

2005

## Southern Nevada guide: Tree selection and care

City of Las Vegas, Nevada

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*Southern Nevada Guide*

TREE SELECTION AND CARE



2005

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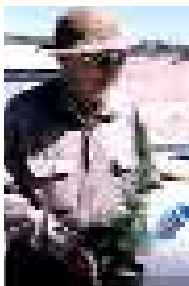


2005

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*Nanyu Tomiyasu*

1918 – 2002



This edition of *Trees for Tomorrow* is dedicated to the late Nanyu Tomiyasu. “Tomi”, as he was affectionately known, was highly regarded as a plantsman by Las Vegans. He was a descendent of Yonema “Bill” Tomiyasu who moved to Southern Nevada in 1916 to start a farming operation.

The Tomiyasu family became a legacy, supplying a large portion of the fresh produce required to support the massive construction of Boulder Dam. Tomi continued that family legacy in the years ensuing, working tirelessly to help others understand the difficulties of desert gardening. He was recognized for his work with the Boy Scouts, the Gardens at the Springs Preserve and the UNLV Arboretum—always eager to share his wealth of knowledge on trees and desert soils. Many thanks to Tomi and his family for their many contributions.



*Living in the Mojave Desert*



The Mojave Desert is the least understood American landscape. People unfamiliar with the Mojave can hardly believe the high temperatures and low precipitation we accept as normal.

The Mojave has its beauty; it just takes awhile to learn to appreciate it. You’ll know you are becoming local when you sniff the air after one of our desert rains to smell the Creosote’s perfume. It’s said you can even tell how much rain fell by the strength of that beautiful fragrance.

You’ll know you’re local when you know the few trees that call the Mojave home. You may choose to edify the Mojave by planting a desert-appropriate garden. Many trees from other deserts can join our few local trees in our gardens. And, yes, there are a few trees—shade trees—that can be planted here to recreate that shady presence we remember so well.

A famous author once said that the key to becoming western is getting over the color green. The Mojave will give you much opportunity to test the truth of that statement. But in cities, in our yards, trees are essential if we expect to be comfortable in this land of perpetual sun. Over two dozen individuals with more than 500 collective years of working with trees have contributed to the making of this booklet. This booklet is about trees that you can expect to survive and even thrive in the Mojave. It is the goal of this booklet to acquaint you with the trees and things that you should do to assure your garden of its chance in the sun.

## Purpose and Goal

Trees for Tomorrow was created to educate Southern Nevada residents on the benefits of trees and to help homeowners choose the right trees for their landscape setting. The goal of this booklet is to help homeowners successfully select and establish trees. This Centennial edition recognizes the 100-year celebration of the founding of the City of Las Vegas.

Planting trees is a necessary adaptation to human settlement in arid environments. A strong, healthy community forest is built tree by tree, home by home. Tree canopies help to reduce energy demands, reduce water demands, reduce local air temperatures, reduce air pollution, provide habitat for birds, and create beautiful, shady urban environments.

The trees in this booklet were chosen because they are our most reliable trees given our intense sunlight and variety of local soils. They are tolerant of heat, cold and wind, moderately fast growing, provide good shade, water efficient, low-maintenance, and most are readily available in local nurseries. These tree choices were based on the combined experience of many local arborists, horticulture professionals, plant nursery staff, commercial and residential landscape companies and architects who have been working in Southern Nevada over the past century. Several hundred trees were considered during the revision of Trees for Tomorrow. Only the most "bulletproof" shade trees are included in the Centennial edition.

Trees that did not make it into this edition did not meet criteria of tolerance, insect issues, invasiveness or water use. Specialty trees like palms, fruit and nut trees were excluded. University of Nevada Cooperative Extension (702-222-3130) has detailed information on these trees. While many favorite trees did not make it into the Centennial edition, they are still available for the adventurous gardener, and can be found in Trees of Yesterday at Web site [www.lvsnag.org](http://www.lvsnag.org).

