

Planting for Resilience: Trees and Shrubs for the Future

Dr. Laura Jull, Dept. of Plant and Agroecosystem Sciences
University of Wisconsin-Madison and UW Division of Extension

Emerald ash borer (EAB) has destroyed millions of trees throughout the U.S. and Canada. Many cities suffered huge losses in their urban and suburban tree canopies as ash populations were very high. For some municipalities, 80-100% or more ash trees have died from EAB. A broader tree diversity using both native and non-native species could help guard against the real possibility of large-scale devastation by exotic pests and diseases. In addition to exotic pests, trees growing in urban conditions are subject to drought, excessive heat, air pollution, road salt, poorly drained, compacted soils with high pH and low fertility. These extreme conditions are often not conducive to growing many plants, particularly native trees that grow naturally in fertile, moist forests. The list below is a summation of non-invasive trees that have been used successfully in urban conditions. Urban foresters, arborists, landscapers and homeowners can replant areas devastated from EAB with the below EAB resistant species. Not all tree species tolerate all urban conditions mentioned above, but have an improved chance of successfully establishing than more sensitive species.

Before we choose a specific tree, Wisconsin DNR Urban Forestry has established guidelines for tree planting in a city to help avoid another major tree catastrophe like EAB. These guidelines include recommendations for people employed in the nursery and landscape industries and homeowners.

Example one: Betulaceae family

Plant no more than 20% of trees representing a plant family: i.e., Betulaceae (includes alders (*Alnus* spp.), birches (*Betula* spp.), hornbeams (*Carpinus* spp.), hazelnuts (*Corylus* spp.) and ironwood (*Ostrya* spp.).

Plant no more than 10% of trees from a genus within a family: i.e., *Betula lenta*, *Ostrya virginiana*, *Carpinus caroliniana*, *Corylus colurna* (these are all in the Betulaceae family).

Plant no more than 5% of trees from a species or cultivar within a genus: i.e., *Betula lenta*, *Betula nigra*, *Betula papyrifera*, or *Betula populifolia* (all birches or *Betula* spp.).

Example two: Sapindaceae family

The Sapindaceae family includes maples (*Acer* spp., formerly in Aceraceae family), buckeyes and horsechestnuts (*Aesculus* spp., formerly in Hippocastanaceae family), golden rain-tree, (*Koelreuteria paniculata*), yellowhorn (*Xanthoceras sorbifolium*) and western soapberry (*Sapindus drummondii*), etc. With 20% of your urban forest representing trees in the Sapindaceae family, there should only be 10% of a genus within the Sapindaceae family, such as maple (*Acer* spp.) with only 5% of those maple trees from a certain species, such as Freeman maple (*Acer xfreemanii*). There are many different species of maples (i.e., red, silver, Freeman, Norway, sugar, Amur maples, etc.) that are used in landscaping, unfortunately, there are too many of them which may become problematic in the future. A devastating insect or disease could destroy maples throughout the eastern U.S. and Canada, similar to what happened to millions of ash trees (*Fraxinus* spp.) due to emerald ash borer and elm trees (*Ulmus* spp.) due to Dutch elm disease.

Example three: Rosaceae family

The Rosaceae family is very large and includes many genera and species. Trees within the rose family include serviceberries (*Amelanchier* spp.), hawthorns (*Crataegus* spp.), ornamental crabapples and apples (*Malus* spp.), cherries, peaches, plums, apricots (*Prunus* spp.), pears (*Pyrus* spp.) and mountainashes (*Sorbus* spp.), etc. With 20% of an urban forest representing trees in the Rosaceae family, there should only be 10% of a genus within the Rosaceae family, such as hawthorns (*Crataegus* spp.) with only 5% of those hawthorn trees from a certain species (i.e., Washington, downy, cockspur, or 'Winter King' hawthorns).

Trees

***Acer miyabei*: Miyabe maple**, hardy to zone 4a; 50-55' tall, 35-40' wide; dense, upright-oval form with ascending branches; dark green leaves; late, pale yellow fall color; grayish, scaly bark in long strips; adaptable to most well-drained soils and pH; drought, urban and heat tolerant; moderate salt tolerance; can be bareroot transplanted; susceptible to Verticillium wilt and Asian longhorn beetle as it is a maple; prone to developing girdling roots if planted too deeply; native to Japan; Sapindaceae family (formerly Aceraceae family)

'Morton': STATE STREET®, hardy to zone 4a; 50' tall, 35-40' wide; dense, upright, oval form with ascending branches; branching often starts higher up trunk than species

'JFS-KW3AMI': RUGGED RIDGE®, hardy to zone 4a; 55' tall, 35-40' wide; dense, upright, oval form; more vigorous; deeply furrowed, corky bark

***Acer triflorum*: three-flower maple**; hardy to zone 4a; 20-25' tall, 15-25' wide; upright to rounded, symmetrical form; lower branches droop downward; sold as a single trunk or multi-stemmed tree; slow grower; trifoliate leaves turn yellow to orange in fall; showy, light tan to ashy-brown, exfoliating bark with vertical, papery cracks on trunk; flowers are not showy and not significant; full sun to partial shade; prefers a fertile, loamy, moist, well-drained soil, but is more tolerant to soils and urban conditions than other, smaller maples; intolerant to wet and compacted soil and poor drainage; pH adaptable; intolerant to road salt; susceptible to Verticillium wilt and Asian longhorn beetle as it is a maple; difficult to transplant; dig in spring only; native to Manchuria and Korea; Sapindaceae family (formerly Aceraceae family)

***Celtis occidentalis*: common hackberry**, hardy to zone 3b; 50-70' tall, 40-60' wide; vase-shaped when young becoming rounded with age with arching branches; yellow to yellowish-green fall color; gray to tan, corky, warty looking bark; small, purplish-black fruit not a litter problem; fruit attracts birds; adaptable to dry, clay, rocky and sandy soils and high pH; air pollution, heat, urban, drought and wet soil tolerant; intolerant to road salt; sensitive to juglone; susceptible to hackberry nipple gall on leaves, but is only cosmetic; susceptible to Asian longhorn beetles and witches brooming on twigs (due to Eriophyid mite and powdery mildew fungus); prone to included bark formation; needs pruning when young to develop a central leader and good branch structure; do not bareroot transplant; transplants poorly from containers; native to WI; Cannabaceae family (formerly Ulmaceae family)

'Chicagoland': hardy to zone 3b; 40-50' tall, 50' wide; upright-oval growth with a single, straight, terminal leader; cultivar is harder to find in nurseries

'JFS-KSU1': PRAIRIE SENTINEL®, hardy to zone 4; 45' tall, only 12' wide; columnar to fastigiate form

'Prairie Pride': cultivar is harder to find in nurseries

'Windy City': hardy to zone 3b; 40-60' tall and wide; upright, spreading form with a single, straight, terminal leader; golden yellow fall color; faster growing; cultivar is harder to find in nurseries

***Cercis canadensis*: eastern redbud**; hardy to zone 4, only if cold hardy seed source (provenance) is grown, otherwise, trees grown from seed from southern U.S. trees will not be hardy in WI; most cultivars are not hardy except for a few below; 20-30' tall and wide; upright, spreading to vase-shaped form becoming flat-topped with age; low branches and often multi-stemmed tree; heart-shaped leaves turn yellow in fall; brownish-black bark with orange inner bark when older; very showy, reddish-purple, long lasting flowers in early spring; tolerates full sun to partial shade; performs better with some afternoon shade; adaptable to most soils and pH; drought tolerant, but intolerant to wet soils or road salt; susceptible to Verticillium wilt; dig from field in spring only; do not bareroot transplant; native to eastern U.S., but not WI; there are more cultivars available than the ones below, but they are not cold hardy to WI; Fabaceae family

Columbus Strain: hardy to zone 4b; same size, shape and flowers as species; seed propagated from trees planted in Columbus, WI; but not native in WI

Minnesota Strain: hardy to zone 4b; same size, shape and flowers as species; seed propagated from trees planted in Chaska, MN; but not native in MN

'Morton': Joy's PRIDE™, hardy to zone 5a; 15' tall, 20' wide; oval to spreading form; bright lavender-pink flowers; seed propagated from trees growing in Lisle, IL; Morton Arboretum introduction

'Pink Trim': NORTHERN HERALD®, hardy to zone 4a; 20' tall and wide; rounded form; bright magenta-pink flowers borne in profusion all down the stems; darker green, leathery leaves; supposedly produces little fruit; seed propagated from trees growing in central South Dakota, but is not native in SD; North Dakota State University introduction

