ORDINANCE NO. 20-03

TOWN OF DUNN
DANE COUNTY, WISCONSIN

AN ORDINANCE TO PROTECT AND PRESERVE THE TOWN'S URBAN FOREST

20.03-1 Intent and Purpose
20.03-2 Pruning Restrictions
20.03-3 Damage to Trees on Public Property
20.03-4 Designated Preferred Tree Species List
20.03-5 Heritage Trees
20.03-6 Penalty for violation

20.03-1 Intent and Purpose

Trees are a valuable resource, which enhance the aesthetics of the Town, prevent soil erosion, filter airborne pollutants, reduce atmospheric carbon dioxide, produce oxygen, improve water quality, reduce noise pollution, and contribute significantly to property values, quality of life, and our sense of community. It is hereby declared to be the policy of the Town of Dunn to regulate trees within the Town to promote the public welfare, reduce the spread of harmful insects and disease affecting trees, and encourage the preservation of valuable trees.

NOW, THEREFORE, pursuant to the Wisconsin Statutes, including Wis. Stat. §§ 60.22, the Town Board of the Town of Dunn hereby ordains as follows:

20.03-2 Pruning Restrictions

In an effort to control the overland spread of Oak Wilt, pruning, cutting, or other wounding of Oaks is prohibited from April 1 until October 15 of any year without written permission from the Town of Dunn Tree Board. Ongoing research may cause amendments to the restriction dates from time to time. During the period from April 1 until October 15, if wounding occurs or pruning is necessary in response to an emergency, such as storm damage, a tree wound dressing shall be applied immediately to each wound. The cut surface of stumps from living non-infected Oaks shall be immediately painted with a wound dressing.

20.03-3 Damage to Trees on Public Property

It shall be a violation of the provisions of this section for any person to abuse, cut, harvest, destroy, or mutilate any tree, shrub, or plant on public property, including Town parks, greenways, and Town-owned roadsides. It shall be a violation to attach a rope, wire, animal leash, sign, poster, or any other objects to trees on public property, or to allow any chemical or natural substance which is harmful to trees to come in contact with the roots, trunks or leaves of the trees on public property.

Trees growing on private property in Town road right-of-way easements shall be similarly protected against damage from the public, however, the owner of the land under the easement maintains the rights to remove, prune and otherwise manage the trees on their property pursuant to Wis. Stats. 66.1035.

20.03-4 Designated Preferred Tree Species List

The Town has designated a preferred Tree list to encourage native species to be planted on public and private lands within the Town. The list is provided by the University of Wisconsin Extension and will be updated periodically. The preferred tree list is attached as **Exhibit A** to this ordinance.

20.03-5 Heritage Trees

Any tree, grove of trees, or shrub, growing on public or private property within the Town of Dunn which meets the following criteria, may be added to the Town's registry of Heritage Trees, and have priority for preservation:

a. Any Oak over 36 inches in diameter, any Hickory over 24 inches in diameter, any tree over 48 inches in diameter when measured four and one-half feet above existing grade.

b. Any tree or shrub with historical significance, such as those planted to commemorate an event, planted during a significant historical era, or marking the location of a historical event.

c. Trees identified by the Town Board as having significant arboricultural value to the citizens of the Town, whether the tree meets the size criteria or not.

d. The overall health and condition of the tree shall be criteria for Heritage Tree designation. Trees in poor health or condition shall not be designated as Heritage Trees.

Nomination of Heritage Trees: Only the current landowner may nominate a tree for Heritage Tree designation. Nominations are accepted by the Tree Board at least annually. Tree owners must submit a signed nomination with information about the tree's qualifications, such as measurements, species, commemorative status, or unique arboricultural value. Heritage Tree status is binding on future owners of the tree.

No Heritage Tree may be removed without written permission of the Tree Board. If removal is permitted, the person responsible for its removal may be required to remediate the tree(s) removed by replanting. Construction of new buildings and structures shall not cause Heritage Trees to be removed without written permission of the Tree Board and shall not significantly infringe upon the root system of Heritage Trees to an extent that is likely to damage the tree or jeopardize its survival. Guidelines in **Exhibit B** of this ordinance shall be used to determine the area required to protect the root system. No replacement is required for the removal of dead, diseased, or potentially hazardous Heritage Trees.

20.036 Penalty for Violation

Any person violating any provision of this Chapter or failing to comply with any order issued pursuant to the provisions of the Chapter shall be subject to a forfeiture pursuant to Section 21.07 of the Town of Dunn Code of Ordinances.

Any person who damages or destroys any tree or shrub on public property or on a Town right-of-way, shall be liable for the cost of repairing the damage or replacing the tree or shrub of comparable age and similar species and diameter at 4 feet above grade, up to a 4 inch diameter. For trees above a 4-inch diameter a maximum replacement value will be established not to exceed $2,000.

Effective Date of Ordinance. This ordinance shall take effect the day after passage and posting or publication pursuant to law. The above and foregoing ordinance was adopted by the Town Board of the Town of Dunn at its meeting held on November 19, 2007.

TOWN OF DUNN

By Edmond P. Minihan

Edmond P. Minihan, Town Chair

ATTEST:

Rosalind Gausman

Rosalind Gausman, Town Clerk/Treasurer

Approved: 11-19-2007

Posted: 11-21-2007

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Exibit A- Commercially Available Species and Cultivars

Dr. Laura G. Jull
Dept. of Horticulture, University of Wisconsin-Madison

Santamour (1990) established guidelines for tree planting within a city:
Plant no more than 30% of a family: i.e. Aceraceae
Plant no more than 20% of a genus: i.e. *Acer* × *freemanii*, *Acer rubrum*, *Acer platanoides*, *Acer saccharum*, etc.
Plant no more than 10% of a species: i.e. *Acer platanoides*

Large to medium-sized Street/Urban Trees

Acer* × *freemanii: Freeman maple, Zone 3b-4 (depends on cultivar), native hybrid of red and silver maple, oval to rounded form, ascending branches, 40-60' tall, 35-40' wide, moderate to fast growth rate, yellow, orange to red fall color, smooth, light gray bark when young, red samaras in spring, not fall, adaptable to most soils and pH, some cultivars can get chlorotic at very high pH, tolerant to wet soils, drought and urban conditions, moderate salt tolerance, can get verticillium wilt and leaf hoppers, some cultivars prone to included bark formation and narrow branch crotch angles, dioecious (separate male and female flowers produced on separate plants)

'Armstrong': narrow, fastigiate form, 45' tall, 15' wide, yellow fall color, female, produces seeds
'Celzam' (Celebration®): upright to oval form, 45' tall, 25-30' wide, better branch angles and straight central leader, yellow fall color, fast grower, male, seedless, drought tolerant
'DTR 102' (Autumn Fantasy®): broadly oval form, upright branches, 50' tall, 40' wide, bright to dark red fall color, female, produces seeds
'Indian Summer' or 'Morgan': broadly oval to rounded form, 45' tall, 40' wide, early, bright rosy-red fall color, vigorous, female, produces seeds, very sensitive to flooded soils
'Jeffersred' (Autumn Blaze®): broadly oval form with upright branches, 50' tall, 40' wide, bright orange-red to red fall color that is longer lasting, male, seedless, drought tolerant, tends to develop narrow crotch angles, included bark, and multiple leaders
'Marmo': upright, oval form, 55' tall, 45' wide, early, fair, mottled blend of deep red and green fall color starts at leaf tips and gradually works its way down leaf, good branching with straight central leader, male, seedless, slower grower
'Scarsen' (Scarlet Sentinel®): upright form becoming oval, 40' tall, 20' wide, yellow-orange to orange-red fall color, fast grower, male, seedless
'Sienna' (Sienna Glen®): pyramidal form, 50' tall, 35' wide, rusty orange to burgundy fall color, male, seedless, wider branch angles, from northern seed source, less susceptible to frost crack, hardy to zone 3

Acer miyabei: Miyabei maple, Zone 4a, native to Japan

'Morton' (State Street®), 40' tall, 25' wide, upright, oval form, dark green foliage, late, yellow fall color, corky-looking bark, faster grower, grafted higher up than straight species for street tree clearance, very adaptable to soils and pH, urban tolerant, moderate salt tolerance, not invasive, no pests

Acer nigrum: black maple, Zone 4, used to be considered a subspecies of sugar maple, native to central U.S.

