

Trees for Middle Tennessee

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Best All-around Urban Trees

The following were selected for the best combination of all traits, emphasizing survivability on tough urban sites.

Small trees – 15 to 25 feet

American smoke tree (*Cotinus obovatus*):

- native to TN, TX, AR, OK
- Extremely drought tolerant, tough as nails
- Hazy clouds of small flowers, new foliage is purple, good fall color
- No pests
- Grows very slow on native tough sites, but on good soil grows 2'/yr
- Be sure to get American smoke tree, not Chinese, which is a bush.

Crapemyrtle:

- Very drought and heat tolerant
- High crown makes it good tree for lining streets
- Transplants easily
- Available in many sizes and colors
- Do not remove more than 25% of crown in any year, or sucker sprouts will be an on going problem. Do not top

Crabapple:

- A good, proven urban tree
- Beautiful dense flowers
- Buy only rust and scab resistant varieties, and avoid areas with lots of cedar
- Fruit is a little messy.

Redbud, especially *Cercis* 'Rising Sun':

- Very popular native tree
- Grows fast
- Short lived
- Easy to transplant
- Takes tough conditions fairly well

Amur Maackia

- May be the most drought resistant small tree (Native to Manchuria)
- Perfect shade-tree shape
- Fixes its own nitrogen
- Long lived
- Strong wood
- White flower spikes

- No fall color
- Not planted much in TN, but common in north and plains
- One large nursery in TN (at least) has started growing it
- Requires no basal sprout pruning, unlike many small trees
- No pests
- Perhaps the best small tree all around. Sure to become popular
- Old trees may become “mid-sized” rather than “small”

Wireless zelkova

- Dwarf, flat-topped variety of Japanese zelkova (relative of elm)
- No significant pest problems.
- Drought tolerant
- Good fall color

Tatarian maple

- Tough, drought tolerant
- Beautiful fall color
- Pink seed wings in spring
- Requires pruning to shape into tree

Chinese fringe tree *Chionanthus retusus*

- One of the most beautiful bloomers
- Good fall color (yellow)
- Very adaptable
- Not extremely drought tolerant, so should not be used in toughest settings
- Sun or shade
- Can be hard to transplant

Dwarf Ginkgo

- The perfect small sculpted tree
- 8-10' tall
- Globe shape
- Straight clear trunk
- Tolerates worst urban environments

Mid-Sized trees 25-45'tall

Overcup oak:

- small for an oak, usually 40-60' (at most) in town
- tolerates wetness, drought, and compaction
- Becoming more popular
- Transplants well for an oak
- Native to west TN

Chalk maple

- Drought tolerant for a maple
- Good fall color
- Grows in shade or sun
- Native to Piedmont
- Hard to find, but should be planted more

American hophornbeam:

- Drought tolerant
- Well shaped, looks dense and trimmed
- Strong wood
- long lived
- Grows is slow, moderate on good sites

American persimmon

- Tolerates compaction and other urban conditions
- Does not grow to be a big tree in urban settings
- Fruit good for wildlife, but are messy (get male clone if desired)
- Strong, long lived
- Glossy dark green leaves, good fall color
- Should be planted more in town

Chinese pistache

- Extremely drought and heat tolerant
- Transplants well
- Long lived
- Strong wood
- Beautiful fall color like sugar maple
- No pests
- Ideal for tough urban sites, like parking lots
- Widely planted in TX
- Gaining popularity here
- Looks gangly when young, needs early structural pruning

Persian Parrotia

- Very drought tolerant and tough
- Small red flowers early in spring/late winter
- Brilliant yellow and red leaves in fall
- Showy bark
- Member of witchhazel family
- Two varieties: American (bushy) and European (spreading tree)
- Horticulturalist John Bradley thinks this is the best tree
- Native to Iran

Lacebark (Chinese) elm

- A good urban tree, widely planted in cities
- Good shape, except branches tend to hang down

- Drought tolerant
- Easy to transplant

Red maple varieties (not species)

- Very popular
- Easy to transplant
- Grows fast
- Adapt to a range of soils
- Sensitive to severe drought
- Varieties have red fall color, but not species
- Weak wood (not so bad in more columnar varieties)
- Thin bark get sunscald
- Surface roots
- Overplanted, which in other species has lead to epidemics

Hedge maple

- The most heat/drought tolerant maple
- Native to north Africa and southern Europe
- Good fall color
- Need pruning early on to shape into tree

Goldenrain tree:

- Another tough urban favorite
- Unusual yellow summer flowers

Mancana ash

- Very tough, tolerant of urban conditions
- Good oval shape
- Good yellow fall color
- Resistant to emerald ash borer
- Not available locally, but widely used in North and West

Turkish filbert

- Extremely drought tolerant, always dark green even in severe drought
- Well-shaped cone-like, trim
- Yellow fall color
- Grown and used in north, but well adapted here

Large tree 45'+

American elm

- Elegant spreading vase-shaped crown
- Wet and drought tolerant
- Tolerates compacted soil
- Easy to transplant

- Fast growing on decent soil
- Purchase only varieties resistant to Dutch elm disease: Princeton, Patriot, Heritage, Concord, etc
Princeton is the best adapted to this area.

Black maple

- Almost identical to northern sugar maple in appearance
- Native to Nashville Basin
- Comparatively tolerant of heat and drought, but still not a really tough tree.
- Does not tolerate compaction
- Better choice than northern sugar maple
- Surprisingly hard to find

Swamp white oak

- One of best oaks
- Beautiful silver/dark green leaves
- Tolerates heat, drought, wetness, compaction
- Seems to transplant better than upland white oak

Bur oak

- Very tough, tolerant of compaction, wetness, drought
- Can grow to be huge on good sites
- Makes a good street tree where there is room
- Should be planted more

Willow oak

- Very popular standard urban tree
- Tolerates a variety of conditions
- Sometimes gets iron deficiency

Ginkgo

- May be the tree most tolerant of adverse city conditions
- Upright shape
- Beautiful bright yellow fall color
- Grows a bit slow
- Very long lived
- Strong wood
- Get male trees only! Fruit smells putrid
- Very ancient species

Hardy rubber tree

- Extremely drought tolerant
- Dark green glossy leaves never fall during summer drought
- Good umbrella shape, dense foliage
- Only temperate rubber tree
- Grows slowly
- Should be planted more in really tough situations

- Do not plant on school grounds – some children might be allergic to milky leaf sap
- Grown in TN nurseries

Japanese Zelkova

- Close relative of elm
- Very drought tolerant
- Mostly pest free
- Grows fairly fast
- Good yellow fall color
- Best varieties are Village Green, Green Vase. Halka is also good

Trees to Never Plant

Undesirable tree species (never plant):