## Trees and the Earth

Imagine a world without trees, if you can! It's easy to see that they are an essential part of this garden world that we call Earth. Trees give us solid things like food, wood and paper products, chemicals and medicines, and they bring us other economic, recreation and aesthetic benefits. But perhaps the most important role of trees is the one they play in the life support system of our planet.

Trees have been called "nature's air conditioner" and "the lungs of the earth". Their ability to cool and clean the air brings us welcome relief from sun and smog, especially in the concrete-and-asphalt heat islands of our cities. Trees produce life-sustaining oxygen while absorbing pollutants and protecting soil from erosion by wind and water. In our watersheds, trees help store and filter rain and snow, ensuring a long-lasting supply of clean water. And, trees are homes and food for wildlife.

Today, people around the world understand the importance of our forests and are looking for ways to ensure their survival and sustainability. Perhaps the simplest action you can take is to plant and take care of trees—right now, where you live. Plant trees in your yard, on your street, at your schools, in your parks and in your community. The future is in our hands today. Plant a tree!



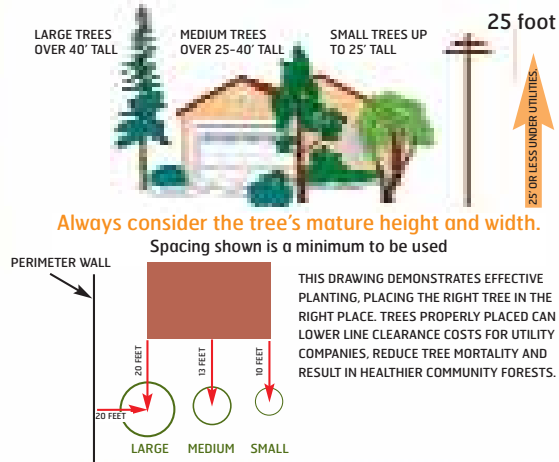
## Small Trees for Small Spaces

In Las Vegas, most urban yards are small and becoming smaller. Homeowners need to choose the right tree to fit their physical yard space. Available space is often overlooked in yard design. Big trees in small spaces typically become long-term problems. They require extensive pruning, interrupt sidewalks, pool decks, roof and fence lines and overrun neighboring property. The solution is to plant small trees in small spaces. Small trees only reach a height of 25 feet or less. Some may actually be large shrubs trained into tree form. Small trees complement the scale of small dwellings, create shade, can be easier to maintain by the homeowner, and bring beauty, flowers, fragrance and wildlife to any yard. Healthy trees increase your property value by 20 percent or more.

Presentation of trees in this booklet is designed with yard size in mind. The trees are listed as small, medium or large based on their mature size (see Tree Comparison Chart, pages 21-22). Use these height guidelines to plan for the right tree for your yard space.

## Right Tree, Right Place

Even the best tree is not useful if it is not planted in the right place in relation to the yard and home. To avoid problems in the future, trees should be planted a safe distance from structures, walls, above- and below-ground utilities and swimming pools. Always consider the tree's mature height and width before planting. For example, small trees should be at least 10 feet away from structures and large trees should be 20 feet away.



## Native Trees

Southern Nevada is part of the Mojave Desert, a shrub-dominated landscape. While native trees do exist in our desert, they occur in streambeds and at higher elevations. Low elevation native trees tend to be compact, small, shrubby and low water users, perfect for urban landscapes and water conservation needs. Some of these trees can be difficult to find in the retail nurseries. However, **it is illegal to take native plants or seeds from public lands without permits.** We encourage you to purchase trees from reputable nurseries.

