Trees provide us with many environmental, aesthetic, functional, and economic benefits. Tree selection is one of the most important considerations when a homeowner, nurserymen, or landscaper is deciding what species to grow or plant. Many questions need to be answered including size, location, site characteristics, aesthetic features, pest susceptibility, hardiness, and maintenance considerations. Some trees can become a maintenance headache due to their inherent pest problems or lack of structural integrity.

The trees represented in this story have not generally performed well in urban and suburban areas of the Midwest. Some are susceptible to insects and diseases, and some have severe structural problems such as being weak-wooded or prone to girdling roots or included bark formation. Others have cultural problems such as intolerance to high pH, road salt, drought, and poor drainage. A few tree species are invasive and should be avoided near sensitive areas or seed dispersal into woodlands could occur.

Some of these trees may do quite well in other parts of the U.S., so my intention is not to apply a blanket statement for all these trees to all situations. Invasiveness and pest susceptibility can vary geographically. The article is based on more than 25 years of field experience and data collected from numerous states’ plant disease and insect diagnostic clinics, and conversations with arborists, nurseries, landscapers, and extension personnel. There are alternative species that can be used and are mentioned here. These alternative tree species have performed well in USDA Cold Hardiness Zone 4b.

1) **Acer platanoides** (Norway maple)
   - **Abiotic or structural problems:** poor structure, tight branching, often forms double leaders due to its opposite branching, girdling roots, shallow root system, leaf scorch, frost crack and sunscald on young trees, intolerant to poor drainage
   - **Insects and mites:** Japanese beetles, cottony maple scale
   - **Diseases:** Verticillium wilt, basal/crown rot near the soil line and decline due to deep planting, Eutypella and Nectria cankers, internal decay when older, root rot
   - **Invasiveness:** very invasive, especially in woods and natural areas due to production of lots of fruit/seed that creates a litter mess

2) **Fraxinus spp.** (ashes)
   - **Abiotic or structural problems:** girdling roots, subject to storm damage, poor form (green ash), often forms double leaders due to its opposite branching, greater maintenance pruning required, leaf drop in late spring, especially on green ash, bark splitting, white ash intolerant to poor drainage
   - **Insects and mites:** emerald ash borer (major pest), native ash borers, oystershell scale, ash plant bug, ash flower gall mite, sawflies
   - **Diseases:** anthracnose, Verticillium wilt, ash yellows, basal rot (white ash) due to deep planting, leaf spot, cankers
   - **Fruit:** female trees produce large amounts of unsightly fruit in large clusters that create a litter mess; can reseed

3) **Tilia cordata**, especially ‘Greenspire’ (Greenspire littleleaf linden)
   - **Abiotic or structural problems:** tight branching, often develops multiple leaders, narrow branch crotch angles leading to included bark formation, requiring lots of training pruning, basal suckering, girdling roots, decline due to deep planting, subject to storm damage, sunscald on trunk, sensitive to road salt and juglone, leaf scorch, intolerant to poor drainage
   - **Insects and mites:** Japanese beetles, linden borer, gypsy moth, some leaf galls, spider mites, scale
   - **Diseases:** basal/crown rot due to deep planting, root rot, Nectria canker, Verticillium wilt, anthracnose

4) **Malus spp. disease susceptible cultivars** (flowering crabapple)
   - **Abiotic or structural problems:** basal suckering from rootstock, watersprouts on branches, poor form and tight branching (some cultivars), sensitive to juglone, intolerant to poor drainage
   - **Insects and mites:** Japanese beetles, spider mites, eastern tent caterpillar, gypsy moth, aphids, leaf rollers, borers, fall webworm, cankerworms, scale
   - **Diseases:** susceptibility to diseases varies across the country, apple scab, frogeye leaf spot, fireblight, cedar-apple rust, powdery mildew, cankers, root rot
   - **Fruit:** some cultivars produce either large or non-persistent fruit that falls and creates a litter mess; some cultivars are alternate bearing (some cultivars flower/fruit heavily every other year)
   - **Animals:** subject to rabbit and vole injury at base of trunk, deer browse the fruit
5) *Acer saccharinum* (silver maple)
Abiotic or structural problems: poor structural form, narrow branch crotch angles leading to included bark formation, weak-wooded, subject to storm damage, watersprouts on branches, shallow surface roots, girdling roots, aggressive root system can ruin foundations and sewer pipes, can get chlorotic at very high pH, sensitive to juglone, leaf scorch, frost crack and sunscald on young trees, thin bark easily damaged due to mechanical injury
Insects and mites: Eriophyid gall mites (causes bladder, ermineum, and spindle galls), cottony maple scale, borers
Diseases: anthracnose, bacterial wetwood, Verticillium wilt, internal trunk decay, cankers, tar spot, Venturia leaf blotch
Fruit: female trees produce large amounts of unsightly fruit in large clusters that create a litter mess, reseeds