- **Ailanthus** (very invasive)
- **Bradford pear:** Very weak and short lived. Has become invasive. Bells Bend park is a good example.
- **box elder** (short-lived, weak wood, box elder bugs)
- **silver maple** (roots on top of lawn, weak wood, falling twigs)
- **ash** (will all be killed soon by emerald ash borer, a Chinese beetle)
- **hemlock** (will be killed by invading balsam wooly adelgid)
- **Leyland cypress** (dies a few to several years after planting from Botriospheria and Seiridium cankers)
- **Siberian elm** (weak, dead, tangled branches) Better choice: lacebark (Chinese) elm
- **Black locust** (short-lived, often split, sprouts prolifically from roots)
- **Hackberry:** weak wood, decay, sooty mold on honeydew from aphids on leaves

Trees to think twice about

Species that may pose problems in certain situations (look at site, or plant sparingly :

- **White pine:** sensitive to drought, heat, clay, poor drainage. Might do OK for several years, then die. Better choices: Oriental spruce, magnolia, holly, Chinese juniper, redcedar, *Cryptomeria*, *Cedrus atlantica* “glauca”
- **Sugar maple:** sensitive to heat, drought, compaction, and grass competition. Better choices: black maple or Southern sugar maple.
- **Purple plum & cherries:** many insects and diseases, short life.
- **Sycamore:** anthracnose and bacterial leaf scorch, heavy leaf litter. Very large, so not suitable to many applications. Better choice: London plane tree
- **Yellow poplar:** breakage, size. Often gets root collar canker in Nashville Basin. For large areas only
- **Sourwood:** soil not acid enough in this area

- **Red maple:** has some minor disadvantages: weak wood, roots exposed on top, gets sunscald easily. Sensitive to very dry conditions. Main problem is it is overplanted, which could be a set-up for an epidemic, as happened with elm.
- **Pin oak:** especially prone to bacterial leaf scorch and oak wilt. Also commonly gets chlorosis from high pH values in Nashville Basin. Somewhat overplanted
- **Dogwood:** sensitive to heat, drought, and compaction.

Tree Catalogue

Most of the following are available from Tennessee nurseries. A listing of species and nurseries providing them is available at www.tnla.com. If a selection is not available on this list, try Googling "Tree nurseries selling (species)" to find out-of-state sources.

Small Trees (15-25 feet)

Acer palmatum Japanese maple

15-25 feet tall and wide (many varieties). Full to part shade; protect from afternoon sun. Slow growing, moderate life span. Plant in as rich a soil as possible, with good drainage.

Acer tartaricum 20-25 feet high, 25 to 35 feet wide. Round, spreading, symmetrical crown. Moderate to fast growth when young, long lived. Brilliant red fall color. Showy yellow fragrant flowers, showy pink-winged fruit. All soil textures, tolerates some wetness and drought. Requires pruning to develop one stem. Part shade to full sun. Urban tolerant. Branches droop and may have to be pruned up.

Asimina triloba Pawpaw

15 to 20 feet height and width. Moderate growth rate and life span. Shape is rounded pyramid; course-textured. Very showy fall color. Tolerates range of soil conditions; sensitive to drought in sun. Can be grown in full shade to mostly sunny. Best form in sun. Pest-free. Drooping branches require pruning for traffic clearance. Good central leader. Two-inch purple flowers, tasty banana-like fruit. This well-formed small tree should be used more often.

Aesculus pavia Red buckeye

15-20 feet tall and wide. Slow to moderate growth, moderate life span. Oval, round, symmetrical shape when older. Flower is showy red, pollinated by hummingbirds. Large round woody fruit. Shade to full sun. More compact shape in the sun. Takes range of soil conditions, including wetness and moderate drought. No important pests – nearly pest free. Needs pruning to establish trunk and strong structure. Can be grown as single trunk. Trees flower at 3 years old.

Amelanchier laevis “Snowcloud” Serviceberry

Height 25 feet, width 20 feet. Upright, oval to columnar crown. White flowers appear on this species in early spring, followed by red to purple edible berries in early summer. It tolerates shade and a wide variety of soils, and tolerates moderate drought. It is fast growing, but short lived. Fireblight can be a problem, and mites may also attack occasionally. Tends to sprout from roots. Snowcloud is less so, more tree-like. Downy serviceberry, *Amelanchier arborea*, is more bush-like and requires training up to a tree form.

Camelia oleifera Tea-oil camellia

20 feet tall by 10-15 feet wide. Often grown with multiple trunks; can be trained to have a short single trunk. Rapid growth, moderate life span. Evergreen. Part shade to full sun. Tolerates a range of soil conditions, including moderate drought. Flowers: white, showy, winter. Resistant to pests. Ideal for under utility lines and as a screen. China.

Cercis Canadensis Eastern redbud. ‘Rising Sun’ is the most drought & heat tolerant. 15-30 feet tall and wide. Growth is rapid; short span. Easily trained into single trunk. Showy purple flowers in early spring. Comes in many varieties, including purple leaves and especially drought-tolerant types. Part shade (best) to full sun. Looks best if watered during droughts. Old trees susceptible to breakage. Tolerates a wide range of soil conditions. Fixes its own nitrogen.

Chionanthus retusus Chinese fringe tree

20 x 15 feet. Slow growing (4-10"/yr), moderate life span. Oval to rounded vase shape. Showy yellow fall color. White, showy, fragrant flowers in spring. Tolerates a range of soil conditions; takes moderate drought. Part shade to full sun. Mostly pest-free. Drooping branches require pruning for pedestrians. Looks best if watered during droughts. Beautiful tree. China, Korea, Japan.

Chionanthus virginicus Fringe tree, old man’s beard

10-15 feet tall and wide. Some pruning needed to develop a single trunk. Slow growing, moderate life span. Showy yellow fall color. Showy, white, fragrant spring

flowers. Part shade to full sun (best with afternoon shade.) Resistant to pests (scales, mites, and cancers). Another beautiful tree.

Cornus florida Flowering dogwood

20-30 feet tall and wide. Beautiful white or pink blossoms, red fall color, red berries attract birds. Tolerates all soil textures, but must be well drained. Salt sensitive. Grow in mostly shade to full sun; drought sensitive in sun. Pests: anthracnose, borers, powdery mildew. Drooping branches may need pruning up for pedestrians.

Cornus kousa Kousa dogwood, Chinese dogwood or Japanese dogwood

15 to 20 feet wide and tall. Much like *C. florida*, but somewhat smaller, flowers bloom after leaves come out. Kousa resists borers and powdery mildew better than *C. florida*.

Cornus mas Cornelian-cherry

15-20 feet high, 12-18 feet wide. Slow to moderate growth, moderate life span. Part shade to full sun. Showy yellow flowers in late winter and early spring. Tolerates all soil textures, needs good drainage, tolerates moderate drought. Pest free. Needs little pruning, except suckers from base of trunk. Once popular, and still should be.

Cotinus obovatus American smoke tree, chittamwood

20-30 feet tall, 15-20 feet wide. Very slow growing on its dry native sites, but grows up to 2' per year on good sites. Moderate life span. Many bright fall colors, even in shade. Fuzzy flower panicles look like cloud of smoke. Mostly shaded to full sun. Tolerates range of conditions, except must have good drainage. Sensitive to salt. Tolerates many urban conditions, including wind, drought, and compaction. Easy to train into tree form. Can be hard to transplant balled in burlap; use container grown. This species is different from smoke bush, *C. coggygria*, from southern Europe and central China, which grows to only 10-15 feet and is a bush. Be sure to specify *obovatus* if you want the tree.