'UMN7101': HEART'S DESIRE™, hardy to zone 4b; 15-20' tall, 15-20' wide; spreading, rounded form; lavender-pink flowers; seed propagated from trees growing in Chaska, MN; but not native in MN

***Corylus colurna*: Turkish filbert**, hardy to zone 4; 40-50' tall, 25-30' wide; dense, broad, pyramidal form; no fall color; showy, long, pendulous catkins in early spring; scaly to flaky bark becoming ridged; may produce edible nuts if planted near another Turkish hazelnut tree; fruit attracts wildlife; difficult to transplant; adaptable to most well-drained soils and pH; air pollution, heat, urban and drought tolerant; intolerant to wet, poorly drained soil and road salt; susceptible to eastern filbert blight and Japanese beetles; root rot in poorly drained soil; some difficulties with bareroot transplanting, but there has been good success with it; native to southeastern Europe and western Asia; Betulaceae family

***Crataegus phaenopyrum*: Washington hawthorn**; hardy to zone 4b; 20-30' tall, 20-25' wide; vase-shaped to broadly oval, dense form; often multi-stemmed tree; low, horizontal branches; dark green, semi-glossy, lobed leaves; showy, late, orange to reddish-purple fall color; species is covered in long, very sharp, 1-3" long thorns; showy, white, flat-topped flower clusters in late spring to early summer; slight bad odor of flowers when up close; very showy, glossy, bright orange-red to scarlet, ¼" in diameter fruit borne in clusters that are persistent from fall throughout winter; adaptable to most soils and pH; intolerant to wet soils; poor, dry, sandy soil tolerant; drought, urban and heat tolerant; moderate to low salt tolerance; susceptible to cedar hawthorn rust on leaves and cedar quince rust on fruit, but is non-lethal; difficult to transplant; dig from field in spring only; do not bareroot transplant; deer resistant tree; native to eastern U.S. and Canada; Rosaceae family

***Crataegus viridis* 'Winter King': 'Winter King' hawthorn**; hardy to zone 4b; 20-25' tall, 20-30' wide; vase-shaped to rounded, wide-spreading form; often multi-stemmed tree; low, horizontal branches; dark green, semi-glossy leaves; yellow to orangish fall color; this cultivar produces few, if any, 1½" long thorns; showy, silvery-gray bark becoming exfoliating with age revealing orange to brown inner bark; showy, white, flat-topped flower clusters in late spring; slight bad odor of flowers when up close; showy, bright orange-red, persistent, ½" diameter fruit borne in small clusters from fall to early winter; adaptable to most soils and pH; intolerant to wet soils; poor soil, drought, urban and heat tolerant; moderate to low salt tolerance; less susceptible to cedar hawthorn rust on leaves and cedar quince rust on fruit, but is non-lethal; difficult to transplant; dig from field in spring only; does not bareroot transplant, but some municipalities had success; deer resistant tree; native to eastern U.S.; Rosaceae family

***Ginkgo biloba*: ginkgo, maidenhair tree**, hardy to zone 4a; 50-70' tall, 30-60' wide; pyramidal when young becoming wide-spreading with age to upright (depends on cultivar); distinct, bright green, fan-shaped leaves with straight leaf veins; tip of leaf may be notched; showy, bright golden-yellow to yellow fall color; a gymnosperm and female trees produce undesirable, 1-2" long, orangish-tan arils with very foul odor due to its fleshy seed coat; plant male cultivars only (see below) to avoid any arils and "fruit" litter; adaptable to most, well-drained soils and pH; drought, air pollution, heat and urban tolerant; moderate salt tolerance; no pest problems; deer resistant tree; do not bareroot transplant; native to eastern China; Ginkgoaceae family

'Autumn Gold': hardy to zone 4a; 45-50' tall, 35' wide; broadly pyramidal to oval, symmetrical form; male cultivar; fruitless

'Blagon': GOLDSPIRE™, hardy to zone 4a; 45' tall and only 12' wide; dense, tightly fastigate form creates a symmetrical, narrow spire; male cultivar; fruitless

'JFS-UGA2': GOLDEN COLONNADE®, hardy to zone 4a; 45' tall, 25' wide; narrow, upright-oval form; strong, central leader; male cultivar; fruitless

'Magyar': hardy to zone 4a; 50' tall, 25' wide; narrow, pyramidal form; faster growing than PRINCETON SENTRY®; male cultivar; fruitless

'PNI 2720': PRINCETON SENTRY®, hardy to zone 4a; 40-50' tall, 15-20' wide; narrow, upright, pyramidal form; male cultivar; fruitless

'Saratoga': hardy to zone 4a; 30-40' tall, 20-30' wide; compact, dense, rounded form; pendulous leaves; slower and smaller than other ginkgos; male cultivar; fruitless

'The President': PRESIDENTIAL GOLD®, hardy to zone 4a; 50' tall, 40' wide; broadly pyramidal to upright-oval form; densely branched; straight, central leader; male cultivar; fruitless

***Gymnocladus dioica*: Kentucky coffeetree**, hardy to zone 4a; 50-70' tall, 40-50' wide; upright-oval to vase-shaped form becoming irregular and open with age; coarse texture in winter with sparse branching; long, lacy, blue-green leaves; yellow fall color; ashy-gray, scaly to furrowed bark resembling stiff icing on a cake; produces 4-7" long, thick, dark brown, persistent pods resembling a burnt taco or sausage; fruit produced on female trees only; plant male cultivars (see below) to avoid fruit; adaptable to most soils and pH; tolerant to heavy clay, compacted soil, drought, heat, urban conditions, periodic flooding and road salt; no pest problems; deer resistant tree; can be bareroot transplanted; native to WI; Fabaceae family

'Espresso': hardy to zone 4a; 50' tall, 35' wide; oval to vase-shaped form with upright branches; male cultivar; fruitless

'J.C. McDaniel': PRAIRIE TITAN®, hardy to zone 4a; 60-70' tall, 40' wide; upright, spreading form; male cultivar; fruitless

'McKBranced': DECAF[®], hardy to zone 4a; 50' tall, 40' wide; upright, oval form; finer textured branches, twigs and leaflets compared to species; caramel-colored new leaves turn green; male cultivar; fruitless

'Morton': SKINNY LATTE™, hardy to zone 4a; 50' tall and only 18' wide; narrow, vase-shaped to columnar form; stiff, upright branches; male cultivar; fruitless

'Stately Manor': hardy to zone 4a; 50' tall, 30' wide; narrower, upright form; male cultivar; fruitless

'UMN Synergy': TRUE NORTH™, hardy to zone 4a; 50-70' tall, 35-40' wide; upright, vase-shaped form; male cultivar; fruitless

Maackia amurensis: Amur maackia; hardy to zone 3b; 20-30' tall and wide; vase-shaped to rounded form; upright branches; slow growing; silvery and fuzzy leaves in spring turn olive-green and smooth; no fall color; showy, coppery-green to brownish bark that develops curling strips that peel backwards with age; showy, dull white, slightly fragrant, upright flower clusters in summer; adaptable to most soils and pH, but grows best in loose soils; dry, infertile soil tolerant as roots fix atmospheric nitrogen; urban tolerant; moderate drought tolerance; intolerant to road salt; no pest problems; needs corrective pruning when young; easy to transplant; can bareroot transplant; native to Manchuria in northeast China; Fabaceae family

'JFS-Schichtel1': MAACNIFICENT[®], hardy to zone 3b; 30' tall, 20-22' wide; upright, dense, uniform, vase-shaped form; faster grower

'Starburst': hardy to zone 3b; 20-30' tall, 20-25' wide; upright, vase-shaped, dense form; faster grower

Platanus × acerifolia 'Morton Circle': EXCLAMATION![®] London planetree; hardy to zone 5a; 55-60' tall, 35' wide; very uniform, upright-pyramidal form with a straight, central leader; fast grower; large, dark green leaves cast dense shade; no fall color; very showy, exfoliating bark in large, tan to creamy-green plates revealing olive inner bark; pendulous, 1", rounded ball-like fruit in clusters of 2-3; fruit is not a litter problem; adaptable to most soils and pH; tolerant to heavy clay, compacted, dry, poorly drained soil; drought, urban, heat and wet soil tolerant; intolerant to road salt and some sensitivity to air pollution; resistant to anthracnose, powdery mildew and frost crack compared to other cultivars of London planetree; can bareroot transplant; deer resistant tree; hybrid origin of American sycamore (*Platanus occidentalis*) and Oriental sycamore (*Platanus orientalis*); Platanaceae family