'Greencolumn': upright, narrow form, 50' tall, 20' wide, straight central leader, light green, thick, leathery leaves leaves, yellow orange fall color, slow grower, more heat and drought tolerant than sugar maple

Acer platanoides: Norway maple, Zone 4b, native to Europe, wide-spreading, rounded, dense form, 40-50' tall, 35-40' wide, dark green, large leaves, late, yellow fall color, adaptable to most soils and pH, easy to transplant, will not tolerate wet soils, salt and urban tolerant, susceptible to verticillium wilt, girdling roots, basal rot, leaf scorch, frost crack, very invasive, do not use near any natural area, shallow roots

'Cleveland': upright, oval, dense form, fast grower, 40' tall, 30' wide, older cultivar
'Columnarbroad' (Parkway®): oval form with straight central leader, broader and faster growing than 'Columnare', 40' tall, 25' wide
'Columnare': upright, narrow-columnar form, ascending branches, 40' tall, 15' wide
'Conzam' (Conquest™): narrow oval form, 40' tall, 20' wide, maroon-red leaves in spring turn bronzish
'Crimson King': older cultivar, oval becoming rounded, dark purple leaves all season, 40' tall, 35' wide, slower growing, hardy only to zone 5a
'Crimson Sentry': but sport off of 'Crimson King', dense, compact, pyramidal to oval form, deep purple leaves all season, 35' tall, 15' wide
'Deborah': common, broadly oval to rounded, reddish-purple leaves in spring turn dark green, 40-60' tall, 40' wide, straight leader
'Drummondii': variegated leaves with white margins, reverts readily to all green leaves, rounded to broadly oval form, 30-40' tall, 25' wide, slow grower, tends to scorch in hot sun and drought
'Ezestre' (Easy Street™): pyramidal to narrow oval form, 40' tall, 20' wide, faster grower
'Fairview': narrow, upright-oval form, reddish purple leaves in spring turn bronzish, 45' tall, 35' wide
'Globosum': dense, globular form, 15-20' tall, 18' wide, slow grower, formal looking
'Jade Glen': broad, rounded, open form, 45' tall, 40' wide, faster growing, says it is verticillium wilt resistant but it is not
'McGill No. 42' (Emerald Queen®): dense, oval to rounded form with upright, spreading branches, deep green, glossy leaves, 50' tall, 40' wide, good branch pattern, straight trunk
'National 2000' (Champtree™): upright spreading to broadly oval form, 50-60' tall, 40' wide
'Pond' (Emerald Lustre®): upright, spreading to rounded form, 45' tall, 40' wide, faster grower, good branching
'Princeton Gold': oval form, bright yellow leaves in spring that turn bright green, bright yellow fall color, 35' tall, 30' wide
'Royal Red': more cold hardy version of 'Crimson King', deep maroon leaves during growing season, oval to rounded form, 40' tall, 30' wide
'Schwedleri': bronzy-purple leaves in spring fade to dark green, broad-rounded form, 40' tall, 30' wide, older cultivar, not recommended, has multiple leaders and twisted look to trunk, prone to frost crack
'Summershade': broad, rounded form, lighter green leaves, 40-50' tall, 40' wide, fast grower, heat tolerant, leathery leaves are scorch resistant
'Superform': broadly oval to rounded form, 45' tall, 40' wide, fast grower, uniform habit

Acer rubrum: red maple (in acidic soils (pH below 7) only or else very chlorotic), hardy to zone 3b-5b (depends on cultivar), native to eastern and central U.S., Canada, and Wisconsin, oval to rounded to irregular form, 40-60' tall, 25-35' wide, moderate to fast grower, yellow, orange to bright red fall color, smooth, light gray bark when young, reddish flowers in early spring, red samaras in spring, not fall, dioecious (separate male and female flowers produced on separate plants), adaptable to most soils, requires acid pH or else develops serious chlorosis due to lack of manganese, not iron, easy to transplant, tolerant to wet soils (some cultivars), sensitive to salt and air pollution, susceptible to verticillium wilt, leaf hoppers, frost crack, girdling roots, prone to included bark formation and narrow, branch crotch angles, shallow roots

Autumn Flame®: dense, rounded with spreading branches, 40' tall, 35' wide, early, bright red fall color, male, seedless, slower grower
Autumn Radiance®: rounded, open, symmetrical form, 60' tall, 40' wide, early red-orange fall color
'Autumn Spire': narrow to oval form, 40-50' tall, 30' wide, bright red fall color, male, seedless, from a northern seed source, newer cultivar, Zone 3
'Bailcraig' (Scarlet Jewell™): upright form, 60' tall, 30' wide, early, deep crimson-red fall color, from a northern seed source, Zone 3, new cultivar
'Bowhall': upright, very narrow form, 40-50' tall, 15' wide, yellowish-orange to reddish fall color, female, produces seed, prone to included bark formation
'Brandywine': oval form 40' tall, 30' wide, deep red fall color for a longer period, male, seedless, newer cultivar
Fairview Flame™: good branching, 45' tall, fast growing, later, orange-red fall color
'Frank Jr.' (Redpointe™): broadly pyramidal form, 45' tall, 30' wide, bright red fall color, faster growing, straight central leader, better branch crotch angles, new cultivar
'Franksred' (Red Sunset®): upright, dense, oval form, symmetrical form, bright red to orange fall color, fast grower, 45-50' tall, 35' wide, female, produces seeds, dark green, glossy leaves, older cultivar

Karpick®: narrow, oval, dense form, 40' tall, 20' wide, yellow to orange fall color, male, seedless, prone to included bark formation

'Magnificient Magenta' (Burgundy Belle®): oval to rounded form, 45' tall, 40' wide, bright red fall color that changes to burgundy, symmetrical form, heat tolerant, prone to leafhoppers and witches' broom

'New World': upright, narrow-oval form, 40' tall, 20' wide, orange-yellow to orange-red fall color, male, seedless

'Northwood': symmetrical, broadly oval to rounded form, ascending branches, 40' tall, 35' wide, early orange to reddish fall color, male, seedless, from a northern seed source, Zone 3

'Olson' (Northfire®): oval form, 50' tall, 35' wide, early, bright red fall color, northern seed source, Zone 3

'PNI 0268' (October Glory®): not hardy, zone 5b-6a, broadly oval to rounded form, 40' tall, 35' wide, red fall color for a longer period, female, produces seeds, old cultivar

'Polara' (Ruby Frost™): upright, dense, broad oval form, 45' tall, 40' wide, ruby-red fall color, selected in NW Wisconsin, Zone 3

'Red Rocket': narrow, columnar form, 35' tall, 8' wide, red fall color, northern seed source, tolerant to leaf hopper

'Schlesinger': broadly vase-shaped to rounded, 45' tall, 35' wide, very early orange to purplish-red fall color, female, produced seed

'Somerset': broadly oval to rounded form, 45' tall, 35' wide, red fall color, leaf hopper resistant newer cultivar

Summer Red®: dense, broad oval form, 20' tall, 10' wide, burgundy red new leaves that turn purplish-green, yellow to orange to purple fall color, leaf hopper resistant, Zone 5

'Sun Valley': oval, symmetrical form, densely branched, 40' tall, 35' wide, bright red fall color

Acer saccharum: sugar maple, hardy to zone 3a-5 (depends on cultivar), native to eastern U.S., Canada, and Wisconsin (our state tree), upright, oval to rounded form, 60-75' tall, 35-50' wide, showy, bright yellow to orange-red fall color, prefers a fertile, moist, well-drained soil, will not tolerate heavy clay, poorly drained, or dry soils, sensitive to drought, salt and air pollution, susceptible to leaf tatter and leaf scorch, verticillium wilt, basal rot, girdling roots, leaf hoppers

'Astis' (Steeple®): narrow oval form, 45' tall, 20' wide, yellow-orange fall color

'Autumn Splendor': broadly oval to rounded form, 45' tall, 40' wide, glossy leaves, orange-red fall color, resistant to heat drought and leaf tatter, Zone 5, newer cultivar

'Bailsta' (Fall Fiesta®): broadly ovate to rounded form, 50' tall, 40' wide, glossy, leathery leaves, yellow-orange to red fall color, leaf tatter and leaf hopper resistant, faster grower, newer cultivar

'Barrett Cole' (Apollo®): symmetrical, narrow, columnar form, 35' tall, 10' wide, yellow-orange to red fall color

Bonfire™: broadly oval form, 50' tall, 40' wide, orange to red fall color, more heat tolerant, fast grower

Commemoration®: oval to rounded, dense form, 50' tall, 35' wide, thick, glossy, dark green leaves, yellow-orange to red fall color, vigorous, faster grower, resistant to leaf tatter

'Endowment': broad columnar form, 50' tall, 20' wide, bright yellow fall color, no leaf scorch

'Heartland' (Autumn Faith™): oval to vase-shape, dense form, 35' tall, 20' wide, new leaves are bronze opening to dark green, bronze fall color, slow grower

'Flax Mill' (Majesty®): broadly oval, symmetrical form, 50' tall, 40' wide, thicker leaves, orange to reddish fall color

'Jefcan' (Unity®): upright, oval form, 50' tall, 30' wide, yellow to orange-red fall color, selected for harsh prairie climate, from Canada, slower grower, resistant to frost crack, newer cultivar, zone 3

Legacy®: oval to rounded, dense form, 50' tall, 35' wide, glossy, thick, dark green leaves, later reddish-orange to red fall color or none, leaf scorch and leaf tatter resistant, faster grower, heat tolerant,

'Morton' (Cresendo™): broadly oval form, 45' tall, 40' wide, orange-red to red fall color, heat tolerant

'PNI 0285' (Green Mountain®): broadly oval form, 45-50' tall, 35' wide, reddish-orange to red fall color, leathery leaves less subject to leaf scorch, faster growing, more heat tolerant

'Wright Brothers': oval form, 50' tall, 35' wide, yellow-orange to red fall color, resistant to leaf scorch and frost crack, faster growing

***Acer* 'Keithsform'**: Norwegian Sunset®: not reliably hardy in zone 5, hybrid of Norway and Shantung maples, may not develop any fall color

***Acer* 'Warrenred'**: Pacific Sunset®: zone 4b, hybrid of Norway and Shantung maples, upright, oval to spreading form, good branching, 30-40' tall, 20-25' wide, glossy leaves, late yellow to bright orange-red fall color, heat, drought, and urban tolerant