Ginkgo dwarf If you are looking for a small perfectly shaped tree, this is it. Nice round globe shape only 10 or so feet tall on straight clear trunk. Very tolerant of bad urban environments.

Hamamelis mollis Chinese witch-hazel

10-20 feet tall, 12-18 feet wide. Slow growing, short lived. Showy, fragrant, long-lasting yellow flowers in winter. Often grown with multiple trunks, but can be trained to a single short trunk. Grow in full sun of partial shade on acid soils. Takes moderate drought. Should be used more in urban settings.

Hydrangea paniculata Panicle hydrangea

15-25 feet tall, 10-20 feet wide. Moderate growth rate; short lived. White, very showy, summer flowers. Part shade to full sun, all soil textures and pH, takes moderate drought. Numerous non-lethal pests. Generally grown with multiple trunks, but can be pruned early into single short trunk. China

Ilex decidua Possumhaw

10-15 feet tall and wide. Slow growing, moderate life span. Forms dense, symmetrical, rounded vase. Showy red fruit attracts birds. Mostly shaded to full sun. Tolerates all soil conditions. Needs little pruning except to direct growth and remove drooping branches. Branches can break in ice storms. Resistant to pests. Altogether, few problems.

Lagerstroemia indica (hybrids and cultivars) Crape-myrtle

Rated hardy only to zone 7A, crape myrtle is very common in Tennessee landscapes. It is usually grown with 3-5 trunks, but can easily be trained to one. Height can range from 10 to 30 feet, depending on cultivar. Takes heat and drought. Grows well in limited rooting space. Plant in full sun. Crape-myrtle should never be topped, just as with any other tree. No significant pests. Very showy flowers and generally good fall color.

Maackia amurensis Amur maackia

20-25' tall, 25-30' wide. Rounded symmetrical vase. Slow to moderate growth. Leaves emerge silvery gray, turn dark green, then yellow in fall. White flowers on upright spikes; dry fruit (pod) causes some litter. Pest free. Tolerates all soils and extreme drought. Shiny brown bark; branches don't droop. Almost perfect small tree form. Fixes its own nitrogen. China, Manchuria.

Magnolia kobus Kobus magnolia

25 feet tall, 35 feet wide. Showy yellow fall color, very showy fruits. Showy, fragrant spring flowers. Tolerates all soil textures and moderate drought, range of pH. Needs good drainage. Needs little pruning, except to form trunk(s) and remove drooping branches. Occasionally bothered by scale. Japan.

Malus species Crabapple. (Many varieties)

10-25 feet tall and wide. Slow to moderate growth, moderate life span. Fruit .25 to 2.5" depending on cultivar. Showy flowers, fragrant. Some pruning necessary to remove suckers and sprouts along major branches. Tolerates all soil textures and pH, occasionally wet soils, drought, compaction. Salt tolerant to sensitive depending on cultivar. "Callaway" is probably the best one for the Southeast, but it has large fruits

that can be messy. Some other of legendary horticulturist Michael Dirr's favorites are: Adirondack, Donald Wyman, *floridunda* (Japanese crab), Harvest Gold, Red Jewel, *sargentii* (Sargeant crab), Snowdrift, and Sugartyme. There are many others. An experienced horticulturalist or wholesale nursery will have suggestions. Grow in sun. Good standard urban tree. Susceptible to cedar apple rust and fire blight, depending on cultivar.

Prunus "Halley Joviette" Halley Joviette cherry.

15 by 15 feet. Slow to moderate growth, moderate life span. Showy pink-white spring flowers. Yellow leaves in fall. Little or no fruit. Full sun. Takes all soil conditions except wet. Often grown with multiple trunks, but can be trained to a single trunk. Needs little pruning. Important for a cherry: resists pests.

Pterostyrax hispidia Fragrant epaulette tree

20-30' tall and wide. Dense rounded vase with drooping branches. White, fragrant, showy summer flowers in pendulous 9x4 inch clusters; showy persistent fruit is small gray or white pod that causes no significant litter, is used in dried flower arrangements. Showy trunk. Fabulous small shade tree, but hard to find. Currently offered by a nursery in Oregon. Japan

Quercus prinoides Dwarf chinkapin oak

20 feet tall. 16 feet wide. broadly oval to rounded crown This tree may be useful where an oak is desired but space is limited. Growth is slow to moderate with moderate longevity. Tolerates a wide variety of soils, and likes the sun. Like other oaks, a variety of pests attack it, but seldom cause serious damage.

Rhamnus caroliniana Carolina butthorn.

12-15 feet tall, almost as wide. Moderate growth rate, short lived. Showy, persistent red to black 1/3" fruit attracts birds. Orange fall color. One of first fruiting trees to turn color. Mostly shaded to full sun. Tolerates all soil textures, moderate drought, and a range of pH. Downside: can be invasive and weedy.

Zelkova serrata "Schmidtlow" Wireless zelkova

24 feet tall by 36 feet wide. Spreading vase shape. Red fall color. Pest-free and drought-tolerant.

Mid-sized Trees (25-40 feet)

Available from Tennessee Nurseries

Acer campestre Hedge maple

30-50' tall and wide; summer foliage is dark green, fall is yellow; slow-growing; all soil textures, moderate salt, very drought-tolerant. Not for highly compacted soil. Casts dense shade. Pests usually not serious. Europe and North Africa

Acer leucoderme Chalkbark maple

25-30' tall and wide. Tolerant of dry soils and understory conditions. Sun or shade. Fall color orange to bright red. Often multi-stemmed. Native to Piedmont.

Acer rubrum Red maple

Very popular, to the point it is overplanted, which could set it up for disease epidemics. Good general purpose tree. Transplants easily, grows fast. The non-varietal species is often gangly and does not have good fall color. Varieties include *October Glory*, *Red Sunset*, *Autumn Blaze*, etc. Drawbacks: weak wood, surface roots, thin bark that easily gets sun scald.

Carpinus betulus European hornbeam

30-40' tall, 15-20' wide; slow growing; fall color is yellow; all soil textures, tolerates occasionally wet soil and moderate drought; no salt tolerance; dense, fine foliage, symmetrical and trimmed looking; also available in a columnar form, "fastigiata"; mostly pest-resistant, although Japanese beetle prefers the foliage. Europe

Cladrastis kentukea American yellowwood

30-50' tall and wide; moderate growth rate; rounded vase shape; coppery-yellow fall foliage; all soil textures, tolerates moderate drought and occasional wetness; showy, fragrant, white flowers; dry fruit sometimes a little messy; fixes its own nitrogen fertilizer; resists pests. Native mostly to coves and north slopes in Middle Tennessee. Is listed as an endangered tree. Should be planted more on good sites.

Cornus florida Flowering dogwood

Dogwood is particular about where it grows. It prefers a cool site, good moist well drained soil, and partial shade. It is mentioned here because it is so useful in shaded situations, which few trees tolerate. Dogwood is susceptible to Anthracnose fungus and the dogwood borer. These are less of a problem when the tree is planted on a proper site.

