

HOUSTON

TEXAS

**TOUGH
TREES**

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TREES

SUMMER 2012

TOUGH TEXAS TREES FOR HOUSTON

PREFACE

Although the change in Houston's climate over the previous three years—moving from a generally wet climate at approximately 45 inches of annual rainfall to less than 20 inches of annual rainfall—was beginning to be seen, no one anticipated how devastating the 2011 summer of record heat and drought would be for our trees.

A generous gift from The Wortham Foundation, Inc., brought the parks and greenspace community together to assist the City of Houston. While the City put tremendous resources into removing dead wood for public safety and fire hazard reasons, we joined the City in saving as many trees as possible and planning for the future.

The immediate response was focused on legacy trees, those significant because of historic location or size, and on younger trees with a higher likelihood of survival. We treated the root systems of targeted legacy trees for better water and nutrient absorption, and watered as much as funding and practical considerations allowed before winter dormancy and in the critical early spring period. Thankfully, spring 2012 turned out to be average in terms of rainfall.

Now we look to the future and to replanting. Knowing what did well under severe drought conditions is important to choosing what trees to replant. This booklet reports the 2011/2012 experience and judgment of many of our region's agencies who manage large public spaces, of expert professional foresters and nurserymen, and of avid gardeners. We are grateful to all the experts who helped to create these lists; all are listed along with other information sources at the end of the guide.

In selecting trees for Houston region, it is important to remember that we do not know what weather patterns our region will face in the next few years. It would be unwise to simply select trees from elsewhere that are impervious to drought, as they may not tolerate our local soils or the enormous rain that Houston can be subject to. So, we have emphasized here the trees that are both native to our region and drought tolerant, and thus more likely to survive in all rainfall conditions we may face. Other trees that are native to other, usually drier, parts of the state are identified separately as they have also done quite well here as long as they are given good drainage.

Particularly as our climate changes, it is important to select a diversity of trees that provide food and shelter to the birds, butterflies, and other wildlife that enrich our area, so we have also provided information on which of these trees are particularly useful to wildlife.

All the experts emphasize how important good planting techniques and supplemental watering are to establishing trees under dry conditions. So, planting tips are included here also.

We hope that these lists are helpful to Houstonians as we together recover from the drought of 2011 and plant for the future.

THE GARDEN CLUB OF HOUSTON
HERMANN PARK CONSERVANCY
THE HOUSTON PARKS BOARD
KATY PRAIRIE CONSERVANCY
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HOUSTON






TEXAS

LARGE
TREES

LARGE TREES

These large native trees were observed to, once established, survive the historic 2011 drought with little or no supplemental watering.

LEGEND

-  SUN
-  PARTIAL SUN
-  SHADE
-  ATTRACTS BUTTERFLIES
-  ATTRACTS BIRDS

BUR OAK *Quercus macrocarpa*



Soil: variety of soils, sand, loam, clay, or caliche

Growth Habit: deciduous; easy and fast-growing; resistant to drought, urban pollution, fire, insects and disease; straight trunk with a broad, rounded crown of stout branches

Flowers/Fruit: largest acorns of all native oaks

Size: 80 feet tall or more



LIVE OAK *Quercus virginiana*



Soil: gravel, sand, loam or clay but does best in neutral or slightly acid clay loam

Growth Habit: evergreen; fast-growing and long-lived; very resistant to salt spray; easily transplanted when young; tolerates poor drainage and compaction of soil

Flower/Fruit: acorns about 1 inch long

Size: large spreading tree to about 50 feet tall with a crown of up to 100 feet in diameter



Platanus occidentalis AMERICAN SYCAMORE



Soil: moist, sandy loam or silty clay

Growth Habit: deciduous; fast-growing and long-lived; broad, dense crown with very large leaves that are bright green on top and paler underside; has distinctive, white, exfoliating bark; larger trunk diameter than any other native hardwood

Flowers/Fruit: brown balls of small seeds, 1 inch in diameter on 3 to 6 inch stems

Size: large tree up to 100 feet or more



Platanus mexicana MEXICAN SYCAMORE



Option to American Sycamore

The Mexican Sycamore is a close relative of the American Sycamore and is very similar. It averages 80' by 50', fast-growing, full sun, tolerant of most soils, tolerates wet and drought, long-lived. It is native to Mexico but is now being planted in the Houston area. The Mexican Sycamore is preferred to the American by many nursery people who feel it is more disease tolerant than the American Sycamore, but time will tell whether this is accurate.