Abiotic or structural problems: intolerant to heavy clay soils or poor drainage, road salt and drought intolerant, sensitive to juglone, not heat tolerant, shallow roots, susceptible to storm injury
Insects and mites: very susceptible to bronze birch borer, birch leaf miner, Japanese beetles, gypsy moth, sawflies
Diseases: anthracnose, cankers, leaf spot

7) Poplars, willows, and their hybrids: *Populus deltoides* (eastern cottonwood), *Populus alba* (white poplar, very invasive), *Salix × sepulcralis var. chrysocoma* (golden weeping willow) and *Salix matsudana × Salix alba* (Austree® willow)
Abiotic or structural problems: weak-wooded, fast growing, very susceptible to storm damage due to brittle branches, roots very aggressive and can ruin foundations and clog sewer pipes, messy tree, consistent fruit, leaf and branch litter problems, a number of municipalities have ordinances against planting some of these trees
Insects and mites: willow leaf beetle, borers, Japanese beetles (willows), elm sawfly (willows), aphids, fall webworm, gypsy moth, scale
Diseases: leaf spot, leaf rust, many stem and trunk cankers, bacterial wetwood, leaf and shoot blight, anthracnose
Fruit: female poplar and willow trees produce large amounts of cottony seeds that create a litter mess, can reseed; hybrids are mainly male so no seeds

8) Some cherries and plums: *Prunus virginiana* ‘Schubert’ or ‘Canada Red’ (Canada Red chokecherry), *Prunus serotina* (black cherry) *Prunus ‘Newport’* (Newport plum), *Prunus nigra* ‘Princess Kay’ (Princess Kay Canadian plum), *Prunus padus* (European bird cherry), *Prunus pemslyvianca* (pin cherry, fire cherry), *Prunus americana* (American plum, wild plum), *Prunus cerasifera* (purpleleaf plum), *Prunus × cistena* ‘Schmidtcsis’ (Big Cis®, tree form)
Abiotic or structural problems: weak-wooded, susceptible to storm injury (black cherry), intolerant to heavy clay, poorly drained soils, short-lived trees, narrow branch crotch angles leading to included bark formation, girdling roots, leaves, twigs, and seeds are poisonous, especially to livestock
Insects and mites: shothole borers, eastern tent caterpillar, Japanese beetles, scale, fall webworm, pear slug, gypsy moth, cankerworms, spider mites

*Despite the problems listed above, there are some excellent, disease resistant crabapple cultivars
Diseases: very susceptible to black knot, bacterial canker, brown rot, internal decay, viruses, root/crown rot, cherry leaf spot, plum pox, root rot
Fruit: messy fruit that stains sidewalks, reseeds readily (black cherry); “mummy”, shriveled fruit on plums
Animals: subject to rabbit and vole injury at base of trunk

9) Mountainashes: *Sorbus aucuparia* (European mountainash), *Sorbus americana* (American mountainash), *Sorbus decora* (showy mountainash), *Sorbus alnifolia* (Korean mountainash)
Abiotic or structural problems: narrow branch crotch angles leading to included bark formation, sunscald on trunk, intolerant to heavy clay, poorly drained soils, not heat tolerant, intolerant to wet soils, road salt, drought, and air pollution
Insects and mites: mountainash sawfly, borers, leafhoppers, Japanese beetles, aphids, gypsy moth, spider mites, fall webworm, oystershell scale, gall mites
Diseases: very susceptible to fireblight, stem cankers, apple scab on fruit and leaves, leaf rust, root rot
Fruit: European mountainash fruit can shrivel on plant and be full of disease