Quercus bicolor: swamp white oak; hardy to zone 4a; 50-60' tall and wide; pyramidal when young becoming rounded with broad spreading branches; large green leaves with whitish undersides; no fall color to yellow-brown; light brown acorn produced on 1-2" long stalks attracts wildlife; exfoliating, gray-brown bark on younger trees and stems; older bark has deep fissures; adaptable to most soils and pH; tolerant to heavy clay, poorly drained to wet soil; drought and urban tolerant; requires a slightly acidic to slightly alkaline pH soil; develops chlorosis in soil pH above 7.5; moderate salt tolerance; prune all oaks only during dormant season; can get oak wilt, anthracnose, two-lined chestnut borer and gypsy moth; can bareroot transplant; native to WI; Fagaceae family

'Bonnie and Mike': BEACON[®], hardy to zone 4a; 40' tall, only 15' wide; narrowly columnar form; upright branching; yellow fall color

'JFS-KW12': AMERICAN DREAM[®], hardy to zone 4a; 50' tall, 40' wide; broadly pyramidal form; vigorous grower; bright green, glossy leaves; yellowish fall color; good resistance to anthracnose and powdery mildew

Quercus × bimundorum: hybrid oak; cultivars hardy to zone 4; height, width and form varies with cultivar; dark green leaves; fall color varies with cultivar; brown acorn attracts wildlife; adaptable to well-drained soils and pH; drought, air pollution, urban and heat tolerant; moderate salt tolerance; easy to transplant; can get oak wilt, anthracnose; two-lined chestnut borer and gypsy moth; below cultivars are powdery mildew resistant; columnar forms are good alternatives to larger trees for smaller spaces; hybrid origin of English oak (*Quercus robur* or *Q. robur* 'Fastigiata') and native white oak (*Quercus alba*); Fagaceae family

'Crimschmidt': CRIMSON SPIRE™, hardy to zone 4; 45' tall, 15' wide; columnar to tightly fastigate form; dark green to blue-green leaves; rusty-red fall color; holds onto older leaves in winter; powdery mildew resistant

'JFS-KW1QX': STREETSPIRE[®], hardy to zone 4; 45' tall, 14' wide; narrow, columnar form; dark green leaves; rusty-red fall color; does not hold on to old leaves in winter; stiff, short, upright branches; wider branch crotch angles; powdery mildew resistant

'JFS-KW2QX': SKINNY GENES[®], hardy to zone 4; 45' tall, 10' wide; columnar to tightly fastigate form; glossy, very dark green leaves; yellow to brown fall color; powdery mildew resistant

'Midwest': PRAIRIE STATURE®, hardy to zone 3b(4a); 50' tall, 40' wide; broad, pyramidal form; dark green leaves; yellow-orange to reddish fall color; powdery mildew resistant

'Tabor': FOREST KNIGHT®, hardy to zone 4; 50' tall, 40' wide; symmetrical, broadly oval form; glossy, dark green leaves; orange-red fall color; strong branching; powdery mildew resistant

***Quercus macrocarpa*: bur oak**; hardy to zone 3b; 60-70' tall, 60-80' wide; pyramidal when young, becoming broadly oval to irregular and open with age; large, dark green leaves; no fall color to pale yellow-brown; deeply furrowed, dark gray to dark brown bark; brown acorn with fringed cap edges attracts wildlife; adaptable to most soils and pH; tolerant to dry, heavy clay and wet soil, drought, road salt, heat and urban conditions; can get oak wilt, anthracnose, bur oak blight; two-lined chestnut borer and gypsy moth; difficult to transplant; do not bareroot transplant; native to WI; Fagaceae family

'JFS-KW14': COBBLESTONE®, hardy to zone 3b; 55' tall, 45' wide; broadly oval form; dark green leaves; very corky bark when young; powdery mildew and anthracnose resistant

'JFS-KW3': URBAN PINNACLE®, hardy to zone 3b; 55' tall, only 25' wide; narrow pyramidal to oval form; strong, central leader; dark green, glossy leaves; very small acorns; powdery mildew and anthracnose resistant

***Quercus × macdenielli* 'Clemon's': HERITAGE**® oak; hardy to zone 4; 50-60' tall, 40-50' wide; broadly pyramidal becoming oval form; glossy, dark green leaves; no fall color to yellowish; brown acorn attracts wildlife; adaptable to most soils and pH; heavy clay, drought, heat and urban tolerant; moderate salt tolerance; can get oak wilt, anthracnose, two-lined chestnut borer and gypsy moth; powdery mildew resistant; do not bareroot transplant; hybrid cross of English oak (*Quercus robur*) and native bur oak (*Q. macrocarpa*); Fagaceae family

***Quercus muehlenbergii*: chinkapin oak**; hardy to zone 4b; 50-60' tall and wide; narrow when young, becoming rounded and wide-spreading with age; narrower, coarsely toothed (but in white oak group), finer textured leaves; yellow to yellow-brown fall color; light ashy-gray, flaky bark; small, chestnut-brown to blackish acorns attract wildlife; adaptable to most, well-drained soils and pH; dry and clay soil tolerant; drought, urban and heat tolerant; moderate salt tolerance; can get oak wilt, anthracnose, two-lined chestnut borer and gypsy moth; do not bareroot transplant; native to WI; Fagaceae family

***Quercus × schuettei*: Schuette's oak**; hardy to zone 3b; 60-70' tall and wide; broad, rounded form; faster growing; glossy, dark green leaves; yellow to brown fall color; brown acorn attracts wildlife; adaptable to most soils and better tolerance to higher pH soil; easier to transplant; clay, drought, urban and heat tolerant; moderate salt tolerance; can get oak wilt, anthracnose, two-lined chestnut borer and gypsy moth; do not bareroot transplant; hybrid cross of native swamp white oak (*Q. bicolor*) and native bur oak (*Q. macrocarpa*), but is a natural hybrid native to WI; Fagaceae family

'Rick': EPIC™, hardy to zone 3b; 50-60' tall and wide; broad, pyramidal form with ascending branches; denser branching than hybrid species, dark green leaves; yellowish fall color; tree resembles a swamp white oak due to exfoliating bark on younger branches; tolerant to higher pH soils; Johnson's Nursery introduction

***Quercus × warei*: Ware's oak**; hardy to zone 4b; size and form vary with cultivars below; dark green leaves; yellow to brown fall color; brown acorn attracts wildlife; adaptable to most well-drained soils and pH; clay soil, drought, urban and heat tolerant; moderate salt tolerance; can get oak wilt, anthracnose, two-lined chestnut borer and gypsy moth; easier to transplant, but do not bareroot transplant; hybrid of columnar English oak (*Quercus robur* 'Fastigiata') and swamp white oak (*Quercus bicolor*); Fagaceae family

'Chimney Fire': hardy to zone 4b; upright to columnar form, 45-50' tall, 12-13' wide, pinkish-green new leaves in spring turn glossy, dark green by summer, bright orange-red to red fall color, new cultivar

'Long': REGAL PRINCE®, hardy to zone 4b; 40-45' tall, 15-18' wide; columnar to narrow-oval form; glossy, bright green leaves with silvery undersides; no fall color; powdery mildew resistant

'Nadler': KINDRED SPIRIT®, hardy to zone 4b; 30-35' tall, only 6' wide; tight, columnar form; medium green leaves with silvery undersides; no fall color; powdery mildew resistant; good for tight spaces

***Syringa peginensis*: Pekin or Peking lilac**; hardy to zone 3b-4a; 25-30' tall, 20' wide; open, loose to rounded form; sold as either a single or multi-stemmed tree; moderate to fast grower; no fall color; showy, reddish-brown, shiny bark; showy, large, creamy-white, fragrant flowers in early summer that do not smell like typical lilacs; tends to flower heavily every other year; persistent, gold to tan turning brown, large fruit clusters through winter; adaptable to most soils and pH;

intolerant to wet, poorly drained soil; moderate drought tolerance; salt and urban tolerant; resistant to powdery mildew, bacterial blight and Japanese beetles; susceptible to Verticillium wilt; easy to transplant; can bareroot transplant; sensitive to juglone; deer resistant tree; native to northern China; species has tendency to produce seedlings under tree and has potential to become invasive; Oleaceae family