Celtis occidentalis: common hackberry, zone 3b, native to eastern and central U.S., Canada, and Wisconsin, vase-shaped when young becoming rounded with drooping branches, moderate to fast growth rate, 50-70' tall, 40-60' wide, corky, warty looking bark, small, pea-sized, purplish-black fruit in fall, adaptable to most soils and pH, tolerates dry, sandy, rocky, and compact, heavy clay soils, slow to establish, plant in spring, drought, urban, wind, and wet soils tolerant, but sensitive to salt, susceptible to hackberry nipple gall on leaves, witches' brooming of twigs, resistant to DED, sensitive to Dicamba herbicides used near tree, branches tend to break in storms, prone to included bark formation, need to train to develop good branch structure

'Chicagoland': broad pyramidal form with upright branches, 55' tall, 40' wide, forms a straight central leader, rich green leaves, yellow fall color, warty bark
'Windy City': upright, spreading form, straight, central leader, fast grower

Corylus colurna: Turkish filbert, hardy to zone 4b, native to southeastern Europe and western Asia, broad, pyramidal form, formal looking even with age, dense, coarse texture, 40-50' tall, 20-25' wide, no fall color, scaly to corky, gray-brown bark, long, pendulous catkins in early spring are showy, may produce nuts, difficult to transplant, heat, urban, and drought tolerant, once established, sensitive to salt

Ginkgo biloba: ginkgo, maidenhair tree, hardy to zone 4b, native to eastern China, living fossil, found in fossil records dating back 150 million years ago, deciduous gymnosperm, pyramidal when young, becoming wide-spreading with age to upright, slow grower, 50-80' tall, 30-60' wide, very interesting, fan-shaped leaves, golden-yellow fall color, dioecious (separate male and female flowers produced on separate plants), female trees produce smelly, messy fruit, but not until 20 years old, so plant male cultivars only, tolerant to most soils and pH, prefers a sandy, deep soil, difficult to transplant, plant in spring, heat, salt, urban, and drought tolerant, no pests

'Autumn Gold': broadly pyramidal, symmetrical form, 45' tall, 35' wide, golden yellow fall color, male, no fruit, good, uniform branching
'Fairmount': dense, upright, pyramidal form, straight central leader, male, no fruit
'Halka': broadly pyramidal becoming oval, 45' tall, 40' wide, bright yellow fall color, male, no fruit
'Golden Globe™': broad, rounded form, 60' tall, 40' wide, slightly faster growth rate, male, no fruit, dense form, golden yellow fall color, Zone 5
'Magyar': upright form, 50' tall, 30' wide, bright yellow fall color, male, no fruit
'PNI 22720' (Princeton Sentry®): narrow pyramidal, upright form, 50' tall, 20-30' wide, bright yellow fall color, male, no fruit
'Saratoga': compact, dense, rounded form, with straight central leader, 20-30' tall, 15-20' wide, pendulous leaves, soft yellow fall color, slower and smaller than other ginkgos, male, no fruit
Shangri-La®: moderately pyramidal form, 45' tall, 25' wide, slightly faster growth rate, bright yellow fall color, male, no fruit
'Windover Gold®': upright, oval form, 40-60' tall, 30-40' wide, golden yellow fall color, strong grower, male, no fruit
'Woodstock' (Emperor™): uniform, oval form, strong, central leader, good branching, male, no fruit

Gleditsia triacanthos* var. *inermis: thornless honeylocust, hardy to zone 4a, native to central U.S. and southern Wisconsin (thorny type native, not var. *inermis*), fine texture, fast growing, vase-shaped form becoming flat-topped, spreading branches, open, 50-70' tall, 40-50' wide, early, bright golden-yellow fall color, no thorns, dioecious (separate male and female flowers produced on separate plants), female plants produce long, twisted, black pods that make a slippery, litter mess, tolerant to most soils and pH, tolerant to compacted, heavy clay soil, drought, salt, and urban tolerant, tolerant to periodic flooding, susceptible to leaf hoppers, plant bug, cankers, sunscald on trunk, high maintenance pruning, tends to develop co-dominate branches, can break in storms

'Christie' (Halka™): broad, oval to rounded form, 40' tall, 40' wide, horizontal branches, some pods, fast growing, yellowish fall color

'Emerald Kascade': irregular, weeping form with pendulous branches, grafted, 16' tall, male, no pods
'Harve' (Northern Acclaim®): symmetrical, upright, spreading form, 45' tall, 35' wide, yellow fall color, male, no pods, developed in North Dakota, hardy to zone 3b
'Impcole' (Imperial®): rounded form, symmetrical, wide-spreading, with good branching, 35' tall, 35' wide, seedless but can throw a few pods, susceptible to leaf hoppers and plant bug
'Moraine': uniform, rounded crown with vase-shaped branching, male, no pods, older cultivar
'PNI 2835' (Shademaster®): vase-shaped to rounded, irregular form, 45' tall, 35' wide, uniform, ascending branches, occasionally, some trees may produce pods
'Skycole' (Skyline®): broadly pyramidal form, ascending branches with wider crotch angles, 45' tall, 35' wide, develops a strong, central leader better than any other cultivar, male, no pods, bright golden yellow fall color
'Suncole' (Sunburst®): irregular, oval form, 40' tall, 35' wide, 8" of new leaves are bright yellow then fades to green, yellowish fall color, susceptible to leaf hoppers, plant bug, and canker, male, no pods
True Shade®: broadly oval form, 40' tall, 35' wide, wider branch angles, yellow fall color, faster grower, male, no pods
'Wandell' (Perfection™): develops a good crown at a younger age, 35' tall, 30' wide, dark green leaves, male, no pods

Gymnocladus dioica: Kentucky coffeetree, hardy to zone 4a, native to central U.S., southern Ontario, and Wisconsin (scattered distribution), vase-shaped form with upright branches becoming irregular and open, 50-75' tall, 40-50' wide, slow to moderate grower, coarse texture in winter with sparse branching when young, lacy texture when in leaf, yellow fall color, large, bluish-green leaves, ashy-gray, deeply furrowed bark with exfoliating plates, dioecious (separate male and female flowers produced on separate plants), females produce thick, sausage-like, pendulous pods, that can be a litter problem along with the leaf rachis in fall, adaptable to most soils and pH, slow to establish, tolerates compacted, heavy clay soil, salt, drought, periodic flooding, and urban conditions, no pests, can look a bit "gauntly" when young due to sparse branching

'Espresso': oval to vase-shaped form with arching branches, 50' tall, 35' wide, large, blue-green leaves, yellowish fall color, male, no pods, newer cultivar
'J.C. McDaniel' (Prairie Titan™): oval to vase-shaped form, 50' tall, 35' wide, large, blue-green leaves, yellowish fall color, male, no pods, newer cultivar

***Phellodendron amurense* 'Macho'**: Macho Amur corktree, hardy to zone 3b, native to northern China and Japan, broadly vase-shape, upright form, 40' tall, 30' wide, ascending branches, thick, dark green leaves, yellowish-green fall color, male, no fruit, corky bark when older, adaptable to most soils and pH, slow to establish, urban tolerant, moderate salt tolerance, no pests, shallow roots, low branching, avoid female trees as they produce invasive seeds

***Phellodendron lavallei* 'Longenecker'**: Eyestopper™ Lavalle corktree, hardy to zone 4b, native to Japan, upright, wide spreading form, 40' tall, 35' wide, bright yellow fall color, male, no fruit, corky bark when older, same culture as Amur corktree

***Phellodendron sachalinense* 'His Majesty'**: His Majesty Sakhalin corktree, hardy to zone 3b, native to Korea, northern Japan, and western China, broadly vase-shaped to rounded, open form, 35-40' tall, 35' wide, yellow fall color, male, no fruit, same culture as Amur corktree

***Sweating**: Most bare root oaks require sweating before planting to break bud. This involves dormant tree liners laid down and covered with wet packing material such as straw, shingle tow, and covered with a sheet of plastic. This should be done indoors, if possible, or in the shade. Temperatures should be between 45-70°F with high humidity (under plastic). Once the buds have begun to swell, usually within a few days, but usually not more than a week, the trees are ready to be lined out. The key to success is after the sweating process. Delay planting of oaks until the weather is warmer and humid (May) for better success after the sweating process. This is critical for success of sweated oak liners. Oaks are best transplanted in spring, rather than fall. It is best to move oaks at 2-2 1/2" caliper or lower, rather than bigger caliper as transplant shock reduces chances for survival. Other species that benefit from the sweating process include: birch, especially river birch, hawthorns, hackberry, ironwood (*Ostrya*), and redbud

Quercus bicolor: swamp white oak, hardy to zone 4a, native to eastern U.S. and Wisconsin, pyramidal when young, becoming broad, rounded, wide-spreading with age, 50-60' tall, 50-60' wide, slow to moderate growth rate, easier to transplant than bur oak, prefers acidic to neutral pH, but will tolerate a bit higher, but at very high pH, it will get chlorotic, adaptable to most soils including heavy clay, tolerant to wet soil, drought, and urban conditions

***Quercus* × *bimundorum* 'Crimschmidt'**: Crimson Spire™ oak, hardy to zone 4b, hybrid of *Q. alba* × *Q. robur*, columnar to tightly fastigiate form, 45' tall, 15' wide, dark green to blue green leaves, rusty-reddish fall color, supposed to be mildew resistant, zone 5