10) Some hawthorns: *Crataegus laevigata* ‘Crimson Cloud’ (‘Superba’), ‘Paul’s Scarlet’, (Crimson Cloud and Paul’s Scarlet English hawthorns), *Crataegus ‘Vaughn’* (Vaughn hawthorn), *Crataegus × mordenensis* ‘Snowbird’ and ‘Toba’ (Snowbird and Toba Morden hawthorns), *Crataegus mollis* (downy hawthorn), *Crataegus ambigua* (Russian hawthorn), and *Crataegus punctata* ‘Ohio Pioneer’ (Ohio Pioneer thicket or dotted hawthorn)
Abiotic or structural problems: intolerant to road salt and wet soils, very sharp thorns, narrow branch crotch angles leading to included bark formation, fruit on some hawthorns can create a litter mess, difficult to transplant
Insects and mites: hawthorn leaf miner, woolly aphids, lacebugs, borers, gypsy moth, spider mites, scale, aphids
Diseases: very susceptible to cedar-apple/hawthorn/quince rust on leaves, twigs and fruit (rust can defoliate the trees by midsummer), fireblight, powdery mildew, leaf spot, leaf blight, stem cankers

11) Tree species requiring acid soils, but placed into alkaline soils: *Acer rubrum* (red maple), *Quercus palustris* (pin oak), *Quercus coccinea* (scarlet oak), *Quercus rubra* (northern red oak), *Quercus alba* (white oak), *Betula nigra* (river birch), *Fagus grandifolia* (American beech), *Amelanchier* spp. (serviceberries), *Larix* spp. (larches), all are great species, but ONLY if the soil pH is conducive to their growth (acid soils, below 7.0 pH).

12) *Picea pungens* (Colorado blue spruce)
Abiotic or structural problems: sensitive to juglone, intolerant to wet soils, intolerant to heat, pollution or high humidity, short-lived tree and often looks unsightly with age due to absence of lower branches
Insects and mites: Cooley spruce gall adelgids, eastern spruce gall adelgids, spruce budworm, spider mites, borers, spruce bud scale
Diseases: very susceptible to Cytospora canker, Rhizosphaera needle cast, root rot, Weir’s cushion rust, spruce needle drop, often full of dead branches due to diseases

13) *Pinus nigra* (Austrian pine)
Abiotic or structural problems: sensitive to juglone, intolerant to wet soils, short lived tree due to pests
Insects and mites: European pine shoot moth, Zimmerman pine moth, European pine sawfly, bark beetles, borers, pine needle scale
Diseases: very susceptible to Diplodia tip blight, pine wilt nematode, Dothistroma needle blight, Lophodermium needle cast, root rot

14) *Pinus sylvestris* (Scots pine, Scotch pine)
Abiotic or structural problems: sensitive to juglone, intolerant to wet soils, short lived tree due to pests, prone to limb breakage due to snow and ice loads
Insects and mites: European pine shoot moth, Zimmerman pine moth, European pine sawfly, bark beetles, borers, pine needle scale
Diseases: very susceptible to Diplodia tip blight, pine wilt nematode, Dothistroma needle blight, Lophodermium needle cast, brown spot, root rot
Invasiveness: invasive, especially in woods and natural areas, but is easily controlled as stumps do not resprout and no root suckers