Crataegus phenopyrum Washington hawthorn

20-35' tall; white showy flowers, very showy red fruits; tolerates all soils, drought, and occasional wet soils; sensitive to salt. Very thorny. *C. viridus* "Winter King" has fewer thorns. *C. lavallei* (English hawthorn) has even fewer thorns than *viridus*. Hawthorns get cedar-hawthorn rust so they should not be planted near cedars.

Diospora virginiana Common persimmon

30-60' tall, 20-35' wide, often much shorter in landscapes. Oval, upright, open to moderate density, pleasing irregular silhouette. Moderate growth rate, long-lived. Showy red to yellow fall color. Female trees bear soft orange fruit that attracts wildlife and makes a mess. Order male clones if you want to prevent this. Strong limbs. Grows in all textures of soil, slightly alkaline to acidic. Tolerates occasionally wet soil, some salt, and drought. Very adaptable and urban-tolerant. Should be planted more.

Eucommia ulmoides Hardy Rubber Tree

40-60' tall, 50-70' wide. Rounded, spreading form. Slow growing. Very glossy dark green leaves in summer, no fall color. Very drought tolerant, grows in all soils except wet. This urban-tough tree stays a lush green even in hot dry summers. Pest-free. Should get wider use. Old Soviet Union and China

Koelrueteria paniculata Panicked goldenrain tree, varnish tree, pride of India

30-40" tall and wide. Moderate to fast growth. Dense, rounded form with upwardly arching branches. Leaves purplish when unfolding, bright green in summer, yellow in fall. Clusters of yellow flowers in summer. Grows in all soil textures, tolerates drought, heat, wind alkalinity, salt, and urban conditions. No serious pests. China, Japan. Korea.

Ostrya virginiana American hophornbeam

30-40' tall, 25-35' wide. Slow to moderate growth rate. Symmetrical with fine texture. Yellow/tan fall color. Grows in all soil textures, tolerates drought; salt sensitive. Nearly pest free. Rugged tree tolerant of urban soil conditions.

Parrotia persica Persian parrotia.

20-40' tall and wide. Grows in all soil textures, very drought-tolerant. Leaves reddish purple when young, dark green when mature, brilliant red, orange and yellow in fall. Flowers somewhat showy, red. Except for Japanese beetle, almost pest free. Showy trunk. Needs good drainage. Ideal specimen or street tree. Slow growing. Two varieties: American is bushy, European is spreading tree. Iran

Pistachia chinensis Chinese pistache

25-35' tall and wide. Small showy red fruit on female trees. Leaves dark green, strikingly beautiful orange and red fall color. Grows in all soil textures, very drought and heat tolerant. Transplants well. Grows rapidly on good soil. Strong wood. Long-lived. No pests. Leggy when young, becoming symmetrical with age and early punning. Showy bark. Excellent choice for an urban tree. Should be widely planted. Asia.

Prunus sargentii Sargent cherry

25-40' tall and wide. Bears small drupes that attract birds; no significant litter. Grows rapidly, moderate life span. Showy spring flowers and fall color, attractive. Grows in all soil textures, but good drainage is essential. Tolerates drought, moderate salt. Low susceptibility to pests for a cherry; foliage attacked by Japanese beetles. Probably the best cherry for landscape purposes. Japan

Quercus lyrata Overcup oak

35-50' tall and wide. Oval to round, symmetrical. Slow to moderate growth, long-lived. Grows in all soil textures, tolerates wet soil and drought. Generally resists pests. Should be a popular mid-sized tree and deserves to be widely planted

Stewartia monadelpa Tall stewartia

25-35' tall, 15-25' wide. Upright pyramidal when young, vase later. Showy red fall color and somewhat showy white summer flowers. Outstanding cinnamon-brown bark. Grows in all textures of soil, tolerates drought. Casts light shade. Horizontal branches do not droop. Resistant to pests. White fragrant flowers, red fall color. Slow growing. Should be planted more often. Japan.

Syringa pekinensis Peking lilac

25-40' tall, 25-30' wide. Showy white flowers in early summer; no fall color change. Grows in all textures of soil from slightly alkaline to acidic; tolerates salt and moderate drought. Branches are thin and droopy. Moderate to rapid growth. Interesting bark. The most pest-resistant lilac, but does have some pest problems. China, Korea, Japan

Ulmus parvifolia Chinese or lacebark elm

40-50' tall and wide. Rapid growth, moderate to long life span. Limbs droop, may break in ice storms. Purple, red, yellow fall color. Grows in all soil textures, tolerates occasionally wet soils, drought once established. Tolerates alkaline soils and salt. Beautiful exfoliating bark. Graceful, upright, rounded canopy. Resistant to pests, including Dutch elm disease. A favorite. China

Available from out-of-state nurseries. Easy to find by Googling “tree nurseries selling Xxxx”:

Acer Griseum Paperbark maple.

Small (20-25 feet), slow growing. Beautiful brown and orange exfoliating bark. Variable fall color. Needs to be pruned up into tree form.

Acer miyabei . Miyabe maple

30-40 feet high. Oval to rounded upright form. Leaves stay green late into fall, then rapidly turn yellow. Leaves similar to sugar maple, but smaller. Tolerates dry sites.

Acer tartaricum 20-25 feet high, 25 to 35 feet wide. Round, spreading, symmetrical crown. Moderate to fast growth when young, long lived. Brilliant red fall color. Showy yellow fragrant flowers, showy pink-winged fruit. All soil textures, tolerates some wetness and drought. Requires pruning to develop one stem. Part shade to full sun. Urban tolerant. Branches droop and may have to be pruned up.

Acer triflorum Three-flower maple. 20-30 feet tall. Compact and round in full sun, spreading in shade. One of few maples to have brilliant fall color in shade. Beautiful exfoliating cinnamon colored bark. Tolerates dry soil and clay, but not wet soil or compaction.

Acer truncatum Purpleblow or Shantung maple

25-35' tall & wide. Moderate growth rate (fast when young in good situation) and moderate life span. Round and spreading, dense, symmetrical. Showy fall color and spring yellow flowers.. Grows in all soil textures, takes drought and moderate salt, tolerates reflected light. Nearly pest-free.

Bumelia lanuginosa Chittamwood

30-40' tall. Dark blue fruit is not messy. Moderate growth, long lived. No fall color. Small flowers are fragrant. Grows in clay, loam and sand, takes heat and drought. Pest free.

Cornus walteri Walter dogwood

30-40' tall and wide. Red fall color, showy white spring flowers. Showy trunk. Grows in all soil textures, tolerates slight alkalinity and moderate drought. Sensitive to salt. China.

Corylus colurna Turkish filbert

40-50' tall, 25-35' wide. Oval, pyramidal, dense, very symmetrical. Slow to moderate growth, long lived. Tolerates occasional wetness and drought, alkalinity, and air pollution; salt sensitive. Grows in any texture soil. Pest-free except for Japanese beetles. Where other trees scorch in summer, this one stays green. Southeast Europe to Asia minor.