Quercus macrocarpa: bur oak, hardy to zone 3a, native to eastern and midwestern U.S. and Wisconsin, pyramidal when young, becoming very wide-spreading, rounded, 70-80' tall, 60-80' wide, slow growing, coarse texture, deeply furrowed bark, no fall color, adaptable to most soils and pH, drought and urban tolerant, difficult to transplant

***Quercus* × *macdenielli* 'Clemon's'**: Heritage® oak, hardy to zone 4, hybrid of *Q. robur* × *Q. macrocarpa*, broadly pyramidal becoming oval form, 60-80' tall, 40-50' wide, dark green, glossy leaves, no fall color, mildew resistant, vigorous, zone 4

Quercus muehlenbergii: chinkapin oak, hardy to zone 4b, native to eastern and midwestern U.S. and Wisconsin, wide-spreading, rounded, open form, 40-60' tall, 50-60' wide, yellow to orangish-brown fall color, ashy-gray, flaky bark, adaptable to most soils and pH, difficult to transplant, drought and urban tolerant

Quercus robur: English oak, hardy to zone 5a, native to Europe, northern Africa, and western Asia, oval to rounded form, short trunk, slow to moderate growth rate, 40-60' tall, 40-50' wide, no fall color, smaller leaves than other oaks, deeply furrowed bark, adaptable to most soils and pH, does not like compacted soils, urban tolerant, susceptible to powdery mildew, especially fastigiate forms, two-lined chestnut borer, scale, basal canker

'Fastigiata' (Skyrocket®): narrow, fastigiate form, 45' tall, 15' wide, tight branching, susceptible to mildew
'Pyramich' (Skymaster®): hardy to zone 5, narrow when young becoming pyramidal, 50' tall, 25' wide, straight central leader, good branch crotch angles, fast grower, may be a hybrid as it is vigorous
'Wandell' (Attention®): narrow, pyramidal to columnar form, 50' tall, 15' wide, resistant to powdery mildew, smaller leaves

***Quercus* Rosehill®**: Rosehill oak, hybrid of *Q. robur* x *Q. bicolor* 'Asjes', fastigiate to narrow-oval form, 40' tall, 20' wide, mildew resistant, zone 4b

Quercus* × *schuettei: swamp bur oak, hybrid of *Q. bicolor* × *Q. macrocarpa*, broad, rounded form, 75' tall, 70' wide, faster growing, better tolerance to high pH and easier to transplant, may be susceptible to leaf/twig galls, zone 3b

***Quercus* × *warei* 'Long'**: Regal Prince® oak, broad columnar becoming upright oval form, 40-60' tall, 20-25' wide, hybrid of *Q. robur* 'Fastigiata' × *Q. bicolor*, dark green leaves with silvery undersides, holds leaves late, no fall color or mildew, zone 4b

Taxodium distichum: baldcypress, northern provenance is critical, hardy to zone 4b, pyramidal form with straight terminal leader, 50-70' tall, 25-35' wide, fine texture, native to southeastern and southcentral U.S. into southern IL, mainly in swamps, needs training in nursery or it grows like a large bush, deciduous gymnosperm, feathery, soft, bright green leaves, with rusty-brown to orangish-bronze fall color, reddish-brown to grayish, fibrous, shreddy bark, does not form "knees" in urban conditions, only if grown near water, adaptable to most soils, prefers slightly acidic to neutral soils, can get chlorotic at very high pH, easy to transplant, heat, drought, salt, wet soil, and urban tolerant, few, if any pests

'Mickelson' (Shawnee Brave®): narrowly pyramidal form, 55' tall, 20' wide, richer green leaves, more upright form

Tilia americana: American linden, basswood, hardy to zone 3a, native to northeast and central U.S., Canada, and Wisconsin, pyramidal when young becoming upright-oval with age, 60-80' tall, 40-50' wide, fragrant, pale yellow flowers in early summer, small nutlet fruit attached to bract, large, heart-shaped leaves, prefers a deep, fertile soil, pH adaptable, easy to transplant, tolerant to wetter soils, sensitive to salt and air pollution, susceptible to Japanese beetle, linden borer, gypsy moth, basal and stem rots, sunscald on bark, tends to sucker at base, can break in storms, prone to included bark formation and narrow, branch crotch angles, girdling roots

'Bailyard' (Front Yard®): broadly pyramidal when young becoming rounded and dense, symmetrical form, 60-75' tall, 40' wide
'Boulevard': narrowly pyramidal form, 50' tall, 25' wide, ascending branches, yellow fall color
'DTR 123' (Legend®): broadly pyramidal form, 40' tall, 30' wide, well-spaced branches, thicker leaves, single leader, yellow fall color
'Lincoln': pyramidal, compact, dense form, 40' tall, 25' wide, upright branches, dark green leaves, yellow fall color
'Mcksentry' (American Sentry™): symmetrical, pyramidal form with straight central leader, 45' tall, 30' wide, better branch angles, lighter gray bark, yellow fall color

Tilia cordata: littleleaf linden, hardy to zone 3b, native to Europe, pyramidal when young becoming oval to round with age, formal, dense habit, 50-70' tall, 35-50' wide, fragrant, pale yellow flowers in early summer, small nutlet fruit attached to bract, small, heart-shaped leaves, prefers a fertile soil, but is adaptable, pH adaptable, easy to transplant, sensitive to poorly-drained, compacted soils and road salt, urban and air pollution tolerant, same pests as American linden

'Baileyi' (Shamrock®): symmetrical, pyramidal form, 40' tall, 30' wide, stouter branches, more open canopy, uniform branching no fall color
'Chancole' (Chancellor®): upright, narrow, pyramidal form, 40' tall, 20' wide, good branching, faster growing, wider branch crotch angles, yellowish fall color
'Corzam' (Corinthian®): narrowly pyramidal form, 45' tall, 15' wide, dense branching, evenly spaced branches, thick, glossy leaves, yellowish fall color
'Halka' (Summer Sprite®): dense, narrow, pyramidal form, dwarf, 16' tall, 8' wide, yellowish fall color
'Norbert' (Prestige®): broad, pyramidal form, good branching, wider branch crotch angles, shiny leaves, fewer seeds produced, harder to find, but much better form than 'Greenspire'
'PNI 6025' (Greenspire®): pyramidal, symmetrical form becomes rounded with age, 40' tall, 30' wide, yellowish fall color, very prone to narrow crotch angles and included bark formation, tight branching, needs a lot of training pruning, old cultivar
'Ronald' (Norlin™): broad, pyramidal form, 40-45' tall, 30' wide, faster grower, resistant to sunscald, more cold hardy

Tilia* × *euchlora: Crimean linden, hardy to zone 4b, hybrid of *T. cordata* × *T. dasystyla*, broadly pyramidal form to oval, 40-60' tall, 35' wide, can sucker from base of tree, yellowish fall color

***Tilia* × *flavescens* 'Glenleven'**: Glenleven linden, hardy to zone 4, hybrid of *T. americana* × *T. cordata*, pyramidal form, 50' tall, 30' wide, yellowish fall color, better branching, more open, larger leaves, faster growing, straight trunk and leader

***Tilia* 'Harvest Gold'**: Harvest Gold linden, hardy to zone 3, hybrid of *T. cordata* × *T. mongolica*, more cold hardy, upright, oval form, 30-40' tall, 20-25' wide, leaves are deeply lobed, resistant to sunscald, exfoliating bark, golden buds and fall color

***Tilia* 'Redmond'**: Redmond linden, hardy to zone 4, hybrid of *T. americana* × *T.* × *euchlora*, pyramidal to oval form, upright branches with terminal leader above the foliage, reddish stems and buds, can sucker at base, 50-70' tall, 30-40' wide, fragrant, pale yellow flowers in early summer, small nutlet fruit attached to bract, large, heart-shaped leaves

Tilia tomentosa: silver linden, hardy to zone 4b, native to southeastern Europe and western Asia, broad-pyramidal form becoming upright-oval, formal looking, dark green leaves with silvery-white undersides, pale yellow flowers in summer, small nutlet fruit attached to a bract, no fall color, prefers a deep, fertile soil, but is

adaptable, pH adaptable, easy to transplant, more heat, drought, and urban tolerant than other lindens, does not tolerate poorly-drained, compacted soils, same pests as American linden

'PNI 6051' (Green Mountain®): broadly pyramidal to oval form, 50' tall, 35' wide, dark green leaves with silvery undersides, yellowish fall color, prone to included bark formation

'Wandell' (Sterling®): broadly pyramidal form, 45' tall, 35' wide, green leaves with silvery undersides, yellowish fall color, prone to included bark formation

Ulmus americana: American elm (DED resistant cultivars), hardy to zone 3a, native to eastern and central U.S., Canada and Wisconsin, all have vase-shaped form with pendulous branches, 70-80' tall, 60-70' wide, yellow fall color, adaptable to most soils and pH, tolerant to compacted, heavy clay soils, easy to transplant, tolerant to periodic flooding, salt, urban, air pollution, and drought tolerant, pest prone

'New Harmony' (from U.S. National Arboretum): broad, vase-shaped form, arching branches, good form, easier to grow

'Princeton': (from Princeton Nursery) large, leathery leaves, vase-shaped form, more resistant to elm leaf beetle