15) *Juniperus scopulorum* (Rocky Mountain juniper)
Abiotic or structural problems: gets leggy and ratty if in shade, not heat tolerant, intolerant to high humidity or poorly drained soils, short-lived tree/shrub due to pests, prone to limb breakage due to snow and ice loads
Insects and mites: bagworms, spider mites, scale
Diseases: very susceptible to Phomopsis tip blight and other cankers leading to extensive death of branches, cedar-apple/hawthorn/quince rust, root rot, cankers
16) Invasive tree species:
Acer campestre (hedge maple): has become invasive out east and in the south, marginally hardy here, susceptible to Verticillium wilt, can reseed, can get aphids, scale, borers, canker and dieback due to lack of cold hardiness in zone 5
Acer negundo (boxelder): native, but reseeds and root sprouts quite readily, weak-wooded, prone to storm injury, breeds populations of boxelder bugs that enter homes in late fall, trunk decay, Verticillium wilt
Acer platanoides (Norway maple): see above
Acer tataricum subsp. ginnala (Amur maple): reseeds readily, very susceptible to Verticillium wilt, stem cankers
Ailanthus altissima (tree-of-heaven): reseeds and root sprouts, weak-wooded, narrow branch crotches and included bark, prone to storm injury, suckers readily, fruit makes a mess, Verticillium wilt, on NR-40 Restricted plant list (can not transport, transfer, or introduce this species as it is already established in Wisconsin and is very invasive; you can possess this plant)
Alnus glutinosa (European black alder): sensitive to juglone, intolerant to drought, susceptible to woolly alder aphids, sooty mold on leaves, leaf miners, borers, powdery mildew, Japanese beetle
Elaeagnus angustifolia (Russian-olive): reseeds and root sprouts, very susceptible to Phomopsis canker, Verticillium wilt, scale, retains old, dead branches, produces lots of watersprouts, short-lived, has thorns, on NR-40 Restricted plant list (can not transport, transfer, or introduce this species as it is already established in Wisconsin and is very invasive; you can possess this plant)
Kalopanax septemlobus (formerly K. pictus) (Castor-aralia): sharp prickles on stems and bark, very invasive
Morus alba (white mulberry): reseeds and root sprouts very easily, weak-wooded, produces lots of root suckers, susceptible to storm injury, aggressive root system, fruit litter stains sidewalks, leaf spot, stem cankers, powdery mildew, bacterial blight, scale, spider mites
Paulownia tomentosa (Royal Empress tree, princess tree): reseeds and root sprouts, fruit litter, weak-wooded, subject to storm injury, root suckers, borers, not reliably hardy in zone 4 and will winter kill back to ground, on NR-40 Prohibited plant list (can not transport, possess, transfer, or introduce this species to Wisconsin)
Phellodendron amurense (females ONLY are invasive) (Amur corktree): females produce lots of black fruit in large clusters that stain sidewalks and reseed readily; plant male cultivars only as they are not invasive
Populus alba (white poplar): reseeds and root sprouts very easily, fruit litter, root suckers and forms colonies, roots very aggressive and can ruin foundations and sewer pipes, weak-wooded, prone to storm injury, very susceptible to stem cankers, aphids, borers, messy tree dropping seeds, twigs, leaves and branches
Robinia pseudoacacia (black locust): weak-wooded, susceptible to storm injury, root suckers and reseed profusely, susceptible to black locust borer, stem cankers, powdery mildew
Ulmus pumila (Siberian elm): reseeds, very weak-wooded, poor form, drops twigs and branches often, susceptible to elm leaf miner, elm leaf beetle, elm flea weevil, Japanese beetles, cankerworms, gypsy moth, bacterial wetwood, Verticillium wilt

Better Tree Choices for the Midwest Urban Landscape

Wisconsin DNR guidelines for tree planting within a city:
Plant no more than 20% of a family: i.e. Betulaceae, Aceraceae, Oleaceae, etc.
Plant no more than 10% of a genus within a family: i.e. within the birch family: Betula lenta, Ostrya virginiana, Carpinus caroliniana, Corylus colurna, Alnus, etc.
Plant no more than 5% of a species within a genus: i.e. Betula lenta, Betula nigra, Betula papyrifera, or Betula populifolia

Large to Medium-sized Street/Urban Trees

*Acer × freemanii
Freeman maple (hardy to zone 3b-4a, depends on cultivar),
‘AF#1’ (Firefall ™)
‘Bailston’ (First Editions® Matador™)
‘DTR 102’ (Autumn Fantasy®)
‘Jeffersred’ (Autumn Blaze®) is overused, prone to included bark
‘Sienna’ (Sienna Glen®)

Acer miyabei
Miyabe maple (hardy to zone 4a)
‘KW-3ami’ (Rugged Ridge™)
‘Morton’ (State Street™)