- 'DTR 124': **SUMMER CHARM**®, hardy to zone 4a; 20' tall, 15' wide; upright to rounded, spreading form; form is better than most cultivars; sold as a single-stemmed tree
- 'Morton': **CHINA SNOW**®, hardy to zone 4a; 25-30' tall, 20' wide; upright, loose, open, spreading, wild-looking, messy form; fast growing; very showy, coppery to cinnamon bark exfoliating in thin, curling strips; sold as a single-stemmed tree
- 'SunDak': **COPPER CURLS**®, hardy to zone 3b; 20-25' tall, 20' wide; rounded to upright, spreading form; moderate grower; very showy, coppery-orange to cinnamon bark exfoliating in thin, curling strips; sold as a single-stemmed or multi-stemmed tree; very similar to CHINA SNOW® Peking lilac
- 'WFH2': **GREAT WALL**™, hardy to zone 4a; 20' tall, 12-15' wide; upright, oval form; glossy, dark green leaves; golden yellow fall color; exfoliating, cherry-like bark; sold as a single-stemmed tree
- 'Zhang Zhiming': **BEIJING GOLD**®, hardy to zone 4a; 25' tall, 20' wide; upright, rounded form, sold as either a single or multi-stemmed tree; yellow flowers instead of white

Syringa reticulata: Japanese tree lilac; hardy to zone 3a; 20-25' tall, 20-30' wide; oval to rounded, spreading form with upright branches; sold as either a single or multi-stemmed tree; moderate growth rate; no fall color; showy, shiny, non-exfoliating, reddish-brown, cherry-like bark; showy, large, creamy-white fragrant flowers in early summer that do not smell like typical lilacs; tends to flower heavily every other year; persistent, gold to tan turning brown, large fruit clusters through winter; adaptable to most soils and pH; intolerant to wet, poorly drained soil; moderate drought tolerance; salt and urban tolerant; resistant to powdery mildew and Japanese beetles; susceptible to bacterial blight and Verticillium wilt; easy to transplant; can bareroot transplant; sensitive to juglone; deer resistant tree; native to Japan and Manchuria in China; species has tendency to produce seedlings under tree and has potential to become invasive; Oleaceae family

- 'Bailnce': **SNOWDANCE**™, hardy to zone 3a; 18' tall, 20' wide; spreading, broad, rounded form; flowers heavily each year; supposed to be sterile or it may produce some fruit
- 'Elliott': **SNOWCAP**™, hardy to zone 3a; 15-20' tall, 10-15' wide; compact, upright to pyramidal form with uniform branching; thick, dark green leaves; flowers heavily every other year
- 'Golden Eclipse': hardy to zone 3a; 18-24' tall, 10-14' wide; compact, upright form; new leaves in spring emerge green with a darker center; leaf margins gradually turn bright gold with the dark green center remaining; by midsummer, the gold margins fade to lighter green; flowers heavily every other year; good leaf resistance to sunburn compared to other variegated cultivars
- 'Ivory Silk': overused cultivar and should be used less to prevent another catastrophic pest from wiping out the population; hardy to zone 3a; 20-25' tall, 15' wide; upright spreading becoming oval to rounded form; flowers heavily every other year; susceptible to bacterial blight
- 'Summer Snow': hardy to zone 3a; 20' tall, 25' wide; compact, rounded form; slower growing than 'Ivory Silk'; dark green leaves; flowers heavily every other year?
- 'Summer Storm': hardy to zone 3a; 15-18' tall, 10-12' wide; broad, upright form; faster grower; flowers heavily every other year?
- 'Williamette': **IVORY PILLAR**™, hardy to zone 3a; 20-25' tall, 10-15' wide; narrow-upright to pyramidal form; flowers heavily every other year

Tilia americana: American linden, basswood, hardy to zone 3b, 60-80' tall, 35-50' wide; pyramidal when young becoming rounded with low, arching branches; moderate growth rate; pale yellow fall color; showy, pale yellow, very fragrant, late spring to early summer flowers in pendulous clusters that attracts bees; tiny, rounded fruit; requires a deep, rich, fertile, loamy to clay, but well-drained soil; intolerant to compacted, poorly drained or wet soil; pH adaptable; intolerant to road salt and wet soil; more tolerant to heat and drought; linden borer, gypsy moth, sun scald on trunk, basal stem rot and girdling roots due to deep planting of root flare, can get Verticillium wilt and anthracnose; less susceptible to Japanese beetles; easy to transplant, but do not bareroot transplant; sensitive to juglone; native to Canada and eastern U.S. to the Great Plains; Malvaceae family (formerly Tiliaceae family)

- 'Bailyard': **FRONTYARD**®, 60-75' tall, 40' wide; broadly pyramidal when young becoming rounded with age with symmetrical branching, dark green leaves

'Boulevard': 50' tall, 25' wide; narrow, pyramidal form, yellow fall color

'Kromm': SWEET STREET™, 50' tall, 25' wide, tight, pyramidal form; glossy, dark green, thick leaves; light gray to silver bark when young

'MckSentry': AMERICAN SENTRY®, 45-60' tall, 30' wide; uniform, symmetrical, narrow, pyramidal to teardrop shaped crown; very straight trunk with better branch crotch angles; light gray to silver bark when young

***Tilia tomentosa*: silver linden**: hardy to zone 4b; 50-60' tall, 40-50' wide; broad-pyramidal form becoming upright-oval with age; dark green leaves with silvery-white underneath that is apparent when the wind blows; yellowish fall color; showy, pale yellow, very fragrant, late spring to early summer flowers in pendulous clusters that attracts bees; tiny, rounded fruit; requires a deep, rich, fertile, loamy to clay, but well-drained soil; intolerant to compacted, poorly drained or wet soil; pH adaptable; intolerant to road salt and wet soil; more tolerant to heat, drought, air pollution and urban conditions; linden borer, gypsy moth, sun scald on trunk, basal stem rot and girdling roots due to deep planting of root flare, can get Verticillium wilt and anthracnose; less susceptible to Japanese beetles due to tiny hairs on backside of leaf; notorious for its included bark formation due to narrow, branch crotch angles, so will need pruning training; easy to transplant, but do not bareroot transplant; sensitive to juglone; native to southeastern Europe and western Asia; Malvaceae family (formerly Tiliaceae family)

'PNI 6051': GREEN MOUNTAIN®, hardy to zone 4b; 45-50' tall, 35' wide; broad, pyramidal form to oval; fast grower; dark green leaves with silvery-white undersides; yellow fall color

'Silver Lining': hardy to zone 5; 40-50' tall, 30' wide; upright, pyramidal form; dark green leaves with silvery-white undersides; yellow fall color

'Sterling': hardy to zone 4b; 45' tall, 35' wide; symmetrical, broad, pyramidal form; dark green leaves with silvery-white undersides; yellow fall color

***Ulmus americana*: American elm**; select only Dutch elm disease (DED) tolerant elms; hardy to zone 3a-4b (depends on cultivar); 70-80' tall, 60-70' wide; beautiful, vase-shaped form with pendulous branches; dark to medium green leaves; yellow fall color; adaptable to most soils and pH; heavy clay, compacted, poorly drained, wet soil tolerant; drought, urban, air pollution and road salt tolerant; easy to transplant; can bareroot transplant in spring only; susceptible to many insects and diseases, including Dutch elm disease (DED) and phloem necrosis, but below cultivars are better; requires pruning when young to develop good branch structure; native to WI; Ulmaceae family

'Jefferson': hardy to zone 4a; 70' tall, 50' wide; upright, vase-shaped form with arching limbs; dark green leaves; DED tolerant; U.S. National Arboretum introduction

'JFS-Prince II': COLONIAL SPIRIT®, hardy to zone 4a; 65' tall, 50' wide; symmetrical, vase-shaped form with arching limbs; dark green leaves; DED tolerant

'Lewis and Clark': PRAIRIE EXPEDITION®, hardy to zone 3a; 55' tall, 60' wide; broad, rounded to spreading vase-shaped form; faster grower; DED tolerant; from trees growing in Fargo, ND

'New Harmony': hardy to zone 4a; 70' tall, 65' wide; vase-shaped form with arching branches; medium green leaves; vigorous grower; DED tolerant; U.S. National Arboretum introduction

'Princeton': hardy to zone 4a; 65' tall, 50' wide; upright, vase-shaped form; dark green, leathery leaves; more resistant to elm leaf beetle; DED tolerant; needs significant structural pruning for first 15 years of life to avoid branch failure from winter winds and ice storms

