

# Alternative to Ash Trees in Urban Settings: Commercially Available Species and Cultivars

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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 saccharum*, etc.

Plant no more than 10% of a species: i.e. *Acer rubrum*

## 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 and will need training pruning when young, dioecious (separate male and female flowers produced on separate plants)

'Armstrong': narrow, fastigate form, 45' tall, 15' wide, yellow fall color, female, produces seeds

'Celzam' (Celebration<sup>®</sup>): 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<sup>®</sup>): 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<sup>®</sup>): 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<sup>®</sup>): upright form becoming oval, 40' tall, 20' wide, yellow-orange to orange-red

fall color, fast grower, male, seedless

'Sienna' (Sienna Glen<sup>®</sup>): 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 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 and drought, susceptible to verticillium wilt, leaf hoppers, frost crack, girdling roots, prone to included bark formation and narrow, branch crotch angles, shallow roots

Autumn Flame<sup>®</sup>: dense, rounded with spreading branches, 40' tall, 35' wide, early, bright red fall color, male, seedless, slower grower

Autumn Radiance<sup>®</sup>: 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<sup>™</sup>): 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<sup>™</sup>: good branching, 45' tall, fast growing, later, orange-red fall color

'Frank Jr.' (Redpointe<sup>™</sup>): 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<sup>®</sup>): 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<sup>®</sup>: narrow, oval, dense form, 40' tall, 20' wide, yellow to orange fall color, male, seedless, prone to included bark formation

'Magnificent Magenta' (Burgundy Belle<sup>®</sup>): 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<sup>®</sup>): oval form, 50' tall, 35' wide, early, bright red fall color, northern seed source, Zone 3

'PNI 0268' (October Glory<sup>®</sup>): 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<sup>™</sup>): 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<sup>®</sup>: 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

***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

***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<sup>™</sup>): broad, oval to rounded form, 40' tall, 40' wide, horizontal branches, some pods, fast growing, yellowish fall color
- 'Emerald Cascade': irregular, weeping form with pendulous branches, grafted, 16' tall, male, no pods
- 'Harve' (Northern Acclaim<sup>®</sup>): symmetrical, upright, spreading form, 45' tall, 35' wide, yellow fall color, male, no pods, developed in North Dakota, hardy to zone 3b
- 'Impcole' (Imperial<sup>®</sup>): 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<sup>®</sup>): vase-shaped to rounded, irregular form, 45' tall, 35' wide, uniform, ascending branches, occasionally, some trees may produce pods
- 'Skycole' (Skyline<sup>®</sup>): 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<sup>®</sup>): 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<sup>®</sup>: broadly oval form, 40' tall, 35' wide, wider branch angles, yellow fall color, faster grower, male, no pods
- 'Wandell' (Perfection<sup>™</sup>): 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; nurseries say the tree is hard to ship as it is very brittle when shipping and forms no central leader

- '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<sup>™</sup>): oval to vase-shaped form, 50' tall, 35' wide, large, blue-green leaves, yellowish fall color, male, no pods, newer cultivar

***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<sup>™</sup> oak, hardy to zone 4b, hybrid of *Q. alba* × *Q. robur*, columnar to tightly fastigate form, 45' tall, 15' wide, dark green to blue green leaves, rusty-reddish fall color, supposed to be mildew resistant

***Quercus imbricaria***: shingle oak, hardy to zone 4b, native to eastern and central U.S., pyramidal when young becoming oval to rounded with age, wide-spreading, 50-60' tall, 40-60' wide, slow to moderate growth rate, late, russet-brown fall color, leaves hold late into winter, requires acidic soil, gets chlorotic at high pH, tolerates dry soil, urban tolerant, susceptible to oak wilt

***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<sup>®</sup> 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

**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 palustris:** pin oak, hardy to zone 4b, native to eastern U.S. to Midwestern U.S., nice pyramidal form with tight branching, 70-80' tall, 40-50' wide, fast growth rate, late, russet to orange-red fall color, prefers a rich, loamy soil, requires acidic soil only, tolerates wet soil, urban tolerant, susceptible to oak wilt

**Quercus × schuettei:** swamp bur oak, hybrid of *Q. bicolor* × *Q. macrocarpa*, zone 3b, 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