Davidia involucre Dove tree This gorgeous member of the Dogwood family is well worth collecting. White and red flowers are surrounded by hanging white 4x7 inch bracts, as in dogwood flowers. Endangered in its native China. Hard to find.

Evodia danielii Korean evodia, bebe tree

25-30' tall and wide. Moderate growth rate (12-18" per year). Open rounded vase, nearly symmetrical, drooping branches. Showy white fragrant summer flowers, showy red to black dry fruit, persistent. Pest-free. Grows in all soils, alkaline to acidic, tolerates drought once established, and moderate salt. Opposite compound leaves look like ash. China and Korea.

Fraxinus mandshurica var. *Mancana*. Manchurian ash. Seedless male is potentially a great replacement for native ash species eliminated by the emerald ash borer. Good upright oval shape, good fall color, tough tree that takes urban settings and pollution well.. Available (and much used) in the West, Midwest and North.

Hovenia dulcis Japanese raisintree

30-35' tall, 15-25' wide. Oval, pyramidal, open, symmetrical. White, very showy, fragrant flowers. Fleshy red edible fruit attracts wildlife but is messy. No fall color. White, very showy, fragrant flowers. Resistant to pests. Grows in all soil textures, but not alkaline, compacted, or poorly drained; tolerates *occasionally* wet soil and moderate drought. Branches are upright or horizontal and don't droop. Moderate growth rate. China.

Kalopanax pictus Castor-aralia

40-60' tall and as wide. Round, dense, nearly symmetrical, "tropical-looking" with large star-shaped leaves. Showy white summer flowers. Fleshy small fruit attracts wildlife but causes some litter. All soil textures, alkaline to acidic, drought-tolerant once established. Rare in nursery trade. Japan, Korea, China

Phellodendron amurense Amur corktree

30-40' tall, 40-60' wide. Rounded spreading vase. Long-lived, moderate growth rate. Small fleshy green-black fruit attracts wildlife but causes messy litter; use male clones to avoid this problem if desired. Grows in all soil conditions. Virtually pest-free.

Recovers slowly from transplanting. Spreading form makes it an excellent shade tree. China, Japan, Manchuria.

Pterostyrax hispida Fragrant epaulette tree

20-30' tall and wide. Dense rounded vase with drooping branches. White, fragrant, showy summer flowers in pendulous 9x4 inch clusters; showy persistent fruit is small gray or white pod that causes no significant litter, is used in dried flower arrangements. Showy trunk. Fabulous small shade tree. As far as I know, offered by only one nursery in Oregon. Japan

Sorbus alnifolia Korean mountain ash

30-40' tall, 20-25' wide. Oval or rounded to upright, dense, symmetrical. Rapid growth, moderate life span. Showy white spring flowers, extremely showy red fruits attract wildlife; no significant litter. Grows in all soil textures, slightly alkaline to acid; tolerates occasionally wet soil, some salt, and moderate drought. Somewhat sensitive to pests.

Large Trees (>40 feet)

Acer barbatum Florida maple, Southern sugar maple

50-60' tall, 25-40' wide. Oval to round, dense, symmetrical. Moderate growth rate, long lived on suitable site. Showy orange and yellow fall color. Interior leaves sometimes stay on tree all winter. Grows in all soil textures, slightly alkaline to acidic, moderate drought tolerance. Does not tolerate compaction well. A smaller version in all aspects (height, seeds, leaves) of Northern sugar maple. Good for yards, parks, and other open areas with light traffic

Acer nigrum Black maple

50-80 feet tall, 35-50' wide. Oval to round, dense, symmetrical. Moderate growth rate, long lived. Grows in all soil textures, slightly alkaline to acidic, salt sensitive, drought tolerant for a maple; does not tolerate compaction well. Can be affected by verticillium wilt and bacterial leaf scorch. This Midwestern maple is a good substitute for northern sugar maple. Good for yards, parks, and other open areas with light traffic. Native to northern Middle Tennessee.

Alnus glutinosa Common alder, black alder

50-80' tall, 20-40' wide. Oval, pyramidal, dense, nearly symmetrical, coarse texture. Rapid growth, moderate life span. Dark green leaves, no color change. Bears small

interesting “cones”. Tolerates all soil conditions, alkaline to acidic, wet to dry (if roots have enough volume to grow into). Drought-sensitive on wet sites. Resists its pests (leaf miners, tent caterpillars, powdery mildew, aphids, alder flea beetles, lace bugs). Limbs resist breakage. Fixes nitrogen. Good choice for challenging wet sites. Europe.

Betula nigra River birch

40-50' tall and wide. Oval, pyramidal, “lacy” texture casts filtered shade, somewhat symmetrical when young. Fast growing, moderate to short (30-40 years) life on urban sites, grows older and larger on moist sites. Grows on all soil textures and requires acid soil (gets chlorosis on alkaline sites), prefers wet soil; tolerates some salt; drought-sensitive in confined spaces. Showy yellow fall color. Very showy peeling reddish-brown trunk. Branches droop, are subject to breakage in ice storms. Resistant to pests and does not get bronze birch borer.

Cercidophyllum japonicum Katsura tree

40-60' tall and wide. Pyramidal to oval, symmetrical. Rapid growth rate, long-lived. Heart-shaped leaves are dark blue-green in summer, stunning yellow in fall. Bears small pods that create no significant litter. Grows in all textures, takes slightly alkaline to acidic; low to moderate salt tolerance, takes moderate drought. Beautiful tree; it is tree “guru” Michael Dirr’s first choice. Coarse roots make transplanting difficult unless precautions are taken at the nursery. Needs frequent irrigation when getting established. Large surface roots on older trees. Can be susceptible to breakage in ice storms. Japan.

Diospora virginiana Common persimmon

30-60' tall, 20-35' wide, often much shorter in landscapes. Oval, upright, open to moderate density, pleasing irregular silhouette. Moderate growth rate, long-lived. Showy red to yellow fall color. Female trees bear soft orange fruit that attracts wildlife and makes a mess. Order male clones to prevent this. Strong limbs. Grows in all textures of soil, slightly alkaline to acidic. Tolerates occasionally wet soil, some salt, and drought. Very adaptable and urban-tolerant. Should be planted more. Resistant to most pests, may be susceptible to vascular wilt in Deep South. Can also get leaf spot and tent caterpillars. Transplanting B in B stock may be difficult due to coarse root system; purchase only young (small) B in B or purchase container stock.

Eucommia ulmoides Hardy Rubber Tree

40-60' tall, 50-70' wide. Rounded, spreading form. Slow growing. Very glossy dark green leaves in summer, no fall color. Very drought tolerant, grows in all soils except wet. This urban-tough tree stays a lush green even in hot dry summers. Pest-free. Should get wider use. Old Soviet Union and China

Ginkgo biloba Ginkgo

50-75' tall, 50-60' wide. Grows slowly at first, then at a moderate rate; long-lived
Pyramidal to oval, open when young, denser later; Traffic-stopping yellow fall color.
Female trees bear smelly fruit; purchase male clones. Grows in all soil conditions,
including wet (once established); very drought tolerant; takes some salt. Urban-
tolerant, adaptable as a street tree, even in confined situations. Pest-free. Excellent tree.
China.