'Valley Forge' (from U.S. National Arboretum): broad, vase-shaped form with arching branches, 70' tall, 70' wide, wild looking form and branching, vigorous, needs training

***Ulmus* hybrids**: hybrid elms, most are hardy to zone 4-5, all Dutch elm disease resistant, needs pruning in nursery to develop good form, adaptable to most soils and pH, tolerant to compacted, heavy clay soils, moderate salt tolerance, drought, urban, and air pollution tolerant

'Cathedral' (UW-Madison intro): hybrid of *U. japonica* × *U. pumila*, broadly vase-shaped, spreading form, 40-50' tall, 40-60' wide, prone to elm leaf beetle, zone 4

'Frontier' (from U.S. National Arboretum): hybrid of *U. carpinifolia* × *U. parvifolia*, broadly oval form, 35' tall, 25' wide, ascending branches, glossy, small, dark green, glossy leaves, late, burgundy fall color, can get elm leaf beetle, Zone 5

'Homestead' (from U.S. National Arboretum): hybrid of *U. pumila* × (*U.* × *hollandica* × *U. carpinifolia*), upright, narrow to oval form, 55' tall, 35' wide, upright, arching branches, prone to elm leaf beetle, fast growing, Zone 4b

'Morton' (Accolade®) (from Morton Arboretum): hybrid of *U. japonica* × *U. wilsoniana*, vase-shaped form with arching branches, 70' tall, 60' wide, resistant to elm leaf beetle, vigorous, resistant to elm leaf beetle, dark green, glossy leaves, zone 4

'Morton Glossy' (Triumph™) (from Morton Arboretum): hybrid of *U.* 'Morton Plainsman' × *U.* 'Morton', upright oval to vase-shape, 55' tall, 45' wide, very glossy, dark green leaves, good form, some elm leaf beetle, excellent drought tolerance, zone 4

'Morton Plainsman' (Vanguard™) (from Morton Arboretum): hybrid of *U. japonica* × *U. pumila*, rounded, vase-shaped form, 45' tall, 40' wide, glossy, dark green leaves, prone to elm leaf beetle, zone 4

'Morton Red Tip' (Danada Charm™) (from Morton Arboretum): complex hybrid of (*U. japonica* × *U. wilsoniana*) × *U. pumila* vase-shape form with arching branches, 70' tall, 60' wide, reddish new leaves, new leaves, prone to elm leaf beetle, zone 4

'Morton Stalwart' (Commendation™) (from Morton Arboretum): complex hybrid of *U.* 'Morton' × (*U. pumila* × *U. carpinifolia*), upright, oval form, 60' tall, 50' wide, zone 5

'New Horizon' (UW-Madison intro): hybrid of *U. japonica* × *U. pumila*, upright, compact form, 50' tall, 25' wide, dark green leaves, wide crotch angles, susceptible to verticillium wilt, zone 3b

'Patriot' (from U.S. National Arboretum): complex hybrid of *U. wilsoniana* × *U. pumila* × *U. carpinifolia* × *U. glabra*, stiffly upright branches, narrow, vase-shape form, 50' tall, 40' wide, dark green leaves, straight central leader, zone 5

'Pioneer' (from U.S. National Arboretum): hybrid of *U. glabra* × *U. carpinifolia*, rounded form, 50' tall, 50' wide, dark green, glossy leaves, prone to elm leaf beetle, zone 5

'Regal' (UW-Madison intro): complex hybrid of *U. carpinifolia* × (*U. pumila* × *U.* × *hollandica*), upright, pyramidal form, 50-60' tall, 30' wide, prone to double leaders and narrow crotches, stiff branches, zone 4

***Ulmus japonica* 'Discovery'**: Discovery Japanese elm, hardy to zone 3, native to Japan and Asia, upright, vase-shape, compact form, 35-40' tall, 35-40' wide, resistant to DED and elm leaf beetle, yellow fall color

Ulmus parvifolia: lacebark elm, Zone 5b, native to China, Korea, and Japan, semi-exfoliating bark with mottled colors of gray, green, orange, and brown inner bark and orange lenticels, adaptable to most soils and pH, easy to transplant, tolerant to compacted, clay soils, urban, air pollution, tolerant, DED resistant

'Dynasty' (from U.S. National Arboretum), more cold hardy, zone 5a, upright, vase-shaped to rounded form, 40-45' tall, 40' wide, orange-yellow to red fall color, bark not as exfoliating as other cultivars

***Ulmus wilsoniana* 'Prospector'** Prospector elm (from U.S. National Arboretum): hardy to zone 4, dense, broad, vase-shaped form, slightly pendulous branches, 40' tall, 30' wide, resistant to elm leaf beetle, DED, and phloem necrosis, deep green, glossy leaves, yellow fall color

Small Urban Area or Street Trees

Acer tataricum: Tatarian maple, Zone 3a, native to southeastern Europe and central Asia, invasive, do not plant near any natural areas, single or multi-stemmed, upright form, 25' tall, 20' wide, yellow to reddish-brown fall color, pinkish-red samaras in summer changing to brown in fall, adaptable to most soils and pH, easy to transplant, drought, salt, and urban tolerant, very susceptible to verticillium wilt

'GarAnn' (Hot Wings™): upright, spreading form, 20-25' tall, 15-20' wide, bright red samaras, yellow to red fall color, drought tolerant
'Patdell' (Pattern Perfect™): upright form, 20' tall, 15-20' wide, bright red samaras, red stems, red-orange fall color
'Summer Splendor™: upright, spreading form, 15-20' tall, 15' wide, bright red fruit in summer

Acer tataricum* subsp. *ginnala: Amur maple, Zone 3a, native to China, Manchuria, and Japan, very invasive, do not plant near any natural areas, multi-stemmed, rounded form, low branches, 15-18' tall and wide (smaller cultivars are available), dagger-shaped leaves, orange to bright red fall color, red samaras in summer turn brown in fall, adaptable to most soils and pH, easy to transplant, drought, salt, and urban tolerant, very susceptible to verticillium wilt

'Compactum' or 'Bailey Compact': dense, compact, rounded, shrubby form, 6-8' tall, 6-8' wide, slower grower, orange to scarlet fall color
'Embers': rounded form, 15-20' tall, 15' wide, bright red samaras, scarlet fall color
'Emerald Elf': compact, rounded, dense, shrubby form, 5-6' tall and wide, scarlet to purple fall color
'Flame': multi-stemmed, spreading, irregular form, 15-20' tall, 20-25' wide, bright orange-red to deep red fall color
'JFS-UGA' (Red November™): multi-stemmed, low, rounded form, 18' tall, 24' wide, later, bright red fall color, heat tolerant, Zone 5

Acer truncatum: Shantung maple, Zone 3b, use a northern provenance (seed source), native to northern China, Russia, Korea, and Japan, broad-rounded, dense, symmetrical form, 20-30' tall, 20-30' wide, yellowish-orange to purple fall color, star-shaped leaves, adaptable to most soils and pH, drought, salt, heat and urban tolerant, no pest problems, harder to find, but worth trying

Amelanchier* x *grandiflora: apple serviceberry, hardy to zone 3a, native hybrid of downy and Allegheny serviceberry, multi or single-stemmed tree to large shrub, upright to irregular form, no suckers, 15-30' tall, 15-25' wide, produces bronze to purplish-red, fuzzy leaves in spring that turn smooth and green, white flowers in early spring, edible fruit in June, smooth, gray bark, yellowish-orange to red fall color, can develop chlorosis at high pH, prefers loamy soil, does poorly in poorly drained soils, difficult to transplant, plant in spring

'Autumn Brilliance': upright, spreading form, 20-25' tall, 15' wide, orange-red fall color, leaf spot resistant, multi-stemmed
'Cole's Select': upright, spreading form, 15-20' tall, 15' wide, multi-stemmed, orange-red fall color, leaf spot resistant, thicker, glossier leaf
'Forest Prince': oval form, 20' tall, 15' wide, red-orange fall color
'Princess Diana': wide spreading form, 15-20' tall, 15' wide, multi-stemmed, red-orange fall color, leaf spot resistant
'Robin Hill': upright, open form, 20-30' tall, 15-20' wide, flowers pink in bud open to pale pink fading to white, red fall color, single-stemmed

Amelanchier laevis: Allegheny serviceberry, hardy to zone 4a, native to eastern and central U.S., Canada, and Wisconsin, upright form, single or multi-stemmed tree, 15-25' tall, 15-20' wide, can sucker, produces white flowers in early spring, bronze to purplish-red new leaves in spring that turn green, edible fruit in June, orange to reddish-bronze fall color, prefers moist, loamy soils, does poorly in poorly drained soils, difficult to transplant, plant in spring

Cumulus®: upright, open form, 20-30' tall, 15' wide, orange-red fall color, minimal suckering, single-stemmed

'JFS-Arb' (Spring Flurry®): upright, oval form, 30-35' tall, 20' wide, orange fall color, single-stemmed, straight central leader, newer cultivar
'Rogers' (Lustre®): upright, open form, 20-30' tall, 15-20' wide, orange-red fall color, minimal suckering, single-stemmed
'Snowcloud': upright, oval form, 25' tall, 15' wide, scarlet fall color, single-stemmed