'St. Croix': hardy to zone 3b; 60-75' tall, 70-90' wide; broad, vase-shaped form with an open, spreading canopy; dark green leaves; DED tolerant; from MN

'Valley Forge': hardy to zone 4a; 70' tall and wide; broad, vase-shaped form with arching branches; somewhat of a wild looking form and branching; needs training to develop good form; vigorous grower; medium green leaves; DED tolerant; needs significant structural pruning for first 15 years of life to avoid branch failure from winter winds and ice storms; U.S. National Arboretum introduction

***Ulmus davidiana* 'JFS-KW2UD': GREENSTONE® David elm**; hardy to zone 4a; 60' tall, 40' wide; upright, vase-shaped form; strong branching with wide branch crotch angles; medium green leaves; yellow fall color; adaptable to most soils and pH; drought, urban, air pollution tolerant; moderate salt tolerance; easy to transplant; can bareroot transplant in spring only; DED and phloem necrosis tolerant; resistant to elm leaf beetle and elm leaf miner; native to China, Korea and Siberia; Ulmaceae family

***Ulmus davidiana* var. *japonica* ‘Burgundy Glow’:** NORTHERN EMPRESS® Japanese elm; new cultivar; hardy to zone 3; 28’ tall, 25’ wide, rounded form; smaller to medium-sized tree; open branching; dark green, clean leaves; apricot-orange to burgundy-red fall color; adaptable to most soils and pH; drought, urban, air pollution tolerant; moderate salt tolerance; easy to transplant; DED and phloem necrosis tolerant; resistant to elm leaf beetle and elm leaf miner; native to Japan, Siberia, and Korea; Ulmaceae family

***Ulmus* hybrids: hybrid elms;** hardiness depends on hybrid cultivar; size and form varies with cultivar; fall color varies; adaptable to most well-drained soils and pH; heavy clay, drought, urban, heat and air pollution tolerant; moderate salt tolerance; below hybrid cultivars are Dutch elm disease (DED) and phloem necrosis tolerant; resistant to moderately resistant to elm leaf beetles; can bareroot transplant in spring only except for ‘Frontier’; hybrid elms of several Asian and European elms, not American elm; some require pruning when young to develop a central leader; Ulmaceae family

‘Frontier’: hardy to zone 5; 35-40’ tall, 25-30’ wide; vase-shaped to broadly oval form; slower grower; glossy, dark green leaves; showy, late, burgundy fall color; exfoliating bark when older; barerooting can be difficult, but has been done successfully; hybrid of *Ulmus carpinifolia* (now *U. minor*) and *U. parvifolia*; U.S. National Arboretum introduction

‘Morton’: ACCOLADE®, hardy to zone 4a; 60-70’ tall, 60’ wide; vase-shaped form with arching branches; fast grower; glossy, dark green leaves; yellow fall color; hybrid of *Ulmus japonica* (now *U. davidiana* var. *japonica*) and *U. wilsoniana* (now *U. davidiana* var. *japonica*); can bareroot transplant; Morton Arboretum introduction

‘Morton Glossy’: TRIUMPH™, hardy to zone 4a; 55’ tall, 45’ wide; upright oval to vase-shaped form; symmetrical habit; fast growing; very glossy, dark green leaves; yellowish fall color; very drought tolerant; hybrid of ‘Morton Plainsman’ (VANGUARD™) and ‘Morton’ (ACCOLADE®) elms; Morton Arboretum introduction

‘New Horizon’: hardy to zone 4a; 50-60’ tall, 40’ wide; upright to oval with wide branch crotch angles; faster growing; dark green leaves; yellowish fall color; hybrid of *Ulmus japonica* (now *U. davidiana* var. *japonica*) and *U. pumila*; UW-Madison introduction

‘Patriot’: hardy to zone 4b; 50’ tall, 35-40’ wide; stiffly upright branching; narrow, vase-shaped form; faster growing; dark green leaves; yellowish fall color; hybrid of *U. wilsoniana* (now *U. davidiana* var. *japonica*), *U. pumila*, *U. carpinifolia* (now *U. minor*) and *U. glabra*; U.S. National Arboretum introduction

Deciduous Shrubs

Aronia melanocarpa: black chokeberry; native to WI; upright to rounded form; suckering; can form large colonies; 5-8' tall, 6-10' wide; glossy, dark green leaves; orange to wine-red fall color; showy, white, flat-topped flower clusters in mid spring; glossy, black, edible, but bitter fruit in pendulous clusters in late summer to winter; fruit high in Vitamin C; adaptable to most soils and pH; tolerant to wet soil, drought, and road salt; full sun to partial shade; can get leaf spot and Japanese beetles; hardy to zone 3b

'Autumn Magic': 4-5' tall, 3-4' wide; upright, compact form; suckering; reddish-purple fall color

'Morton': **IROQUOIS BEAUTY™**, 3-4' tall, 4-5' wide; compact, rounded form; opens with age; suckering, heavy flowering and fruiting, excellent fall color

'SMNAMPEM': **LOW SCAPE SNOWFIRE™**: new cultivar, has more flowers and fruit, bright red fall color, semi-dwarf, rounded form, 3-4' tall and wide

'UCONNAM165': **LOW SCAPE MOUND®**, true dwarf, 1-2' tall, 2' wide, mounded form, dark, glossy, green leaves, white flowers in mid spring, purplish-black fruit in summer to fall, red to orange fall color

'UCONNAM012': **LOW SCAPE GROUND HUG®**, new this year, only 8-14" tall and 3' wide, deciduous groundcover, forms a thick, dense mat of foliage, glossy, dark green leaves, white flowers in mid spring, purplish-black fruit in summer to fall, orangish-red fall color

'Viking': 5-7' tall, 5-6' wide; flowers earlier than species; larger, black fruit

Ceanothus americanus: **New Jersey-tea**; rounded, low, broad, compact form, 2-3' tall, 3-4' wide, native to WI, hardy to zone 3b, dried leaves used in tea, very showy, white, summer flowers, requires a loose, well-drained, infertile, sandy to loamy soil, intolerant to clay, full sun, drought tolerant, no pests; important pollinator plant, native to WI in prairies

Corylus americana: **American filbert, American hazelnut**; large, suckering shrub, 8' tall, 8-12' wide; upright, spreading form; dark green leaves; fall color is variable from none to yellow to orange; with cross-pollination from another shrub, it will produce large, tasty fruit that attracts wildlife, tolerates full sun to partial shade; adaptable to most soils and pH; drought tolerant; suckers to form colonies; hardy to zone 4a; native to WI

Corylus avellana **'Red Dragon'**: **'Red Dragon' European hazelnut**; 5-6' tall and wide; similar to Harry Lauder's walkingstick, but this cultivar has dark burgundy, curled leaves that does not fade; twisted, spreading branches; catkins and buds are also burgundy; may produce a few nuts, but they are small; tolerates full sun to partial shade, but if too much shade, the foliage will turn green; unlike Harry Lauder's walkingstick, this plant is resistant to the eastern filbert blight and was bred at the Oregon State University; very showy plant; susceptible to Japanese beetles; prefers an organic, rich, well-drained soils, but is adaptable except for heavy, wet clay, pH adaptable; readily remove suckers as the growth will be all green and non-contorted

Cotinus coggygria **'NCC01'**: **WINECRAFT BLACK® smokebush**; semi-dwarf habit growing only 5-6' tall and 4-5' wide, half the size of the species; upright branches; purplish-black leaves that darken during summer; tiny, yellow flowers are not showy, but turn smoky pink to purple due to hairs on flower stalks that resemble puffs of smoke; flower puffs last most of summer; adaptable to most soils and pH; needs full sun for purple-leaved cultivars; drought tolerant and deer resistant; susceptible to Verticillium wilt; hardy to zone 4a-5; deer resistant

Cotoneaster apiculatus: **cranberry cotoneaster**; mounded, wide-spreading; stiff, horizontal to arching branches; 2-3' tall, 4-6' wide; tiny, glossy, dark green leaves; late, showy, reddish-purple to bronzy fall color; tiny, pink to rose flowers in spring; showy, cranberry-red, persistent fruit into late fall; resistant to Japanese beetles; hardy to zone 4b

Cotoneaster lucidus: **hedge cotoneaster**; upright, rounded to spreading form; 6-10' tall and wide; can be sheared into a formal hedge; small, white flowers in late spring; shiny, black fruit if not sheared; yellow to reddish-orange fall color; adaptable to most soils and pH, if soil is well-drained; full sun; drought, urban and salt tolerant; can get fireblight; hardy to zone 3a