Gleditsia triachanthos var. *inermis* thornless honeylocust

50-75' tall, 35-50' wide. Upright, spreading form, irregular silhouette; lacy bipinnately
compound leaves cast filtered shade, fine texture. Rapid growing, moderate life span.
Yellow, fragrant flowers in spring, coppery to yellow fall color. Takes any soil
condition, wet or drought, alkaline or acidic, salt, compaction, clay. A tough tree in that
way, honeylocust is subject to many pests, especially if many trees are grown in
proximity. Still, a good tree though over-used.

Gymnocladus dioica Kentucky coffeetree

60-75' tall, 40-50' wide. Slow to moderate growth, long-lived. Oval to round, vase
shape, open, irregular silhouette, bipinnately compound leaves cast light filtered shade.
Leaves out late. Female trees bear long pods with large hard seeds. Leaf midribs and
pods from female trees are messy. Takes almost any soil and is extremely drought-
tolerant. Nearly pest-free. Branching pattern is picturesque and each tree is unique.
Durable trunk and branches. Recovers slowly from transplanting. Using root-pruning
containers will help. Excellent tree that should get more use.

Liquidambar styraciflua Sweetgum

60-75' tall, 40-50' wide. Moderate growth on dry sites, fast (2-3'/yr) on moist sites,
moderate life span. Pyramidal growth, becoming rounded; upright and symmetrical.
Star-shaped leaves are often beautiful combinations of colors in the fall; prickly fruit
causes significant litter. Seeds germinate readily and can be weeds in flowerbeds. Some
cultivars are fruitless. Grows in all textures of soil, slightly alkaline to acid; takes wet
soil, moderate drought, some salt. Damaged by soil compaction and severe drought.
Has a number of pests, but is resistant to lethal ones. Shallow roots; don't plant close to
pavement. Good tree for large wet areas or large lawns, where roots can spread.

Liriodendron tulipifera yellow poplar, tulip tree, tulip poplar

80-120' tall, 25-40' wide. Pyramidal and symmetrical when young, becoming oval with
age. Forest-grown trees are arrow-straight and limbless to a great height. Fast growing
on moderate to good sites, long lived. Tolerates occasionally wet soils, can be injured

by severe or prolonged drought; tends to drop leaves early in dry summers. Salt-sensitive, needs acid soil. Does not tolerate clay well. Weak limbs can break in ice and wind storms. Beautiful yellow, green and orange flowers; dry fruit and cone parts create some litter. Resistant to pest, including gypsy moth, but leaves get aphids that produce honeydew on which mold grows. A big, tall, fast-growing tree for large spaces.

Platanus X acerifolia London planetree

70-85' tall by about 70' wide. Pyramidal when young, becoming rounded; symmetrical, coarse texture. Brown fall color, 1" ball-shaped dry fruit persists in winter. Tolerates all soil conditions including wetness, moderate drought. Withstands pollution and urban conditions. Grows rapidly, has moderate life span. Susceptible to many pests, the most serious of which are anthracnose and bacterial leaf scorch. Planetree is more resistant to anthracnose than is native American sycamore. Not a good street tree, but has a place in parks and other large areas.

Quercus sp Oaks

There are a variety of oak species available for planting. In general these are large, long-lived trees with moderate to rapid growth rates. If planted in the proper site, they resist pests, but if planted off-site they can be susceptible to a number of pests. The most serious oak pests include bacterial leaf scorch, oak wilt, and anthracnose. Gypsy moth will also be a serious oak pest in coming decades. Oak has sensitive roots and can be difficult to transplant due to a tap root and coarse root system (pin oak and willow oak are exceptions).

Quercus acutissima Sawtooth oak

40-60' tall, 30-70' wide. Pyramidal when young, becoming round or spreading at maturity. Fast growing (probably the fastest growing oak) No serious pests. Copious acorn producer. Prefers acid soil, but will take some alkalinity. Tolerates occasionally wet soils, drought, and heat. Transplants easily.

Quercus alba White oak

50-80' tall and wide. Pyramidal when young, upright-rounded to broad-rounded at maturity, with broad spreading branches. Imposing and beautiful. Grows slowly or at a moderate rate, very long lived. Subject to bacterial leaf scorch. Grows in all acidic soils except compacted, including occasionally wet; tolerates salt and moderate drought.

Quercus bicolor Swamp white oak

50-60' tall and wide. More irregular shape and winter silhouette than white oak. Not known to get bacterial leaf scorch. Tolerates both wet soil and drought. Must have acid soil. Also tolerates compaction (rare for an oak) and some salt. Not as hard to transplant as white oak. Excellent choice for large location in an urban setting, wet or dry.

Quercus falcata var pagodafolia Cherrybark oak

60-80' tall and wide. Native to moist riverbottoms, cherrybark oak is also well suited to dry sites and tolerates occasionally wet soil. Growth is fast on good sites. Straight trunk but somewhat irregular silhouette. No pest limitations of major concern.

Quercus imbricata Shingle oak

40-60' tall and wide. Growth slow to moderate, long-lived. Tolerates slightly alkaline soils, wet soil (once established), and moderate drought. A good choice for limey soils in Middle Tennessee. Susceptible to bacterial leaf scorch.

Quercus macrocarpa Bur oak

70-90' tall, 60-80' wide. Growth moderate to rapid, very long lived. Tolerates to widest soil conditions of any oak: alkalinity, wetness, drought, moderate salt. Urban tolerant. Young trees have attractive, dense, symmetrical, uniform crowns. Well-suited to street tree planting if planted more than 5' from pavement. Old trees are massive and spreading. Susceptible to bacterial leaf scorch. Difficult to transplant.

Quercus muehlenbergii Chinkapin oak

40-50' tall and wide, round shape. Growth rate moderate, long-lived. Tolerates alkaline soils, occasionally wet soils, drought, heavy clay, and some salt. Good choice for high-pH soils. Grows readily from seed but is hard to transplant. No limitations of major concern. This will soon be a popular street and shade tree.

Quercus nuttallii Nuttall oak

40-60' tall, 30-50' wide. This little-known oak is actually one of the best oaks for urban planting. It looks much like Northern red or Shumard oak. Grows faster than any other native oak. Rich reddish-purple new growth, clean leaf drop. Strong central leader does not fork. Develops a full canopy at an early age. Tolerates heat and drought well, native to wet bottomlands. Withstands higher pH than most bottomland oaks.

Quercus palustris Pin oak

50-75' tall, 35-40 wide. Upright, pyramidal, symmetrical. One of the fastest-growing oaks. Long-lived on acid soils. Does not tolerate high pH, easily develops chlorosis.

Tolerates wet soil and moderate drought. Salt-sensitive. This popular tree (the most-planted in America) needs no introduction. Very susceptible to bacterial leaf scorch. Fibrous roots make transplanting easy.