Cornus mas: Corneliancherry dogwood (more of a boulevard tree), hardy to zone 4b, native to Europe and western Asia, bright yellow flowers in early spring, long lasting, fruit is in summer and is bright red changing to dark purple and becoming edible, but tart, adaptable to most soils, but prefers rich soils, pH adaptable, easy to transplant, tolerates partial shade, straight species is sensitive to drought, but cultivars are more tolerant, sensitive to salt, no pest problems, hardy to zone 4b

'Golden Glory': narrow, upright form, 20-25' tall, 10' wide, much better form and darker green, glossy, thicker leaves, more flowers and fruit, good substitute to invasive tallhedge buckthorn!
'Pyramidalis': upright, pyramidal to upright form, 20' tall, 10-15' wide, dark green leaves

Crataegus crus-galli* var. *inermis: thornless cockspur hawthorn, hardy to zone 4a, native to eastern and central U.S., Canada, and Wisconsin, multi-stemmed tree, broad, spreading, horizontal, low branches, flat-topped crown, 20-30' tall, 20-35' wide, adaptable to most soils and pH, difficult to transplant, plant in spring, drought, salt, and urban tolerant, susceptible to cedar quince rust (on fruit) or cedar hawthorn rust (leaves), this variety has no thorns, white flowers in late spring, deep red fruit in early to mid fall that drops creating a litter problem, bronzish-orange to reddish fall color, dark green, leathery, spoon-shaped leaves

'Cruzam' (Crusader®): rounded form, 15' tall, 15' wide, thornless, bright red fruit, orange fall color

Crataegus phaenopyrum: Washington hawthorn, hardy to zone 4b, native to eastern U.S. and Canada, multi-stemmed tree, vase-shaped to broadly oval form, horizontal, low branches, 20-30' tall, 20-25' wide, adaptable to most soils and pH, difficult to transplant, plant in spring, tolerant to poor, sandy soils, drought and urban tolerant, moderate salt tolerance, susceptible to cedar quince rust (on fruit) or cedar hawthorn rust (leaves), has long, sharp thorns, white flowers in late spring to early summer, showy, persistent, glossy, bright-orange-red fruit fall to winter

'Westwood I' (Washington Lustre®): rounded, upright form, 20-25' tall, 20-25' wide, has fewer thorns than species, vigorous

***Crataegus viridis* 'Winter King'**: Winter King hawthorn, hardy to 4b, native to eastern U.S., vase-shaped to rounded, wide-spreading form, horizontal, low branches, adaptable to most soils and pH, difficult to transplant, plant in spring, drought and urban tolerant, moderate salt tolerance, less susceptible to cedar hawthorn rust but can get cedar quince rust on fruit, white flowers in late spring, very showy, bright orange-red, persistent fruit from mid fall to winter, silvery-gray bark that exfoliates on the trunk revealing orange inner bark, has few if any thorns, yellowish-purple fall color

Maackia amurensis: Amur maackia, hardy to zone 4a, native to Manchuria, vase-shaped to rounded form, upright, arching branches, 20-30' tall, 20-30' wide, slow grower, silvery and fuzzy leaves in spring turn olive-green and smooth, coppery-green to bronzish-brown, slightly exfoliating bark, off-white flowers in summer, small pods in fall, tolerant to most soils and pH, roots fix atmospheric N, tolerant to poor, infertile soils, urban and salt tolerant, prone to included bark formation, needs pruning when young, no pests, not invasive

'Starburst': upright, vase-shaped form with rounded crown, 25-30' tall, 20' wide, dark green leaves
Summertime®: upright, rounded form, 18-20' tall, 12-15' wide, white flowers in summer

***Malus* spp.**: flowering crabapple, most are hardy to zone 4a and are hybrids with parents originating from Asia, Europe and U.S., size and form are quite variable, adaptable to most soils and pH, prefers low nitrogen to decrease disease susceptibility, drought and urban tolerant, apple scab resistant species and cultivars listed below and have smaller fruit, some cultivars prone to suckering and watersprouts on branches

White Flowers/Red Fruit

'Adirondack': narrow, upright form, 18' tall, 10' wide, persistent fruit
'Guinzam' (Guinevere®): rounded form, 8-10' tall, 10' wide, persistent fruit
'Jewelcole' (Red Jewel®): upright, pyramidal form, 15' tall, 12' wide, persistent fruit, can get fireblight
'Kinarzam' (King Arthur®): upright, rounded form, 12' tall, 10' wide, can sucker from base
'Sutyzam' (Sugar Tyme®): upright, spreading, oval form, 18' tall, 15' wide, persistent fruit
Malus baccata 'Jackii': Jackii crabapple, hardy to zone 3, rounded form, 20' tall, 20' wide, glossy leaves, zone 3
Malus sargentii: Sargent crabapple, low, spreading form, 8' tall, 12' wide, alternate bearing, persistent fruit
'Select A' (Firebird®): rounded, spreading form, 7' tall, 9' wide, persistent fruit, bears annually, persistent fruit
'Tina': small, rounded, dwarf form, 5' tall, 6' wide, slow growing
Malus × *zumi* var. *calocarpa*: redbud crabapple, rounded, spreading form, 20' tall, 24' wide, persistent fruit

White Flowers/Yellow Fruit
'Bob White': dense, rounded form, 20' tall, 20' wide, persistent fruit, but is a watersprouter
'Cinzam' (Cinderella®): dwarf, rounded to upright form, 8' tall, 5' wide, persistent fruit
'Excazam' (Excalibur™): upright form, 10' tall, 8-10' wide, good form
'Hargozam' (Harvest Gold®): upright, oval form, 22' tall, 18' wide, persistent fruit, may get some scab
'Lanzam' (Lancelot®): compact, upright, dense form, 8-10' tall, 8' wide, persistent fruit
'Ormiston Roy': broad, rounded form, 20-25' tall, 25' wide, furrowed, orangish bark, yellow fruit with a rosy blush turn orange-brown after a hard frost

Pink or Reddish Flowers/Red to Purplish-Red Fruit
'Camzam' (Camelot™): rounded form, 10' tall, 8' wide, pinkish-white flowers, burgundy-green leaves, persistent fruit
Malus sargentii 'Candymint': low, spreading, horizontal form, 10' tall, 15' wide, purple tinted foliage becoming bronze-green
'Canterzam' (Canterbury™): rounded, compact form 10' tall, 8-10' wide, light, pinkish-white flowers
'Cardinal': irregular, spreading form, 16' tall, 22' wide, dark purplish-red, glossy leaves
'JFS-KW5' (Royal Raindrops®): upright, spreading form, 20' tall, 15' wide, cutleaf, purple leaves, orange-red fall color, persistent fruit
'Orange Crush': spreading form, 12-15' tall, 12-15' wide, bronze to purplish-green leaves
'Parrsi' (Pink Princess®): low, spreading form, 8' tall, 12' wide, purple leaves become bronze-green
'Prairifire': upright, spreading to rounded form, 20' tall, 20' wide, slower growing, purple leaves become reddish-green
'Prairie Maid': rounded to spreading form, 20' tall, 25' wide, burgundy tinged leaves in spring, but is a watersprouter
'Purple Prince': rounded form, 20' tall, 20' wide, purple leaves become bronzish-green, persistent fruit

Weeping Form
'Coral Cascade': semi-weeping form, 15' tall, 20' wide, white flowers, coral fruit, persistent fruit
'Louisa': graceful weeper, 15' tall, 15' wide, pink flowers, fruit are yellow turning orange-brown, not showy or persistent
'Luwick': graceful, low weeper, 7' tall, 14' wide, deep pink buds open to light pink to whitish flowers, bright red fruit
'Manbeck Weeper' (Anne E.®): wide spreading, horizontal weeper, 10-12' tall, 10-12' wide, white flowers, cherry-red fruit, persistent fruit, is difficult to find, but is one of the nicest crabs
'Molazam' (Molten Lava®): broadly weeping form, 14' tall, 20' wide, white flowers, bright red fruit

Prunus sargentii: Sargent cherry, hardy to zone 4b, native to Japan, oval to vase-shaped form, 25-35' tall, 20-30' wide, showy, single, pink flowers in clusters in early spring, small, purplish-black fruit in summer, bronze to orange-red fall color, reddish-gray to chestnut-brown, polished bark, adaptable to most soils and pH, does not tolerate compacted, heavy-clay soils, plant in spring, likes roots kept cool, must have good drainage, resistant to black knot, may form included bark

'Columnaris': narrow, columnar to narrow, vase-shape form, 25-35' tall, 15' wide, orange to orange-red fall color
'JFS-KW58' (Pink Flair®): upright, narrow, vase-shape form, 25' tall, 15' wide, orange-red fall color

***Prunus* 'Accolade'**: Accolade cherry (hybrid with *P. sargentii* and *P. subhirtella*), hardy to zone 4b, 20-25' tall, 20-25' wide, horizontal branching with vase-shaped form, semi-double, early, pink flowers in drooping clusters before the leaves in early spring, no fruit, golden to orange fall color

Pyrus calleryana: callery pear, hardy to zone 4b, native to China and Korea, upright, pyramidal to oval form, 25-35' tall, 20-30' wide, adaptable to most soils and pH, drought, urban, and salt tolerant, can get fireblight, fast grower, dark green, glossy, leathery leaves, late, reddish-orange to purple fall color, white flowers in mid spring, small, brown, rounded fruit