Diervilla lonicera: **dwarf bush-honeysuckle, northern bush-honeysuckle**, wide-spreading, low, mounded, layered, suckering shrub; 3-4' tall and wide; glossy, bronze new leaves turn green; small, yellow flowers at tips of branches in summer; full

sun to full shade tolerant; adaptable to most soils and pH, drought and heat tolerant; no pests; hardy to zone 3a; native to WI

***Diervilla × splendens* 'G2X88544': KODIAK® ORANGE** hybrid bush-honeysuckle, 3-4' tall and wide, orange-red new leaves throughout summer, bright orange fall color, small, yellow, summer flowers, needs full sun for best leaf color; adaptable to most soils and pH; drought and heat tolerant; no pests; hardy to zone 4

***Eleutherococcus sieboldianus* 'Variegatus': variegated fiveleaf aralia**, upright, rounded shrub with long, arching branches; smaller than the species and not invasive; 4-6' tall and wide; slower growing; showy, variegated leaves of creamy-yellow and green, stays variegated even in shade; this cultivar rarely flowers or produces fruit; full sun to shade; adaptable to most soils and pH, needs good drainage, tolerant to sandy, poor, dry soil, drought, heat and air pollution tolerant; no pest problems; can produce all green shoots that need removal or will take over the shrub; deer resistant plant

***Forsythia* 'Happy Centennial': 'Happy Centennial' forsythia**, compact, mounded shrub, 2-2 ½' tall, 2-3' wide, reliably zone 4 flower bud hardy, yellow, early spring flowers, adaptable to most soils and pH, full sun only; adaptable to most soils and pH, intolerant to wet soil, heat and drought tolerant, deer and pest resistant; was once easy to find in trade, now has been replaced by newer cultivars that are NOT flower bud hardy like this one!

***Hydrangea paniculata*: panicle hydrangea**; many cultivars available; adaptable to most soils and pH; does best in loamy, moist, well-drained soils; some cultivars are more tolerant to drought than others; sizes range from small to very large shrubs; pH adaptable, full sun for best flowering; no pests except Japanese beetles can feed on flowers, but not the leaves; great landscape plant with very long season in bloom for months; native to Japan, Taiwan and China

'Bailpanone': LITTLE HOTTIE®; 3-5' tall and wide; compact, rounded form; large, green flowers turn white; flowers cover the plant from top to bottom; strong stems; heat tolerant and flowers do not turn brown in heat; good basal branching of shrub; flowers turn soft pinkish-brown in fall

'Bokrathirteen': SWEET SUMMER™; 4-5 tall, 4-6' wide; rounded form; green flowers turn white in summer than shades of pink in fall; strong stems

'Bulk': QUICK FIRE®, 6-8' tall and wide, upright form, white flowers in smaller panicles in mid-summer that turn a deep, dark pink in late summer

'DVPpinky': PINKY WINKY®, flowers emerge white, turn pink and continue to push new white flowers at tip of panicles, in fall the pink color turns a dark pinkish-red, has both sterile and fertile flowers, strong stems don't flop as much as Angel's Blush, smaller, compact form, 6-8' tall and wide

'HYPMAD I': WHITE DIAMONDS®; 4-6' tall, 5' wide; compact, flowers are held upright, white fading to pink, has sterile and fertile flowers that attract pollinators; strong stems; dark green leaves, more heat and drought tolerant than other cultivars, rated very high in research trials for attracting pollinators

'HYPMAD II': TICKLED PINK®, all sterile flowers with each petal recurving backwards giving it a full, lacy or frilly texture, white flowers turn rosy-pink in fall, 4-5' tall, 5-6' wide

'ILVOBO': BOBO®, dwarf form, 3' tall, 3-4' wide, dwarf, rounded form, large, white flowers on strong stems in mid to late summer

'ILVOHPPRM': PINKY WINKY PRIME™; 6-9' tall and wide, larger than the original; larger, fuller flowers that age to a richer pink; pointed flower clusters are white than gradually turn hot pink at the base and work its way up the panicle; still has both fertile and sterile flowers

'ILVOMINDY': MEGA MINDY®, new cultivar, fast grower, white flowers turn pinkish-red, strong, sturdy stems, 4 1/2-5 1/2' tall, 3 ½-4 ½' wide, compact, late season bloom

'Jane': LITTLE LIME®, dwarf form of 'Limelight' growing only 3-5' tall and wide, same flower color, borne on strong stems

'Le Vasterival': GREAT STAR™, very large, white, wavy, star-shaped, sterile flowers up to 4" wide, fertile inner flowers, rounded flowers tend to flop over, supposedly has fragrant flowers; weak stems, 6-7' tall, 7-8' wide

'Limelight': 6-8' tall and wide, upright, rounded form, large, bright, lime-green flowers that eventually turn white and last till September then change pinkish, produced on strong stems, one of the best cultivars of panicle hydrangea

'Little Lamb': flowers like peegee hydrangea, but are smaller on smaller panicles, weaker stems and tends to flop over, 4-6' tall, 5' wide

'NCHP1': PUFFER FISH®; new cultivar; 3-5' tall and wide; fluffy, white flowers cover the plant from the bottom up; pure white flowers then turn lime green with white flowers at the tip; compact form; strong stems

'Pink Diamond': large flowers, fertile and sterile flowers; white sepals turn rich pink color, 6-8' tall

- 'Renba': BERRY WHITE**®; 6-7' tall, 4-5' wide; upright form with stronger stems; large, white flowers and progress from the bottom up to dark pink
- 'Rendia': DIAMOND ROUGE**®; 4-5' tall, 3-4' wide; compact, upright form; rounded white flowers that progress to pink then to raspberry-red and finally to wine red in the fall; can be a flopper; stems are reddish on ends of branches
- 'Renhy': VANILLA STRAWBERRY**™, new large hydrangea with sterile flowers that are huge with white at the top of the flower and the bottom flowers turn strawberry-red, flowers held upright, but since they are so big, the flowers flops over and look messy, 6-7' tall, 5-6' wide
- 'Rensun': STRAWBERRY SUNDAE**®, compact, smaller version of VANILLA STRAWBERRY™, 4-5' tall, 3-4' wide, upright, all sterile flowers; small panicles and not that great of a display
- 'SMHPFL': FIRE LIGHT**®, new cultivar, upright, white flowers turn medium pink to dark pinkish-red, thick, sturdy stems, 4 1/2-6' tall, 5-6' wide; nice cultivar
- 'SMHPLQF': LITTLE QUICK FIRE**®, early flowering, similar to QUICK FIRE®, but is smaller plant, 3-5' tall, 4-7' wide, upright to rounded form, white flowers turn to pinkish-red as summer progresses, has both sterile and fertile flowers
- 'SMHPZIND': PILLOW TALK**®, large, pyramidal flowers are white then blushed at base with light pink, 6-8' tall and wide, upright form
- 'SMNHMP': QUICK FIRE FAB**®; 6-8' tall, 5-6' wide; upright form; large, cone-shaped flowers densely packed with cross-shaped florets, lime-green flowers turn white that turn watermelon red at the base and work its way up the flower cluster
- 'SMNHPK': FIRE LIGHT TIDBIT**®; only 2-3' tall, 3' wide, low, mounded form; rounded, lime green flowers turn white then turn bright pink; supposedly has orange-red fall color
- 'SMNHPPH': LITTLE LIME PUNCH**®; compact, 3-5' tall and wide; strong stems, lime-green flowers turn white then are a mix of pink and dark pinkish-red all on the same plant as each flower cluster turns colors at different times
- 'SMNHPPH': LIMELIGHT PRIME**®; 4-6' tall, 4-5' wide; darker green leaves than 'Limelight'; strong stems, compact grower; lime green, cone-shaped flowers turn white then turn bright pink; considered an improvement over 'Limelight' and not as big
- 'SMNHPSB': TINY QUICK FIRE**®; only 1 1/2-3' tall, 2-3' wide; compact form; early flowers are white that turn reddish-pink; smallest panicle hydrangea cultivar
- 'SMNHPRZEP': ZINFIN DOLL**™, new cultivar, dense flowers, all sterile florets, white then turns bright pink from the bottom up then finely age to a dark reddish-pink, strong stems, 6-8' tall and wide
- 'Tardiva'**: 6-8' tall, 8-10' wide, blooms in late August to Sept., some fertile flowers, 6" long clusters
- 'Unique'**: 6-8' tall, rounded form, large late summer-early fall, pure white flowers, 12" clusters, turn pink then brown
- 'Wims Red': FIRE AND ICE**™; 3-5' tall and wide; compact, upright form; earlier to begin flowering; creamy-white flowers earlier in summer that turn shade of blush to pink then finally to a deep magenta-red in fall
- 'WRHPBB2': POLAR BALL**™, new cultivar, large florets, large panicles packed with white florets, sturdy stems, 6-8' tall