PECAN *Carya illinoensis*



Soil: rich, moist, well drained soils, sand, loam, clay or caliche

Growth Habit: deciduous; fairly rapid growth; excellent shaped tree with thick straight trunk, broadly rounded crown; tolerates poorly drained sites; State Tree of Texas

Flowers/Fruit: oblong nut ripening in fall

Size: 70 to 100+ feet tall, allow plenty of room for growth



MONTEZUMA BALD CYPRESS *Taxodium mucronatum*



Soil: wide variety of soils, sand, loam, clay

Growth Habit: evergreen or semi evergreen; fast-growing and long-lived; needle-leaf, tall straight trunk, broad crown with spreading branches and drooping twigs, few or no knees, tolerates extended flooding and well drained

Flowers/Fruits: cone bearing plant, cones open in February and seeds ripen in October

Size: 36 to 80 ft. tall



Taxodium distichum BALD CYPRES



Option to the Montezuma Cypress

Bald Cypress is more easily found in the trade and is frequently planted in street medians because of its adaptability to soil and water conditions. Bald Cypress knees can be a problem in poorly drained areas, but the knees can be controlled by cutting them off with a pruning saw about 1 inch below the soil surface. The bald cypress is deciduous, and the soft, ferny leaves turn terra cotta hue in the fall.



Ulmus alata WINGED ELM



Soil: wide variety of soils, sand, loam, clay, caliche

Growth Habit: deciduous; fast-growing shade tree with spreading branches and rounded top; small serrated dark double serrated, green leaves that turn yellow in the fall

Flowers/Fruits: samara (winged seed pod)

Size: 40 - 70 ft. tall



CEDAR ELM *Ulmus crassifolia*

Soil: wide variety of soils, sand, loam, clay, caliche

Growth Habit: deciduous; fast-growing and long-lived; large, rounded-crown shade tree with drooping branches; dark-green leaves are small, rough-textured and yellow in fall; tolerates alkaline soil

Flowers/Fruit: samara (winged seed pod), autumn fruiting different from most other elms

Size: 30 to 60 ft. tall

*Quercus stellata* POST OAK

Soil: rocky or sandy soils, acid based

Growth Habit: deciduous; slow-growing and long-lived; broad, rounded crown with thick, sometimes leaning, trunk; few pest problem; does well soggy soils, extremely drought tolerant but roots are very sensitive to being disturbed

Flowers/Fruit: small acorns, 3/4" to 1 1/4", ripen in the fall

Size: 50+ ft. tall

EASTERN RED CEDAR *Juniperus virginiana* var. *virginiana*

Soil: wide variety of soils, sand, loam, clay, caliche type

Growth Habit: fragrant evergreen conifer; cone shape when young but more irregular shape when older; fluted trunk up to 2 ft. diameter with reddish brown, thin bark that peels off in long strips

Flowers/Fruit: pale blue berries on female plant, ripen September to December

Size: can get to 70 ft. tall, depends on soil and sight conditions

*Ulmus americana* AMERICAN ELM

Soil: well drained, variety of soils, sand, loam, clay, will tolerate salty soil

Growth Habit: deciduous; fast-growing and reasonably long-lived; attractive, tall shade tree with a symmetrical crown of spreading branches that arch and droop at the tips; thick trunk usually divides into several large ascending, erect branches; double serrated leaves are 3 to 6 inches long and very rough on the top surface