Aristocrat®: pyramidal form with open branching, 35' tall, 25' wide, yellow to red fall color but is inconsistent for fall color, wider branch crotch angles
'Autumn Blaze': rounded form, 30' tall, 25' wide, earlier, bright red to purplish fall color, wide crotch angles, less prone to included bark formation
'Cambridge': upright, narrowly pyramidal form, 35' tall, 15' wide, bright orange fall color
'Capital': narrow, columnar form, 30' tall, 12' wide, reddish-purple fall color, susceptible to limb breakage in storms, susceptible to fireblight, zone 5
'Cleveland Select' or 'Glenn's Form' (Chanticleer®): formal, upright, narrowly pyramidal form, 25-30' tall, 15' wide, late orangish to reddish fall color, not as good as other cultivars for fall color, rarely produces fruit
'Redspire': pyramidal, dense, symmetrical form, 35' tall, 25' wide, yellow to reddish fall color or none at all, susceptible to fireblight, slower grower
'XP-005' (Trinity®): broadly oval to rounded form, 30' tall, 25' wide, glossy, lighter green leaves, orange-red fall color

***Pyrus* 'Edgedell'**: Edgewood® pear, hardy to zone 5, hybrid of *P. calleryana* x *P. betulifolia*, rounded, open form, 30' tall, 25' wide, silvery leaf undersides, white flowers, good branch crotch angles, reddish-purple fall color

Syringa pekinensis: Peking lilac, Pekin lilac, hardy to zone 4a, native to northern China, loose, rounded form, 20-25' tall, 15-20' wide, moderate to fast grower, no fall color, reddish-brown, shiny bark, creamy-white, large flowers in early summer that do not smell like lilacs but rather like a privet, tends to flower heavily every other year, adaptable to most soils and pH, easy to transplant, salt and urban tolerant, susceptible to bacterial blight and verticillium wilt, resistant to mildew

'DTR 124' (Summer Charm®): upright, spreading, better form, 20' tall, 15' wide, single-stemmed
'Morton' (China Snow®): upright, spreading, wild form, big crown, 25' tall, 20' wide, vigorous, showy, showy, exfoliating, coppery to orangish-brown bark, single-stemmed
'Zhang Zhimming' (Beijing Gold™): upright, rounded form, 25' tall, 20' wide, vigorous, single or multi-stemmed, yellow flowers instead of white

Syringa reticulata: Japanese tree lilac, hardy to zone 3a, native to Japan and Manchuria, upright with a rounded to oval form, 20-25' tall, 15-20' wide, no fall color to yellowish, reddish-brown, shiny bark, creamy-white, large flowers in early summer that do not smell like lilacs but rather like a privet, tends to flower heavily every other year, adaptable to most soils and pH, easy to transplant, salt and urban tolerant, susceptible to bacterial blight and verticillium wilt, resistant to mildew

'Elliott' (Snowcap™): upright, more compact form, 15-20' tall 10-12' wide, uniform branching, thick, dark green leaves, good form
'Golden Eclipse': upright, compact form, 18-24' tall, 8-14' wide, new leaves in spring emerge green with a darker center, the edge of the leaf gradually turns bright gold with the dark green center remaining
'Ivory Silk': over used, upright, spreading becoming oval to rounded, 20' tall, 15' wide, susceptible to bacterial blight
'Summer Snow': broad, rounded, compact form, 20' tall, 15' wide, good form, glossy, dark green leaves
'Williamette' (Ivory Pillar™): upright, pyramidal, narrower form, 20-25' tall, 10-15' wide

Wholesale nursery sources used in this guide (does not imply endorsement by me of nurseries named, nor criticism of similar nurseries not mentioned)

Bailey Nurseries: St. Paul, Minnesota, www.baileynurseries.com, (800) 829-8898
Beaver Creek Nursery: Poplar Grove, Illinois, www.beavercreeknursery.com, (815) 737-8758
Carlton Plants: Dayton, Oregon, www.carltonplants.com, (800) 398-8733
Femrite Nursery: Aurora, Oregon, www.femrite.com (800) 547-2161
Heritage Seedlings: Salem, Oregon, www.heritageseedlings.com (503) 371-9688
J. Frank Schmidt and Son: Boring, Oregon, www.jfschmidt.com, (800) 825-8202
Johnson's Nursery: Menomonee Falls, Wisconsin, www.johnsonsnursery.com, (262) 252-4980
Mariani Nurseries: Kenosha, Wisconsin, (866) 627-4264
McKay Nursery: Waterloo, Wisconsin, www.mckaynursery.com, (920) 478-2121
Meadow Lake Nursery, McMinnville, Oregon, www.meadow-lake.com (503) 435-2000
Silver Creek Nurseries: Manitowoc, Wisconsin, (920) 684-6267

U.S.D.A. Cold Hardiness Zones

Zone 3a (cold hardy to –35 to –40ºF): northwestern Wisconsin
Zone 3b (cold hardy to –30 to –35ºF): most of northern Wisconsin

Zone 4a (cold hardy to –25 to –30ºF): northern central and extreme northwestern Wisconsin
Zone 4b (cold hardy to –20 to –25ºF): southwestern and central Wisconsin and along shore of Lake Superior

Zone 5a (cold hardy to –15 to –20ºF): southeastern and eastern Wisconsin up to Door County and Madison near the lakes
Zone 5b (cold hardy to –10 to –15ºF): Milwaukee, Racine, and Kenosha areas near Lake Michigan

Exhibit B

A3072

Preserving trees during construction

Stan Binnie

Wooded lots are in high demand by people seeking home building sites. The price of a building lot with trees is usually much higher than one without, and buyers are willing to pay 5 to 10 percent, even up to 20 percent more for an existing home with trees. However, home construction can damage and even kill the much-desired trees, turning them into an economic liability.

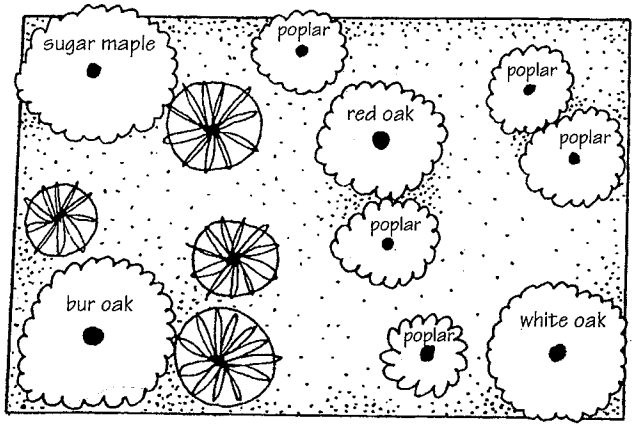
Plan before you build

Protecting the existing trees begins when you plan your home. Select a building site that is large enough to accommodate your house and still allows room for undisturbed areas of trees. Small wooded lots are not practical. Many of the trees will have to be removed to make room for the house, and the remaining trees may be damaged by grading and other activities that go with home building.

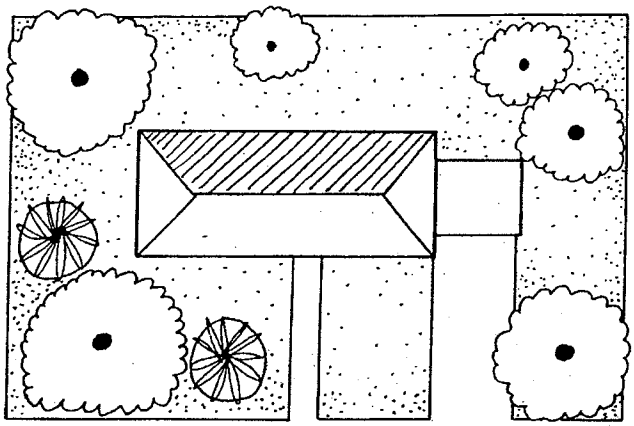
Trees vary in their ability to tolerate construction damage. Among the most sensitive are red oak, white oak, and sugar maple. These species will need more protection during construction. More tolerant trees include bur oak, silver maple, poplars, and willows. In general, young trees are better able to withstand the changes that construction brings than are large, mature trees.

Select a home design that will disturb the area around the trees as little as possible. Keep in mind the trenches dug to install underground water pipes, electric and gas service, telephone and sewer lines will damage or destroy part of a tree's root system. With your blueprints in hand, consult the different utilities to plan service installations as far from the trees as possible.

Plan your driveway to minimize damage. Locate it as far from trees as possible. Limestone gravel placed over the tree's root system will change the chemical makeup of the soil, resulting in poor growth or yellow leaf color. Paving a driveway shuts off the supply of air and water to the root system and suffocates the tree.



Trees on a wooded lot lived many undisturbed years before construction.



Before you build, work with the builder to prevent damage to valuable trees.