***Hypericum kalmianum* 'SMHKBF': BLUES FESTIVAL**® **Kalm's St. Johnswort**, 2-4' tall, 2-3' wide; dense, compact, mounded form that can open with age revealing reddish-brown, exfoliating bark on older wood; small, linear, blue-green leaves; showy, bright yellow, pincushion-like flowers in summer that are long-lasting; favored by native bees; full sun only, adaptable to most soils and pH, as long as well-drained; tolerant to rocky and sandy soil; very drought, heat and salt tolerant; intolerant to wet soil and can root rot; no other pest problems; hardy to zone 4a; species is native to WI; deer and rabbit resistant

***Physocarpus opulifolius*: eastern ninebark**; native to WI; grows 3-10' tall and wide, depending on cultivar; creamy-white to pinkish-white flowers in late spring; red, dry fruit in clusters in summer fade to brown; reddish-brown, shiny, exfoliating bark in papery strips; adaptable to most soils and pH; needs full sun and good air circulation for purple-leaved cultivars to retain color and to reduce conditions favorable for powdery mildew; very drought and heat tolerant once established; hardy to zone 3a; species is native to WI

- 'Nanus'**: old cultivar, but still the most resistant cultivar of eastern ninebark to powdery mildew; leaves are only green, white flowers in late spring followed by pink fruit clusters that eventually turn brown; 5-6' tall and wide, compact form, rounded; may develop orange to yellow fall color
- 'SMNPOBLR': GINGER WINE**®, orange-red and bright burgundy leaves in summer, compact form, 5-6' tall and wide, upright growth, supposed to be powdery mildew resistant
- 'SMPOTW': TINY WINE**®: like LITTLE DEVIL™, but is more powdery mildew resistant, 3-4' tall and wide, smaller, dark bronze-maroon leaves, pinkish-white flowers, resistant to powdery mildew

Potentilla (now Dasiphora) fruticosa: potentilla; bushy, rounded shrub; 2-4' tall and wide, size depends on cultivar; lots of cultivars available; small, pinnately compound, gray-green to blue-green leaves; showy, small, bright yellow or white (can be orange or pink) flowers throughout summer and fall; full sun only, adaptable to most soils and pH; drought, salt, heat and urban tolerant; needs renewal pruning to keep full and rounded; hardy to zone 3a; native to WI; deer resistant

Rhus aromatica 'Gro-low': 'Gro-low' fragrant sumac; native to WI; straight species grows 4-6' tall and 6-8' wide; 'Gro-low' grows only 2-3' tall, 6' wide; wide-spreading, tall groundcover; glossier, dark green leaves; orange, red to purple fall color; small, yellow flowers at branch tips in early spring; male cultivar so no or very low amount of small, red fruit; adaptable to most, well-drained soils and pH; drought, road salt, urban and heat tolerant; full sun only for good fall color; can get Verticillium wilt; resistant to Japanese beetles; hardy to zone 3b

Rhus aromatica 'Fine Textured Compact Select A': LACETTE™ fragrant sumac, compact grower, more refined in leaf than 'Gro-low' sumac; dense form; 3-4 ½' tall, 6-7' wide; lacy, fine-textured, deeper cutleaf, dark green, glossy leaves are smaller than 'Gro-low'; red fall color, this cultivar is female so produces bright red, small, pubescent fruit in clusters that attracts birds; cuttings easier to root than 'Gro-low'; this cultivar is too large to be a groundcover; resistant to eriophyid mites than can attack 'Gro-low' sumac; Mike Yanny introduction; hardy to zone 3b; species native to WI

Spiraea betulifolia 'Tor': 'Tor' birchleaf spirea, 2-3' tall, 3' wide, compact, mounded shrub with ascending branches, showy, white, late spring flowers in flat-topped, 1-2" wide clusters on new growth, very showy, late, orange to reddish-purple fall color, hardy to zone 4a, non-invasive alternative to Japanese spirea

'COURISPI01': PINK SPARKLER™ birchleaf spirea, like 'Tor' spirea, but has pink flowers, 3-4' tall and wide, mounded, rounded form, lime-green to yellow-green leaves, large, pink flowers in late spring to early summer, can rebloom in fall with new, white, smaller flowers borne in the leaf axils, burgundy-red fall color, hardy to zone 4a

Spiraea nipponica 'SMNSNFD': WEDDING CAKE® spirea, better form and improved flowering over 'Snowmound' spirea, more compact, rounded, fluffy, ball-shaped, 3-3 ½' tall and 4' wide, pure white flowers in late spring, blue-green leaves, hardy to zone 4a; full sun for best flowering, like most spirea, adaptable to most soils and pH

Spiraea thunbergii 'Ogon': MELLOW YELLOW® Thunberg spirea, 3-4' tall, bright yellow, willow-like leaves, white flowers in early to mid-spring, bronze to golden fall color, hardy to zone 4b

Spiraea vanhouttei 'Renaissance': 'Renaissance' Vanhoutte spirea, 5-8' tall, 6-10' wide, vase-shaped form, powdery mildew and rust resistant leaves, white flowers in late spring, dark, blue-green leaves, may have some orangish fall color, hardy to zone 4a, adaptable to most soils and pH, drought tolerant

Syringa × hyacinthiflora: early flowering lilac, hardy to zone 3a, some cultivars are more resistant to powdery mildew, can get lilac borer, 8-12' tall, 10-12' wide, size depends on cultivar, upright, wide-spreading, suckering, get leggy with age, only a few cultivars have fall color, larger, thicker leaves than common lilac, bloom first week of May before common lilac, looser panicles are more open, not as tightly packed; all are resistant to Japanese beetles!; many cultivars

'Bailbridget': VIRTUAL VIOLET® lilac, dense, upright form, 6-8' tall, 5-7' wide, shiny, violet new leaves with purple petioles and deep purple stems, raspberry-purple flower buds open to fragrant, violet flowers, powdery mildew resistant, hardy to zone 4a, hybrid of common and early flowering lilac, hardy to zone 3

'SMNSHBL': SCENTARA® Double Blue, 6-8' tall and wide, compact, rounded form, thick, dark green leaves, very fragrant, double, blue flowers, tolerant to powdery mildew

Syringa meyeri 'Palibin': 'Palibin' lilac, dwarf Korean lilac, 5-6' tall, 4-6' wide, dense, compact, non-suckering form, small leaves are powdery mildew resistant, showy, pale purple-lilac, fragrant flowers in mid spring on 4" long flower clusters, slight purplish to maroon hue in fall, hardy to zone 4a

Syringa 'Josée': 'Josée' lilac 4-5' tall, 5-6' wide, dwarf, rounded form, non-suckering, single, light lavender-pink to deep rose, moderately fragrant flowers, does rebloom sporadically in summer, resistant to powdery mildew, heat tolerant, hardy to zone 4

Syringa 'Red Pixie': 'Red Pixie' lilac, 4-6' tall, 5-6' wide, horizontal branching, non-suckering, single, dark reddish-pink to magenta fragrant flowers that fade to light pink, does rebloom sporadically in summer, resistant to powdery mildew, heat tolerant, hardy to zone 4

Syringa 'SMSJBP7: BLOOMERANG® Dark Purple, larger plant, 4-6' tall and wide, flowers are larger and more rounded, darker purple, fragrant flowers, blooms in May and can rebloom during the summer, hardy to zone 4

'SMNJRPU': BLOOMERANG® Dwarf Purple, 2 ½-3' tall, 3' wide, improved purple color but still fades to pinkish, more, fragrant flowers and improved disease resistance, can rebloom sporadically in summer, hardy to zone 4

'SMNJRPI': BLOOMERANG® Dwarf Pink, 2 ½-3' tall and 3' wide, darker pink, fragrant flowers, improved disease resistance, can rebloom sporadically in summer, hardy to zone 4

Syringa pubescens subsp. patula 'Miss Kim': 'Miss Kim' Manchurian lilac, 5-8' tall, 6-8' wide, dense, compact, broadly rounded form, non-suckering, showy, light lilac-violet to lavender, fragrant flowers in mid spring, purplish to maroon fall color, resistant to powdery mildew, hardy to zone 3b

