Native European pine species with dark green needles 3½"–5½" long borne in pairs. This pine is rare in North Dakota because most seed sources are deficient in winter hardiness and tend to winterburn. Needles are thicker in diameter (coarser) than those on ponderosa or scotch pines. Trees grow 30'–50' tall, pyramidal, but become somewhat flat-topped with age. Trunk bark displays dark brown furrows with grayish-mottled, flattened ridges. Cones 2"–3" long, often lacking a prickle at tip of scales. Increasingly planted in landscapes as one progresses southeast of the Northern Plains.

66| PONDEROSA PINE – *Pinus ponderosa*

Native in North Dakota, particularly to the south of Theodore Roosevelt National Park (south unit, Medora, North Dakota). Very hardy species with 5"–10" long needles, borne both 2 and 3 per bundle. This pine does poorly in heavy, poorly drained sites, but well in upland, better drained soils across the Northern Plains and intermountain west. Bark is usually brown-black on young trees, but large trees 60'–85' tall in the Rocky Mountains typically develop yellow-brown to coppery-cinnamon, scaly-fissured barks. Cones are 3"–5" long and scales terminate in a stout, recurved sharp prickle. Used both in shelter and landscape plantings.

Note! Yellow Trail begins north of Memorial Union, northeast side of Family Life Center.

Parking is available for visitors at the WE pay lot (north side of Wallman Wellness Center) or the SU pay lot (southeast of Memorial Union).

Tour Guides Available at Two NDSU Locations:

NDSU Memorial Union

Bison Card Office (adjacent to Bison Connection)

School Year: 8AM to 6PM (Mon.-Thurs.)

8AM to 4:30PM (Fri.)

Summer: 7:30AM to 4PM (Mon.-Fri.)

Wallman Wellness Center

Customer Service Desk

School Year: All hours (Mon.-Sun.)

Summer: All hours (Mon.-Fri.)

8AM to 2PM (Sat.)

2PM to 8PM (Sun.)