Flowers/Fruit: clusters of single seeds, mature by early summer

Size: up to 80 ft. tall





GREEN ASH *Fraxinus pennsylvanica*



Soil: adapts to a variety of soils, sand, loam, clay

Growth Habit: deciduous; upright, spreading habit with crown shape varying from irregular to symmetrical rounded; deep green summer foliage; relative freedom from insects and diseases

Flowers/Fruit: samara (winged seed pod) on female tree, large seed crops

Size: 50 to 70 ft. tall



(NATIVE TO DRIER AREAS) LARGE TREES

The following large trees were also observed to survive the 2011 drought with little or no watering. They are native to drier areas south and west of Houston and do well here only if they have good drainage.

Quercus muehlenbergii CHINKAPIN OAK



Soil: rocky or sandy soil, alkaline

Growth Habit: deciduous; moderate to fast-growing; straight trunk with light colored bark and spreading crown; attractive saw-toothed leaves turn yellow to bronze color in the fall; seldom troubled by diseases or pests

Flowers/Fruit: acorn ½" up to 1 ¼" long

Size: up to 50 ft. tall





MEXICAN WHITE OAK (MONTERREY OAK)

(*Quercus polymorpha*)

Soil: wide variety of soils but best in well drained alkaline soils



Growth Habit: deciduous to semi-evergreen; fast-growing - tall at first then spreads its crown; light colored bark; deep green, long, oval leaves 5"-7" creates a lush appearance and has reliable fall color; resistant to oak wilt, diseases and pests; as drought tolerant as the Live Oak once established

Flowers/Fruit: medium size acorns

Size: 50 ft. tall



HOUSTON

TEXAS

SMALL
TREES

SMALL TREES

Once established, these small trees were observed to survive the historic 2011 drought with little or no supplemental watering.

TEXAS REDBUD *Cercis canadensis* var. *texensis*

Soil: sand, loam, and clay; will not do well in low, wet area

Growth Habit: deciduous; fast-growing

Flower/Fruit: In March ½ inch clusters of pink flowers appear before leaves, followed by seed pods

Size: 10 to 20 ft. tall

MEXICAN PLUM *Prunus mexicana*

Soil: sand, loam, clay

Growth Habit: deciduous; moderate to fast growth; highly drought tolerant, tough tree; single trunk with bluegray bark, dark horizontal striations and broad crown

Flower/Fruit: fragrant, showy, white flowers appear before leaves, followed by small, round, purple fruit

Size: 15 to 30 ft. tall, 25 ft. width



CRATAEGUS MARSHALLII PARSLEY HAWTHORN



Soil: sand, loam, clay; tolerates seasonal poor drainage

Growth Habit: deciduous; slow growing but long-lived; multi-branched, some branches have thorns; leaves look like parsley; plant more than one tree for better fruiting

Flower/Fruit: showy, 1 inch, white flowers, followed by small red haws (berries) throughout winter

Size: 15 to 30 ft. tall, 25 ft. width



YAUPON HOLLY *Ilex vomitoria*



Soil: sand, loam, clay; tolerates seasonal poor drainage

Growth Habit: evergreen; fast-growing; can be pruned into multi-trunk tree or hedge; spreads aggressively in non-maintained areas; need male and female to have berries

Flower/Fruit: insignificant white flowers in spring, followed by red drupes (berries) on female trees in fall and winter

Size: 12 to 25 ft.



POSSUMHAW HOLLY *Ilex decidua*



Soil: sand, loam, clay; well drained preferred but will tolerate seasonal poor drainage

Growth Habit: deciduous; moderate growth; will fruit best in more sun and must have male plant nearby

Flower/Fruit: Small white flowers in spring, followed by bright red-orange drupes on female plants that persist into the winter and are showy on bare branches

Size: 8 to 20 ft.