'SMNSDTP': BABY KIM™, dwarf form of 'Miss Kim', 2-3' tall and wide+; dense, compact form; non-suckering; showy, dark purple flower buds open to fragrant, purple to light lavender flowers in mid spring, resistant to powdery mildew

'Pink Flower Select': DREAM CLOUD™ Manchurian lilac, 4-5' tall and wide, extra-large, pink to light lavender, very fragrant, 12" x 9" flower clusters cover the plant in mid spring, purplish fall color, resistant to powdery mildew, Mike Yanny introduction

'J.N. Upright Select': VIOLET UPRISING™ Manchurian lilac, 4-6' tall, 4-5' wide, very large, 12" long, fragrant, violet flower clusters, strongly ascending, upright branches, purplish fall color, resistant to powdery mildew, can be used as a hedge, but do not shear, Mike Yanny introduction

Syringa vulgaris: 'Elsdancer': TINY DANCER™ common lilac, 4-5' tall, 4' wide, compact form, not leggy, violet-purple flower buds open to intensely fragrant, 4-5" long, violet to purple flowers fading to lavender in mid spring, powdery mildew resistant, heat and drought tolerant, full sun only for all lilacs, adaptable to most soils and pH, all lilacs intolerant to wet soil

Viburnum carlesii: Koreanspice viburnum is one of my very favorite shrubs due to the flowers. The flowers are pink in bud, opening to intensely fragrant, white, rounded flowers in May that can be smelled 20' away from the shrub. The shrub grows 5-8' tall, 6-8' wide with a compact, rounded, dense form. The late fall leaf color ranges from reddish-wine to deep burgundy. Koreanspice viburnum is hardy to zone 4 and requires a rich, loamy, fertile soil, but is pH adaptable. It is intolerant to heavy clay, compacted or poorly drained soil; drought tolerant; flowering and fall color are best in full sun.

'J.N. Select A': SPICE ISLAND®, 4-5' tall and 5-6' wide, compact, rounded form, better, more uniform branching, very fragrant, pink in bud opening to white, rounded snowball-like flower clusters, burgundy to wine red fall color

'J.N. Select S': SUGAR N' SPICE®, 6-8' tall and wide, rounded form, very fragrant, pink in bud opening to white, rounded snowball-like flower clusters are slightly smaller, but more of them are produced across the shrub, burgundy to wine red fall color

Viburnum prunifolium: blackhaw viburnum; native to WI; large shrub to small tree; rounded form with horizontal branches; suckering; 12-15' tall, 10-12'+ wide; glossy, dark green leaves; reddish-purple to maroon fall color; showy, creamy-white, flat-topped flower clusters in late spring; edible, but tart fruit in early fall turns pinkish-rose then dark bluish-black with waxy coating; needs cross pollination with another plant or cultivar for good fruit set; less susceptible to powdery mildew than nannyberry viburnum (*Viburnum lentago*); resistant to Japanese beetles; hardy to zone 4a

'McKRouge': FOREST ROUGE®, more uniform habit; oval to upright form; 10-12' tall and wide; reddish-purple fall color; needs another cultivar for pollination and fruit set, from McKay Nursery

Viburnum sieboldii 'Wavecrest': 'Wavecrest' Siebold viburnum, 10-12' tall, 12' wide, vigorous, rigid, stout branches, small tree to large shrub, large, glossy, wrinkled (rugose) leaves with deeply impressed veins provide unique texture, creamy-white flowers in late spring, red fruit changes to black, borne on red stalks and persist, resistant to viburnum leaf beetle, this cultivar has larger leaves and flower clusters and excellent, red to burgundy-red fall color, hardier than the species, usually a zone 5b plant, but this cultivar is zone 5a; harder to locate, but should be grown a lot more

***Vitex agnus-castus* 'SMVACBD': BLUE DIDDLEY[®] chastetree, vitex;** dieback shrub that is cold hardy to zone 6 (top), but is reliably root hardy to zone 4b; this is a dwarf cultivar growing half the size of the species; compact, 4-6' tall and wide (straight species in the southern U.S. can get up to 20' tall); very long, 6-10" long spikes of lavender-blue flowers occur in mid to late summer to fall and are borne on new wood produced during the spring; flowers attract pollinators; very aromatic (menthol) leaves and flowers when rubbed, palmately compound, gray-green leaves; no fall color; adaptable to most soils and pH as long as well-drained; plant is heat, drought and road salt tolerant and pest free; full sun only; cut back in early winter; slow to emerge in spring; deer resistant plant; fast grower; native to the Mediterranean area

'Bailtexttwo': GALACTIC PINK[®]; 6-8' tall and wide; upright, rounded form; light pink flowers; dark green leaves

'Bailtextthree': QUEEN BEE[®]; 5-6' tall, 7-9' wide; rounded form; bright lavender-blue flowers, can produce a second flush of flowers after the first; gray-green leaves

'PIIVAC-IL': BLUE PUFFBALL[™]; compact ball shaped, dwarf, only 3' tall and wide, green leaves, deep blue flower spikes

'PIIVAC-I': DELTA BLUES[™]; larger growing, 8-10' tall and wide, rounded to upright-spreading, may not get that big in our climate; compact, dark bluish-purple flowers, dark green leaves

***Weigela* hybrids: weigela** used to be considered an old-fashioned, one season plant with its late spring flowers, but new selections have been bred for better form and colored leaves. Weigelas are easy to grow and adaptable to most, well-drained soils and pH and is drought tolerant. Full sun is required for purple leaf color and flower development.

'Alexandra': WINE AND ROSES[®]; 4-5' tall and 3-5' wide; dark burgundy-purple leaves; hot pink flowers; zone 5

'Polka': 3-4' tall, 4-5' wide, rounded, compact form, thick, dark green leaves, clear pink flowers with yellow inner throat, profuse bloomer, hardy to zone 4a

'Red Prince': 5-6' tall and wide, upright form, green leaves, dark red flowers that do not fade, can rebloom sporadically later in summer, no fall color, hardy to zone 4a

'Rumba': 3' tall and wide, compact, rounded form, bronze-purple tinged leaves, dark pinkish-red flowers with yellow throats, long blooming period, hardy to zone 4a

'Tango': compact form; 2-2 ½' tall, 2 ½-3' wide; purple leaves; red flowers with yellow throats; most cold hardy purple-leaved cultivar; hardy to zone 4

'VUKOZLyra': SNIPPET[®] Dark Pink; dwarf, rounded form, 1-2' tall, 2' wide, darker pink flowers than 'Pink Poppet', blooms in late spring and can rebloom sporadically in summer, hardy to zone 4b

'Bokrasopin': SONIC BLOOM[®] PINK; hot pink flower buds open to rich pink flowers in May and reblooms later, 4-5' tall and wide, zone 4b-5a

'Bokraspiwi': SPILLED WINE[®]; hot magenta-pink flowers like WINE & ROSES[®], but smaller plant, 2-3' tall and 3' wide

'Verweig-8': MY MONET[®] PURPLE EFFECT[™]; only 1 ½-2 ½' tall and wide, cream, green, and pink leaves with a burgundy-purple cast, purple-pink flowers in late spring, large amount produced, more heat tolerant, zone 4

'Kolmagira': RAINBOW SENSATION[™]; 3-4' tall and wide, compact, rounded form, variegated leaves with darker green centers and lighter green to yellow margins, soft pink flowers in late spring, hardy to zone 4

'SMNWFGC': WINE AND SPIRITS[®]; new cultivar, 3-5' tall and wide; greenish-white flowers with light green throats borne all over the stems, eventually, flowers turn all white; dark, burgundy-green leaves

***Yucca filamentosa*: Adam's needle yucca;** low, evergreen, herbaceous plant that is treated like a shrub; long, stiff, 1-2 ½' long, sword-like leaves with long, curly filaments come off the leaf margins; sharp tipped leaves; no stem is present as all foliage originates from basal rosette; showy, large, 3-6' tall flower panicles covered in creamy-white, pendulous flowers in summer; needs full sun and well-drained soil; intolerant to wet soil; very heat, drought, high pH, urban and salt tolerant; hardy to zone 4, native to the southeastern U.S.

'Color Guard': creamy-yellow striped variegation with green; center of plant and along margins turn dark rose in winter that turns back to yellow and green in spring

'Golden Sword': green margins with a bright yellow center to the leaf