**Quercus × warei 'Long':** Regal Prince<sup>®</sup> oak, zone 4b, 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

**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<sup>®</sup>): 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<sup>®</sup>): 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<sup>™</sup>): symmetrical, pyramidal form with straight central leader, 45' tall, 30' wide, better branch angles, lighter gray bark, yellow 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 '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

**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, \* are ones that I think are the best

'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<sup>®</sup>) (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<sup>™</sup>) (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<sup>™</sup>) (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<sup>™</sup>) (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<sup>™</sup>) (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 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**

**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<sup>®</sup>): rounded form, 15' tall, 15' wide, thornless, bright red fruit, orange fall color

***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

***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<sup>®</sup>): rounded form, 8-10' tall, 10' wide, persistent fruit

'Jewelcole' (Red Jewel<sup>®</sup>): upright, pyramidal form, 15' tall, 12' wide, persistent fruit, can get fireblight

'Kinarzam' (King Arthur<sup>®</sup>): upright, rounded form, 12' tall, 10' wide, can sucker from base

'Sutyzam' (Sugar Tyme<sup>®</sup>): 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<sup>®</sup>): 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,

#### White Flowers/Yellow Fruit

'Bob White': dense, rounded form, 20' tall, 20' wide, persistent fruit, but is a

watersprouter 'Cinzam' (Cinderella<sup>®</sup>): dwarf, rounded to upright form, 8' tall, 5' wide,

persistent fruit 'Excizam' (Excalibur<sup>™</sup>): upright form, 10' tall, 8-10' wide, good form

'Lanzam' (Lancelot<sup>®</sup>): 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<sup>™</sup>): rounded form, 10' tall, 8' wide, pinkish-white flowers, burgundy-green leaves, persistent fruit

*Malus sargentii* 'Candy mint': low, spreading, horizontal form, 10' tall, 15' wide, purple tinted foliage becoming bronze-green

'Canterzam' (Canterbury<sup>™</sup>): 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<sup>®</sup>): 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

'Parsi' (Pink Princess<sup>®</sup>): 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

\***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*), redbud, ash, lindens, musclewood, pagoda dogwood, pears, weeping willow, honeylocust, serviceberry, Japanese barberry, potentilla, roses, variegated dogwood, spreading cotoneaster

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](http://www.baileynurseries.com), (800) 829-8898

Beaver Creek Nursery: Poplar Grove, Illinois, [www.beavercreeknursery.com](http://www.beavercreeknursery.com), (815) 737-8758

Carlton Plants: Dayton, Oregon, [www.carltonplants.com](http://www.carltonplants.com), (800) 398-8733

Femrite Nursery: Aurora, Oregon, [www.femrite.com](http://www.femrite.com) (800) 547-2161

Heritage Seedlings: Salem, Oregon, [www.heritageseedlings.com](http://www.heritageseedlings.com) (503) 371-9688

J. Frank Schmidt and Son: Boring, Oregon, [www.jfschmidt.com](http://www.jfschmidt.com), (800) 825-8202

Johnson's Nursery: Menomonee Falls, Wisconsin, [www.johnsonsnursery.com](http://www.johnsonsnursery.com), (262) 252-4980

Mariani Nurseries: Kenosha, Wisconsin, (866) 627-4264

McKay Nursery: Waterloo, Wisconsin, [www.mckaynursery.com](http://www.mckaynursery.com), (920) 478-2121

Silver Creek Nurseries: Manitowoc, Wisconsin, (920) 684-6267

### U.S.D.A. Cold Hardiness Zones

Zone 3a (cold hardy to -35 to -40°F): northwestern Wisconsin

Zone 3b (cold hardy to -30 to -35°F): most of northern Wisconsin

Zone 4a (cold hardy to -25 to -30°F): northern central and extreme northwestern Wisconsin

Zone 4b (cold hardy to -20 to -25°F): southwestern and central Wisconsin and along shore of Lake Superior

Zone 5a (cold hardy to -15 to -20°F): southeastern and eastern Wisconsin up to Door County and Madison near the lakes

Zone 5b (cold hardy to -10 to -15°F): Milwaukee, Racine, and Kenosha areas near Lake Michigan