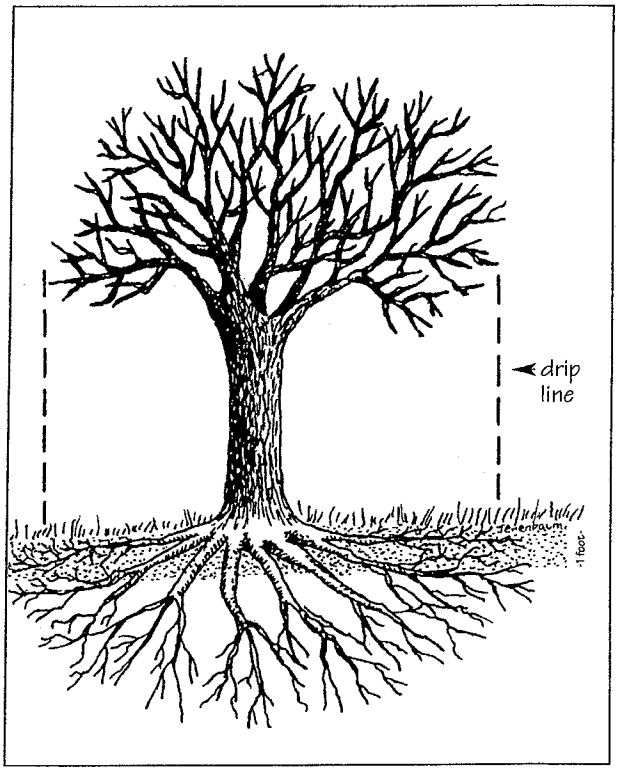
Work with builder to avoid damage

Most of a tree's feeder root system is within the top foot of soil. In fact, many roots grow in the organic litter that has accumulated under the tree. The root system extends at least as far (often farther) than the ends of the branches. Remember, mature trees have been growing in the same place for many years. The tree developed roots at a soil depth optimum for absorbing the nutrients, moisture, and oxygen that are necessary for the growth and survival of the tree. If the root zone is disturbed by adding fill, cutting away soil or moving heavy equipment over the root zone, the tree is almost sure to suffer.

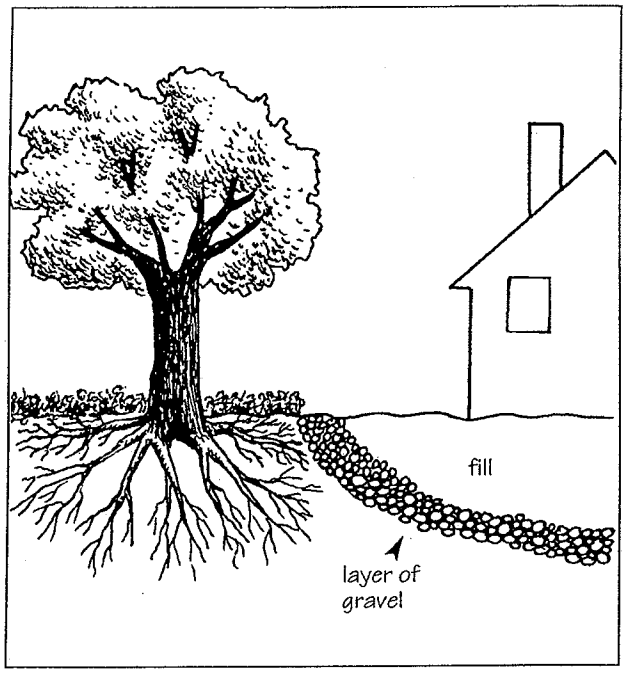
One of the most common (and most destructive) causes of construction damage to mature trees is to add soil, thereby burying the roots. When this happens, the roots lose their supply of oxygen and water. If you must add soil fill around the tree, use a porous soil, like a sandy loam, that will let the roots "breathe." Or, put a layer of gravel (*not* crushed limestone) over the root zone before adding soil. Small, circular pits dug around trees to keep soil fill away from the base of the trunk seldom preserve trees, because the soil fill outside the well covers the major portion of the fine root system. Avoid stockpiling topsoil or construction materials around trees during construction. On the other hand, removing topsoil during home construction will damage the feeder roots. Without their protective soil covering, the roots are subject to drying and injury.

Ask your contractor to keep heavy equipment away from the trees. Build a fence around the root zone if necessary. Broken branches, torn bark, and crushed roots not only hurt the tree, but make it more open to disease and insect invasion. Driving heavy equipment near trees will compact soil and damage the roots. Before construction begins, you may want to cover the root area with several inches of wood chips to minimize compaction.

If at all practical, preserve the natural habitat of the tree, both during and after construction. For example, oak trees thrive in acid soils. Their fallen leaves help create and maintain acidic surface layers of soil that differ significantly from the alkaline material below. If you clear away the natural undergrowth, establish a lawn and rake up the leaves each fall, you will eventually change the upper soil surface, and the oaks will decline and possibly die. Try to maintain the natural drainage pattern of the site. When grading changes the underground flow of water that the tree is accustomed to, the tree will suffer.



The tree's feeder roots grow in the top foot of soil and often extend as far or farther than the ends of the branches.



If fill must be placed over tree roots, put a layer of gravel over the roots before adding fill. This allows water and oxygen to get to the roots.

What to do if construction damages trees

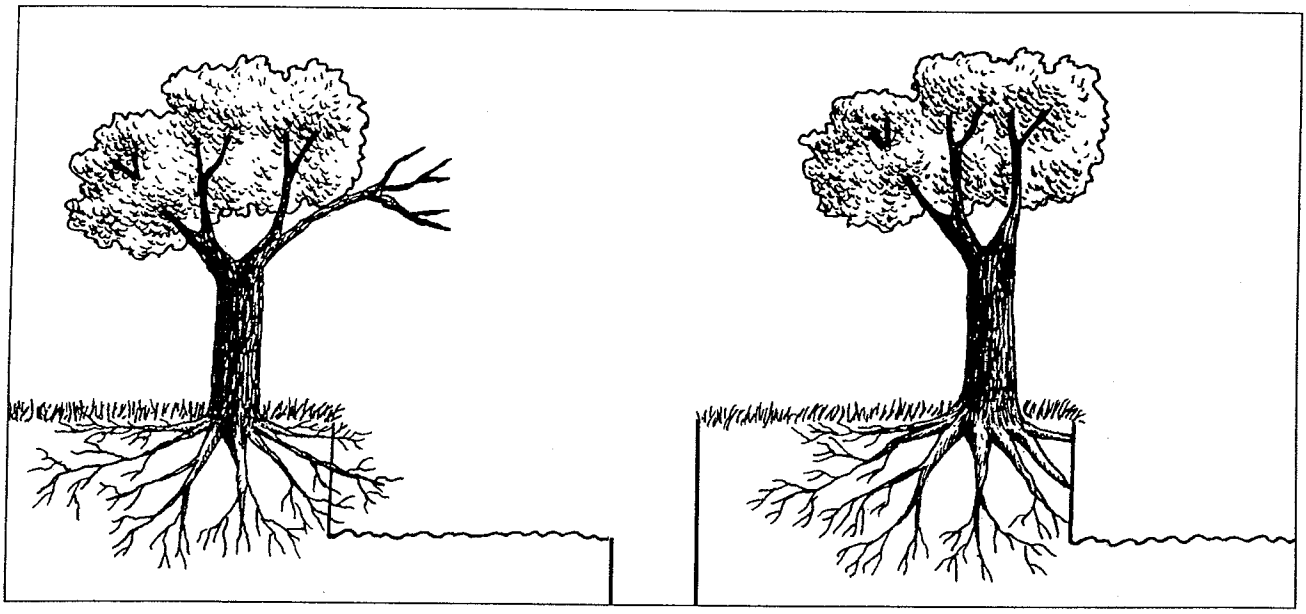
Symptoms of trees suffering from construction damage may appear the next growing season, or may take two or three years to appear. When the roots are damaged, the tree is not able to take up enough water and nutrients to feed all the branches. The result is die-back in the top of the tree and at the ends of the branches as the areas farthest from the root system begin to die. Some trees develop yellow foliage as a result of nutrient deficiencies. Foliage may be small and sparse. Tree growth may slow down.

To revitalize trees suffering from construction damage, you can thin the crown, place mulch over the root system of the tree and fertilize. Thinning the crown may be the most effective way to help a tree in decline. A tree with a damaged root system is not able to sustain all of its branches and leaves. Removing dead or dying branches will help to bring the crown to root ratio back into balance. This may increase the tree's chances for survival. However, do not remove healthy, growing branches.

Mulching with organic material, such as wood chips or shredded bark over the root zone will simulate the forest floor environment. This soft, fertile covering encourages the growth of fine roots which absorb more nutrients, water, and oxygen. Fertilizing may seem to bring trees back to life by stimulating more luxuriant foliage, but no amount of fertilizer will save the tree if root damage is extensive.

Even if no symptoms appear, give extra care to trees following construction work. Water well during dry spells and fertilize once a year in early spring or late fall.

Trees add value to your home. The cost and care of preventing tree damage during construction protects those assets to your home. For more information on preventing construction damage to trees or revitalizing damaged trees, contact your county Extension office or a local arborist.



Trees cannot support all their branches when roots are cut during construction.

Prune dead branches, thin the crown, and water, fertilize, and mulch trees damaged by construction.

Additional information

For more information about selecting, planting, and caring for trees, consult the following Extension publications:

A Guide to Selecting Landscape Plants for Wisconsin	(A2865)
Caring for Deciduous Shrubs	(A1771)
Caring for Your Established Shade Trees	(A1817)
Dutch Elm Disease in Wisconsin	(A2392)
Evergreens—Planting and Care	(A1730)
Fertilization of Trees and Shrubs	(A2308)
Landscape Plants that Attract Birds	(G1609)
Salt Injury to Landscape Plants	(A2970)
Selecting, Planting and Caring for Your Shade Trees	(A3067)

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