*Acer rubrum
Red maple (in acidic soils only!) (hardy to zone 3b-5b, depends on cultivar)
'Autumn Flame'
'Autumn Radiance'
'Autumn Spire'
'Bailcraig' (First Editions® Scarlet Jewell™)
'Brandywine'
'Franksred' (Red Sunset®)
'Magnificent Magenta' (Burgundy Belle®)
'Morgan' (Indian Summer™)
'New World'
'Northwood'
'Olson' (Northfire®)
'Polara' (Rubyfrost™)
'Red Rocket'
'Scarsen' (Scarlet Sentinel®)
'Somerseat'
'Sun Valley'

*Acer saccharum subsp. nigrum*  Black maple (hardy to zone 4)
‘Fall Red’

*Acer ‘JFS-KW202’*  Crimson Sunset® maple (hardy to zone 5) (hybrid of Norway and Shantung maples)

*Acer ‘Keithsform’*  Norwegian Sunset® maple (hardy to zone 5a) (hybrid of Norway and Shantung maples)

*Acer ‘Warrenred’*  Pacific Sunset® maple (hardy to zone 4b) (hybrid of Norway & Shantung maples)

*Celtis occidentalis*  Common hackberry (hardy to zone 3b)
‘Chicagoland’
‘JFS-KSU1’ (Prairie Sentinel®)
‘Prairie Pride’

*Corylus colurna*  Turkish filbert (sensitive to road salt) (hardy to zone 4b)

*Ginkgo biloba*  Ginkgo (plant male cultivars only)
‘Autumn Gold’
‘Halka’
‘JFS-UGA2’ (Golden Colonnade®)
‘Magyar’
‘PNI 2720’ (Princeton Sentry®)
‘Saratoga’
‘The President’ (Presidential Gold®)
‘Woodstock’ (Emperor™)

*Gleditsia triacanthos f. inermis*  Thornless honeylocust, plant male cultivars to avoid fruit, (hardy to zone 4a)
‘Christie’ (Halka™)
‘Draves’ (Street Keeper®)
‘Harve’ (Northern Acclaim®), hardy to zone 3b
‘PNI 2835’ (Shademaker®)
‘Skycole’ (Skyline®)
‘Suncole’ (Sunburst®), pest prone
True Shade®

*Gymnocladus dioicus*  Kentucky coffeetree, plant male cultivars to avoid fruit, (hardy to zone 4a)
‘Espresso’
‘J.C. McDaniel’ (Prairie Titan™)
‘Stately Manor’

*Phellodendron amurense* ‘Macho’  Amur corktree, plant ONLY male cultivars as female trees are invasive
‘Longenecker’ (Eyestopper®) (hardy to zone 4b) (formerly *P. lavaliei*)
‘Macho’ (hardy to zone 3b)

*Phellodendron sachalinense* ‘His Majesty’  His Majesty Sakhalin corktree (male tree) (hardy to zone 3b)

*Platanus × acerifolia* ‘Morton Circle’  Exclamation! London plane tree (hardy to zone 5b), resistant to anthracnose

*Quercus bicolor*  Swamp white oak (hardy to zone 4a)

*Quercus × bimundorum* ‘Crimschmidt’  Crimson Spire® oak (tall, columnar form) (hardy to zone 4b)

*Quercus macrocarpa*  Bur oak (hardy to zone 3a)

*Quercus × macdennielli* ‘Clemon’s Heritage® oak (hardy to zone 4)

*Quercus muehlenbergii*  Chinkapin oak (hardy to zone 4b)

*Quercus palustris*  Pin oak (hardy to zone 4b) (acid soils only!)
Quercus robur

English oak (zone 5a)
  ‘Fastigiata’ (Skyrocket®)
  ‘Pyramich’ (Skymaster®)

*Quercus × schuettei

Swamp bur oak (hardy to zone 3b)

Quercus × warei ‘Long’

Regal Prince® oak (tall, columnar form) (hardy to zone 4b)

Taxodium distichum

Baldcypress (hardy to zone 4b, use northern plant/seed source)
  ‘Shawnee Brave’ is more upright and slightly more cold hardy

**Tilia americana

American linden (sensitive to road salt) (hardy to zone 3a)
  ‘Bailyard’ (Frontyard®)
  ‘Boulevard’
  ‘Continental Appeal’
  ‘DTR 123’ (Legend®)
  ‘Lincoln’
  ‘McKSentry’ (American Sentry®) has good form and branching