Quercus phellos Willow oak

65-70' tall, 40-60' wide. Pyramidal when young, rounded later. Dense, symmetrical, fine texture, small leaves. Fast growing and long-lived. Acidic soils only. Tolerates wet soil and drought, clay and compaction. Widely planted as a shade tree. Resistant to pests. Transplants easily.

Quercus robur English oak

50-60' tall, 40-50' wide. Oval, becoming round. Grows at a moderate rate, long-lived. Moderate growth, long-lived. Grows in all sorts of soil, acidic to alkaline, takes salt, drought. Popular variety is columnar fastigiate form, 8-15" wide – excellent choice for small spaces. Generally pest-free, but often has powdery mildew. Europe and North Africa.

Quercus shumardii Shumard oak

60-80' tall, 40-50' wide. Virtually identical to Northern red oak, except it takes drought better and tolerates higher-pH soils. One of the faster-growing oaks under favorable conditions. Urban-adaptable. Good choice for limestone areas.

Tilia heterophylla Littleleaf linden

60-70' tall, 35-50' wide, oval or pyramidal, symmetrical, dense, neat shape. Fragrant flowers in spring, showy yellow fall color. Grows in all soil textures, tolerates alkaline and wet soils, compaction. Often has leaf scorch in extended drought. Salt-sensitive. Urban tolerant. Moderate growth, long-lived. Resistant to pests except Japanese beetles.

Ulmus americana American Elm

80-120' tall, 60-120' wide. Large, graceful, vase-shaped tree widely planted in the past but hit hard with Dutch elm disease. Rapid growth, moderate to long life span. Tolerates many soils, acidic to alkaline, flooded, salt, drought. Very sensitive to pests. Keeping this tree demands a watchful eye and immediate response with appropriate measures. "Princeton," "Heritage," "Concord", "New Harmony" and "Patriot" are more DED resistant varieties. Princeton is best for Middle Tennessee.

Ulmus alata Winged elm, *Ulmus rubra*, slippery elm, *Ulmus serotina*, September elm

Much like American elm but smaller (40-60' tall), not so vase-like, and resistant to DED. Tough urban trees that deserve planting

Zelkova serrata Japanese zelkova

55 to 80' tall, 50 to 75' wide. Vase-shaped, symmetrical, fine texture. Moderate to rapid growth, long-lived. Showy copper, yellow, orange and red fall color. Showy trunk with exfoliating bark. All soil textures, tolerates moderate alkalinity, drought, compaction, moderate salt tolerance. Urban-tough, tolerating even soil pits. Resistant to pests, normally pest free. Japanese beetles eat foliage. "Green Vase" and "Village Green" are excellent varieties. This member of the elm family is an excellent substitute for American elm. Nursery stock often has branches clustered; insist on trees with well-spaced branches.

Evergreens

Holly (*Ilex species*) "Nelly Stevens" is probably the best screening holly for the Southeast. Pyramidal, relatively fast-growing holly 15 to 25' tall. No real pests. Does well in clay and wet soils, not so good for shallow, droughty conditions. Frazier holly is also beautiful, popular, and a good choice. Chinese holly, *Ilex cornuta*, is extremely drought resistant. Burford holly, a cultivar of the Chinese, is a popular bush that can grow 20' tall. These hollies have few insect pests. Have not seen a lot of success with China Girl (which is beautiful.) Native American holly, *Ilex opaca*, has more disease problems and can be open and rangey.

Evergreen or sweetbay magnolia (*Magnolia virginiana*) Excellent screen or specimen where there is enough room. Grows up to 50-60' tall and wide. Fast growing on suitable soils. Does well on deep clay, wet sites, but not soils with high pH. Really no pests to speak of

Norway spruce (*Picea abies*) Already in wide use here, it generally performs well.

Serbian spruce (*Picea omorika*) Elegant spire of a tree, sometimes very narrow with graceful ascending then drooping foliage. Adapted to this area, but some horticulturalists say it doesn't do as well as oriental spruce. Excellent specimen or group tree. Grows somewhat slowly unless on really good soil. Good long-term landscape investment.

Oriental spruce (*Picea occidentalis*) Much like Serbian spruce. Short needles. Grows slowly. Tolerates droughty gravelly soils. Excellent tree, probably the best spruce for this area.

Eastern redcedar (*Juniperus virginiana*) Not loved by many locals, it is a well formed native that takes really bad sites: shallow, dry or wet soil over limestone. Available in many cultivars that look better than the species. Does not harbor ticks unless deer bed there.

Chinese juniper (*Juniperus chinensis*) Tough. Faster growing than Eastern redcedar. The variety Hetzii, either the spreading type (about 15x15') the columnar variety (20-25' in 20 years) or glauca (bluish), may be the best for a screen in this area. Pretty much trouble free.

Arborvitae (*Thuja orientalis*, a.k.a. in botanical circles as *Biota orientalis*, or as *Platycladus orientalis*, *Thuja plicata*) There are more than one species "arborvitae". This is the best one for Middle Tennessee. 18-25' tall by 10 to 15' wide. Dense, compact, conical or columnar. Tends to become more spreading when it gets large. Slow to medium growth. Tolerates most soils except extremely wet. Gets bag worms (can be controlled by winter application of horticultural oil) and Seiridium canker. *Thuja plicata* is a good arborvitae – old standards are 'emerald green' and 'green giant', but the new variegated 'George Washington' is probably superior.

Chamaecyparis thyoides 'Red Star' is much like arborvitae, but it takes wet sites. It has a very upright form and does not get bagworms.

White pine (*Pinus strobus*) Great tree if planted in deep, well drained loam or silt loam. DO NOT PLANT on clay, shallow soil, limey soils (high pH), low ground, or on steep south or west slopes. In such cases it will either die soon, or may live 10-20 years apparently OK and then die of no reason except the site. Berms of good topsoil can be used to grow this tree on top on shallow soil. Grows very fast once established on good sites. Good screen at first, but thins with age.

Loblolly pine (*Pinus taeda*) Good tree for tough sites: clay soil, wet, south and west slopes. Not a dense tree, so if you use it, plant two or three deep. Grows very fast on good sites (4' per year.) Bothered by Nantucket pine tip moth when a sapling, but grows through this stage with no real damage.

Shortleaf pine (*pinus echinata*) Much like loblolly, but straighter, some think more elegant, and slower growing.

Cedrus Atlantica 'Glauca'. According to the experts this "new" tree is just about perfect for Middle Tennessee – it thrives on heat and humidity. Great gray-blue color, grows fast.

Cryptomeria (Cryptomeria japonica) Beautiful tree 50-60' tall and 20-30' wide. Could be a good replacement for canker-prone Leyland cypress, although as it becomes more popular it may exhibit more fungal problems. Tolerates dry soil, but needs good drainage. Tolerates shade. Should be planted much more. Best variety is "Radicans."

Camelia oleifera Tea-oil camellia

20 feet tall by 10-15 feet wide. Often grown with multiple trunks; can be trained to have a short single trunk. Rapid growth, moderate life span. Evergreen. Part shade to full sun. Tolerates a range of soil conditions, including moderate drought. Flowers: white, showy, winter. Resistant to pests. Ideal for under utility lines and as a screen. China.