Viburnum rufidulum RUSTY BLACKHAW VIBURNUM



Soil: sand, loam, clay; well drained soils only



Growth Habit: deciduous; slow growing; shrub for a long time but becomes a single trunk tree with broad crown; can be difficult to start but beautiful once established, with glossy green leaves with fall color



Flower/Fruit: 4 in. white flower clusters in spring, followed by ½ inch long blue/black drupes in fall



Size: 10 to 30 ft. tall, up to 35 ft. wide



Morella cerifera (Myrica cerifera) SOUTHERN WAX MYRTLE



Soil: deep sand, loam, clay; adaptable, will tolerate poor drainage once established



Growth Habit: evergreen; fast-growing; keep moist when first planted, drought tolerant once established; large shrub that can be maintained as hedge or small multi-trunked tree



Flower/Fruit: inconspicuous flower, followed by pale bluish berries along branches of female plants



Size: 10 to 20 ft. tall, 10 to 15 ft. wide



AMERICAN HOLLY *Ilex opaca*

Soil: sand, loam, acid soils; must be well drained (if you have clay—use ‘Savannah’ cultivar)

Growth Habit: evergreen; slow growing but long-lived; triangular crown that broadens with age; good for screening

Flower/Fruit: inconspicuous flowers, followed by red berries on female, need a male tree nearby for pollination

Size: 15 to 35 ft., occasionally to 60 ft.

MEXICAN BUCKEYE *Ungadia speciosa*

Soil: wide variety of soils from rocky and caliche to clay; must be well drained

Growth Habit: deciduous; fast-growing; often multi-trunked, makes an attractive understory tree with yellow fall color

Flower/Fruit: clusters of bright-pink, fragrant flowers appear before or with the leaves in the spring, followed by reddish brown 3 lobed buckeyes contains several dark brown shiny seeds

Size: up to 30 ft. tall, but usually smaller



(NATIVE TO DRIER AREAS) SMALL TREES

Several trees that are native to drier areas west of Houston can be successfully grown here and have done well in the record drought. Typically, these trees require excellent drainage, so care should be taken in choosing a site. Seven such trees that have done well in Houston in general and during the drought are:

Cordia boissieri TEXAS WILD OLIVE

Soil: variety of soils from caliche to clay; must be well drained

Growth Habit: persistent to evergreen; fast-growing; sensitive to cold—will freeze to roots below 20 degrees; drought tolerant once established; rounded crown with short trunk

Flower/Fruit: showy 2 inch white flowers with yellow throat, followed by drupes (berries) that are white turning to purple; will flower almost all year with enough water

Size: 12 to 24 ft. tall, 25 ft. wide



JERUSALEM THORN (RETAMA) *Parkinsonia aculeata*



Soil: sand, loam, clay, caliche; must be well drained; does well in disturbed soils and poor soils

Growth Habit: deciduous; fast-growing; spiny small tree with long, graceful, slightly drooping branches with unusual green bark bearing many long, delicate leaves, leaves often fall off in the summer

Flower/Fruit: profusion of yellow flowers in the warm months, especially after a rain, followed by 2"-4" legumes

Size: up to 30 ft. tall



WRIGHT ACACIA *Acacia greggii* var. *wrightii*



Soil: caliche, limestone-based, sand, loam, clay

Growth Habit: evergreen to semi-evergreen; slow growing; highly drought tolerant; requires pruning to develop one or more main trunks; feathery leaves and cat claw-like thorns on twigs, highly insect and disease resistant.

Flower/Fruit: fragrant white bottlebrush-like spikes, followed by small brown seed pods 1" to 6"

Size: 30 ft. tall and 35 ft wide



Sophora secundiflora TEXAS MOUNTAIN LAUREL



Soil: prefers dry, rocky soil but will grow in sand, loam, or clay if well drained

Growth Habit: evergreen; slow growing medium size tree; highly drought tolerant

Flower/Fruit: fragrant, showy violet pea-like flowers in clusters at the tip of branches in spring, followed by hard pods 3 1/2 to 5 inches long with shiny red seeds inside; seeds are highly poisonous

Size: up to 30 feet tall



Diospyros texana TEXAS PERSIMMON



Soil: well drained, limestone loam, clay, caliche

Growth Habit: deciduous; slow growing; small tree with rounded crown, smooth gray bark and small leathery leaves; highly drought tolerant

Flower/Fruit: urn shaped, white, single or small clusters of flowers in March and April, followed by small edible fruits on female trees that turn black when ripe from late July into September.