*Tilia ‘Redmond’

Redmond linden (sensitive to road salt) (hardy to zone 4a)

**Ulmus americana

American elm (DED resistant cultivars) (hardy to zone 3a)
  ‘Jefferson’
  ‘New Harmony’
  ‘Princeton’
  ‘Valley Forge’

*Ulmus hybrids (hardy to zones 3-5)

Hybrid elms (DED resistant cultivars)
  ‘Frontier’ (zone 5), maroon fall color
  ‘Homestead’
  ‘Morton’ (Accolade®)
  ‘Morton Glossy’ (Triumph™), one of the best
  ‘Morton Plainsman’ (Vanguard™)
  ‘Morton Red Tip’ (Danada Charm™)
  ‘Morton Stalwart; (Commendation™)
  ‘New Horizon’ (zone 3b)
  ‘Patriot’
  ‘Pioneer’

*Ulmus japonica ‘Discovery’

Discovery Japanese elm (hardy to zone 3)

*Ulmus wilsoniana ‘Prospector’

Prospector elm (hardy to zone 4)

Small Urban Area or Street Trees

Acer truncatum

Shantung maple (hardy to zone 3b), hard to find at nurseries

*Crataegus crus-galli var. inermis

Thornless cockspur hawthorn (hardy to zone 4a)
  ‘Westwood I’ (Washington Lustre®) (fewer thorns, more vigorous)

Crataegus viridis ‘Winter King’

Winter King hawthorn (very few if any thorns) (hardy to zone 4b)
  ‘Westwood I’ (Washington Lustre®) (fewer thorns, more vigorous)

Maackia amurensis

Amur maackii (hardy to zone 4a) ‘Starburst’

*Malus spp. (hardy to zone 4a)

Flowering crabapple (choose from more apple scab resistant cultivars below)
  White flowers/red fruit: ‘Adirondack’, ‘Guinzam’ (Guinevere®), ‘Jewelcole’ (Red Jewel®) (has some fireblight),
    ‘Sutyzam’ (Sugar Tyme®), Malus baccata ‘Jackii’, Malus sargentii ‘Select A’ (Firebird®), Malus sargentii
    ‘Tina’, Malus × zumi var. calocarpa
    (Lollipop®)
  Pink or reddish flowers/red to purplish-red fruit: ‘Camzam’ (Camelot®), Malus sargentii ‘Candymint’, ‘Cardinal’,
    ‘Cardinal’s Robe’, ‘JFS-KW5’ (Royal Raindrops® (some scab in 2010), ‘Orange Crush’, ‘Parrsi’ (Pink
    Princess®), ‘Prairie Maid’, ‘Purple Prince’
    (Molten Lava®), Bailears’ (First Editions® Ruby Tears™)

*Prunus sargentii

Sargent cherry (requires good drainage, has included bark) (hardy to zone 4b)

*Prunus ‘Accolade’

Accolade cherry (requires good drainage) (hardy to zone 4b)

Pyrus calleryana ‘Autumn Blaze’

Autumn Blaze callery pear (hardy to zone 4b) (much better branching)

Syringa pekinensis

Peking lilac (requires good drainage) (hardy to zone 4a)
  ‘DTR 124’ (Summer Charm®)
  ‘Morton’ (China Snow®)
  ‘SunDak’ (Copper Curls®)
  ‘Zhang Zhiming’ (Beijing Gold®)
Syringa reticulata

Japanese tree lilac (requires good drainage) (hardy to zone 3a)
  ‘Bailnec’ (First Editions® Snowdance™)
  ‘Elliott’ (Snowcap™)
  ‘Golden Eclipse’
  ‘Ivory Silk’
  ‘Summer Snow’
  ‘Willamette’ (Ivory Pillar™)

*Native to Midwest
*Susceptible to adult Japanese beetle foliar feeding

U.S.D.A. Cold Hardiness Zones
Zone 3a (cold hardy to –35 to –40°F)
Zone 3b (cold hardy to –30 to –35°F)
Zone 4a (cold hardy to –25 to –30°F)
Zone 4b (cold hardy to –20 to –25°F)
Zone 5a (cold hardy to –15 to –20°F)
Zone 5b (cold hardy to –10 to –15°F)