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Not recommended:

Leyland cypress (*Cupressocyparis lelandii*) A landscape favorite for short term purposes. Grows fast, tolerates dry sites well, transplants easily. Unfortunately it usually dies of *Seiridium* and/or *Botriospheria* canker within 10 to 20 years. It is also very susceptible to root rot fungus. There are better choices, such as Chinese juniper or *Cryptomeria*.

Important advice for buying and planting nursery stock

Planting

- Plant B in B in fall (preferably) or winter. Plant bare root only during winter. They will not survive if planted after bud break.
- Dig a wide, shallow hole (3-4 times as wide as the root ball) and only as deep as the root ball.
- If container stock, cut any circling roots (see below). Handle gently, do not pick up by trunk
- Position tree so that top of root ball is at or just above ground level.
- If B in B stock, remove ½ of burlap and string, and ½ of wire basket.
- Fill half full with soil, firm and water
- Fill to edge of top of root ball. Do not put any soil on top of root ball. This will smother the roots.
- Firm and water in.

Mulching

Mulch layer should look like an old LP record. NO VOLCANOES! Volcanoes shed water and can cause tree to get “dead man’s finger” (Xylaria) fungus. Do not let mulch touch trunk. Make this disk as wide as possible. This has many advantages: helps protect from weed eaters and mowers (#1 enemy of young trees), conserves soil moisture, enriches the soil chemically and biologically, loosens the soil, and prevents grass (the # 2 enemy of trees).

Notes on container stock:

- Advantage: if not left in container too long (and the container is large for the tree’s size), provides full root system.
- Disadvantages
 - Often is in too small a container and has circling roots
 - “Soil” is not mineral soil, but a wood-chip based “planting medium” that desiccates easily. The difference in properties between the “planting

medium” and native mineral soil can easily form an interface that is hard for roots to cross.

- Steps to take: check for circling roots. If present in trees you buy, cut circling roots by slitting up and down the root mass in three places to a depth of one half inch. Water often but not too much at one time.

Notes on balled in burlap:

- Advantage: Mineral soil rather than bark chip “medium”
- Disadvantage: most of the root system is left in the ground.
- Disadvantage: large caliper trees are heavy and hard to move.
- Steps to take:
 - Ideally, plants should be shipped soon after digging (same day or next day is of course best.) Trees must be mulched during storage.
 - Check stock to see that it meets industry standards (see “Contract requirements” below.)
 - Ensure that stock is handled carefully from digging to planting. Never pick up stock by truck, drag stock on the ground, or drop. This breaks small roots and will weaken or kill the tree.
 - Remove ½ of burlap and string, and ½ of wire basket when planting.

Notes on bare root stock:

- Advantage: full root system, recovers quickly and begins growing quickly; high percentage survival if done right
- Disadvantage: requires great care in planting so roots don’t dry out and die.
- Actions:
 - Never expose roots to air for long. The small rootlets must never get dry. Store in a bucket of water during planting. (Don’t store this way for more than a day or two, however)
 - “Stomp in” soil firmly to eliminate air pockets.

Other important advice:

- Before you buy, match the species to the site it will go in: space, soil texture, compaction, depth, drainage, sun and reflected heat.
- Plant small stock. It is less expensive, easier to handle and plant, survives better, and starts growing normally sooner than big stock. Big stock’s purpose is to add a dramatic landscape element immediately.
- Supervise closely if hiring the work done, or if using volunteers.
- Water with equivalent of a one inch rainstorm once a week during dry spring, summer and early fall. Do this for three years, if possible, and longer for large stock.

- Protect from weed eaters and mowers. Do not take anything for granted. Put in steel fence posts around tree if necessary.
- You usually need not stake if you bought good stock. If you do stake, take it all down after one year.

Contract requirements for nursery stock

- *Trees must meet ANSI Z60.1 standards*
 - *Root mass size (24" for 2 1/2" caliper tree, 22" for 2", 20" for 1 1/2", 18" for 1")*
 - *No circling roots*
 - *Less than 3" of loose topsoil on top of root ball.* I recommend less than that: 1" at most. I recommend that less than one inch be your requirement rather than the 3" ANSI standard
 - *One trunk*
 - *Good taper, not spindly*
 - *Not headed back*
- *Trees will be mulched in while in storage.*
- *Trees will not be stored more than one week prior to shipping from wholesaler.*

Contract requirements for planting,

- *Plant B in B trees in late fall/early winter, or (second choice) late winter/early early spring before buds burst.*
- *Dig a hole 3-4 times as wide as the root ball.*
- *Remove the top one-half of burlap and wire basket*
- *Put no soil on top of any of the root ball. Require a three-year warrantee on stock.* Poorly planted trees often take more than one year to die.
- *Mulch in a wide thin (2-4" deep, >6' diameter) disk. Mulch is not to touch the trunk*
- *Three-year replacement guarantee* (This should pose no problem if the work is done properly)

Contractors may not want to perform to these standards. The extra work involved may be reflected in higher bids.

Native or Exotic?

There is a legitimate debate over the question of native versus non-native shade and ornamental trees. I will present information, but try not to take sides. I chose to leave the choice up to the individual.

The biggest concern is that the foreign (exotic) species will escape and spread into the woods, where it will supplant natives. This has happened with tree of heaven and callary pear (root stock of Bradford pear). However, most exotic trees are not invasive. The trees I have listed have been used in American landscapes for a hundred years or more and have not escaped. I do not consider them to be invasive.

The second point is that some natives provide better for birds because they support more insects than do exotics. Insects are vital to native songbirds because they provide a lot of protein and energy. Oak is the best example. Oaks are great bug hosts. Yet they usually don't suffer any major harm. Not all native species support such abundance, however. For example hophornbeam and Kentucky coffee tree are mostly pest free. That means no bugs.

You may notice that many foreign tree species are also "pest free". That is good for the home owner but bad for birds. However, food is not the only issue. There are other ecological factors involved, such as the size of the treed neighborhood and tree density.

Third point is that some people maintain that native trees are better suited to local conditions. This is certainly not true on tough urban sites, with soil compaction, reflected heat, and pollution. These are not native conditions. I list some of the exotic trees I do because they are the only species that will work in those settings.

Then there is personal preference as to aesthetics. Some people just prefer all natives, other prefer the beauty of some exotic trees (and some are quite attractive.)

One reason exotics are useful is that most exotics are mid-sized, and we have few native mid-sized species. Most native hardwoods grow to be around 100 feet tall. Many folks don't want the risk of having a 100 foot tree towering over their house. For most residential yards, mid-sized trees (25 to 45 feet tall) may be a better choice. An outstanding wildlife choice in the medium size range is overcup oak, one of the few mid-sized natives.

I have chosen a compromise for my small yard. I have 14 native species (including 5 oaks), and one exotic species, Chinese pistache, which is an urban favorite of mine. However, to illustrate what I mentioned about "other ecological factors", our flocks of native birds have disappeared since the subdivision expanded. If everyone planted oaks in their yards (instead of exotic lawns) they might still be around.