Size: up to 35 ft. tall



ANACUA *Ehretia anacua*

Soil: well drained, variety of soils, alkaline soils, sand, loam, clay

Growth Habit: semi-evergreen; rounded crown with rough-textured leaves; requires pruning to develop one or more main trunks; needs a lot of water to get established, but is highly drought tolerant thereafter

Flower/Fruit: fragrant white flower clusters cover tree in spring, followed by edible, quarter-inch orange fruits that ripen April to June

Size: up to 50 feet

TEXAS ASH *Fraxinus texensis*

Soil: prefers loamy, well drained soils, but works well on dry sites with sand, loam, clay

Growth Habit: deciduous; small shade tree with an attractive, densely branched canopy and brilliant fall color; long-lived and resistant to sea spray and salt; very drought tolerant with low water requirements

Flower/Fruit: insignificant green flowers, followed by seed pods on female tree only

Size: 30 to feet tall



HOUSTON

TEXAS

PLANT TREES

PLANTING TREES

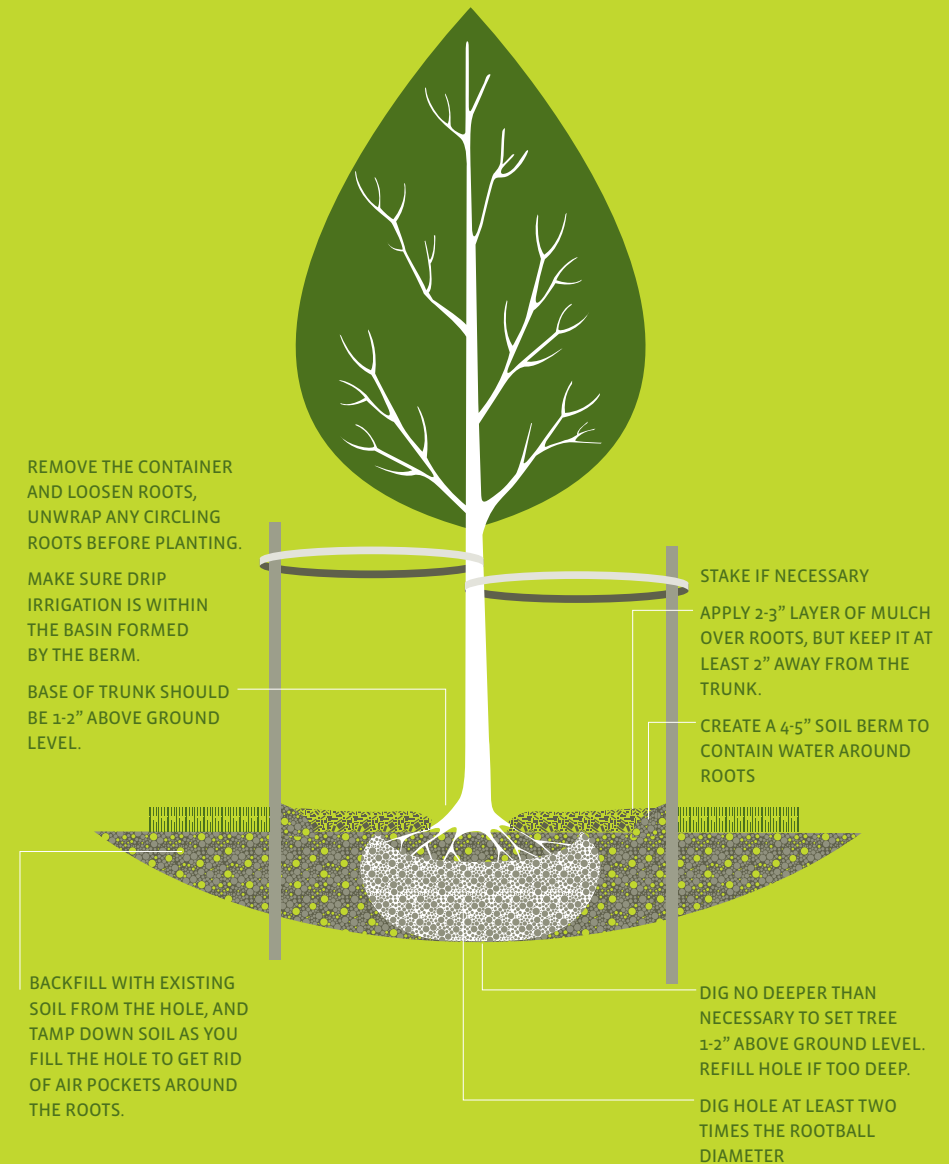
Site and tree selection

- Choose trees suited to your soil. Generally in Harris County, sandier soil is found north of Buffalo Bayou (or I-10) and soil with more clay is found south. There are variations, though, so evaluate your specific site. Organic content can be added to improve most soils.
- Consider the light requirements for your tree, as well as its ability to tolerate poor drainage. Building up a bed before planting assures better drainage.
- It is always best to purchase locally grown trees. You will find many large stores sell trees from California, Florida, and elsewhere. Ask where the tree was grown before you make your purchase.

Tree planting tips

- The best time to plant in Houston is in the fall or winter months, which gives a tree time to establish roots before the summer heat.
- Dig a hole 2 to 3 times wider than the container, but no deeper than the depth of the root ball.
- Center the tree in the planting hole. The tree should be straight with the branches pointing the direction you want them to grow. Make sure the hole is not too deep or too shallow. The top of the root ball should be about 1" to 2" above grade.
- Remove tree from the container. Remove any dead or injured roots with sharp pruners. If the roots are growing in a tight circle, loosen them up so that they will eventually grow out into the surrounding soil. Remove a circling root.
- Back fill the planting hole, filling in around the roots. Use your foot to firmly but gently step around the tree making sure there are no air pockets in the soil. Watering after planting will help to compact the soil and remove excess pore space.
- Water well. The first two years your newly planted tree will need regular watering. A rule of thumb is 1 inch of water or 8 to 10 gallons per inch of diameter each week either from rain or irrigation. You can use a screw driver to check that the soil is moist at least 8 inches down.
- Avoid fertilizing until the root system is established.
- Build a 4 to 5 inch inch berm around the tree located just outside the root zone to help hold the rain or irrigation water. (See illustration)
- Place a 2 to 3 inch inch layer of composted mulch in the bowl around the tree, but make sure it is not touching the trunk of the tree.

HOW TO PLANT A TREE IN HOUSTON



RESOURCES AND REFERENCES

The following experts were invaluable in the creation of this list; we very much appreciate their time, expertise, and thoughtful comments.

Individuals

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Websites

Lady Bird Johnson Wildflower Center Plant Data Base
<http://wildflower.org/plants/>

United States Department of Agriculture Forest Service
http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm

Texas AgriLife Extension Service
<http://aggie-horticulture.tamu.edu/ornamentals/natives/>

Texas Parks and Wildlife
<http://www.tpwd.state.tx.us/>

Books

Trees of Texas, An Easy Guide to Leaf Identification
By Carmine Stahl and Ria McElvaney

Trees, Shrubs and Woody Vines of the Southwest
By Robert A Vines

Texas Trees, A Friendly Guide
By Paul W. Cox and Patty Leslie

The Bayou Planting Guide and Habitat Gardening for Houston
By Mark Bowen


Trees for Southern Landscapes
By William D. Adams

Forest Trees of Texas, How to Know Them
By Texas Forest Service

Texas Wildscapes, Gardening for Wildlife
By Noreen Damude and Kelly Conrad Bender

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