### Low-elevation native trees include:

Catclaw Acacia	<i>Acacia greggii</i>
Desert Hackberry	<i>Celtis reticulata</i>
Western Redbud	<i>Cercis occidentalis</i>
Mountain Mahogany	<i>Cercocarpus ledifolius</i>
Desert Willow	<i>Chilopsis linearis</i>
Singleleaf Ash	<i>Fraxinus anomala</i>
Arizona Ash	<i>Fraxinus velutina</i>
Utah Juniper	<i>Juniperus osteosperma</i>
Singleleaf Piñon	<i>Pinus monophylla</i>
Honey Mesquite	<i>Prosopis glandulosa</i>
Screwbean Mesquite	<i>Prosopis pubescens</i>
Desert Apricot	<i>Prunus fremontii</i>
Gambel Oak	<i>Quercus gambelii</i>
Canyon Oak	<i>Quercus turbinella</i>
Goodding Willow	<i>Salix gooddingii</i>
Arroyo Willow	<i>Salix lasiolepis</i>
Joshua Tree	<i>Yucca brevifolia</i>

### Introduced trees

Some cultivated trees used in low-elevation landscaping have become naturalized. The term naturalized refers to non-native plants that become fully established and expand their range in their new environment. A few are considered invasive or highly allergenic and undesirable or illegal to plant. For example:

Russian Olive	<i>Eleagnus angustifolia</i>
Fruitless Mulberry	<i>Morus alba</i>
**European Olive	<i>Olea europaea</i>
Narrowleaf Poplar	<i>Populus angustifolia</i>
Fremont Cottonwood	<i>Populus fremontii</i>
Salt Cedar	<i>Tamarix species</i>

These introduced trees are no longer recommended for Southern Nevada.

\*\*The only Olive cultivars approved for Southern Nevada are 'Swan Hill' and 'Wilson'.

## Trees give Structure to the Garden; Shrubs Reinforce its Form

We choose the trees with which we want to live here in the Mojave. Most of them would not live here without our interest and support. In turn, they reward us with delightful shade, the color green and forms that shape the many outdoor rooms through which our lives lead us. We read the seasons in the foliage of those trees. We focus on vistas toward which they, in their alignments, point. We park in their shade.

The pattern we establish as we plant trees around our house comes to define the structure of our residential landscape. Trees form the canopies and walls of spaces we define outdoors. Use pines to the north or to block views. Shade trees with their arching branches overhang our driveways, patios and west-facing windows. Smaller trees act as pivot points in the landscape. Small flowering trees accent important places.

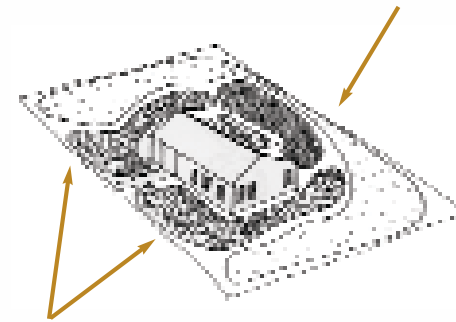
Once the pattern of tree location is established in the landscape plan, the layer of shrubs reinforces the spaces established by the larger trees with their trunks and canopies. Of course, in the areas of naturalized desert, trees will be very scarce. In the desert, shade is an anathema to native plants. Every desert plant is a prima donna, growing fully in the spotlight of the sun. In desert plantings, large shrubs often take the place of trees as focal points. In all cases, the layer of shrub plantings expands and extends the range of texture, color and interest available to the designer. Groundcovers, plant or mineral, extend the textures available to the garden designer.

To find out what plant goes well with what plant, you can guess. Trial and error over time will yield a good garden. Or, you can visit established gardens. Take your camera and notebook. Observe which plants combine in harmony. Does this plant go well with that one? What spacing do they require? Are they in the shade or full sun? Visit plants that have been growing for several years. Note the changes in form over time. Avoid using plants that will grow too large for their intended spaces, or face the costs of keeping them in their place. A dominated garden is never as beautiful as a natural garden. Learn to know the plants. Choose them for their attributes. They will reward you.

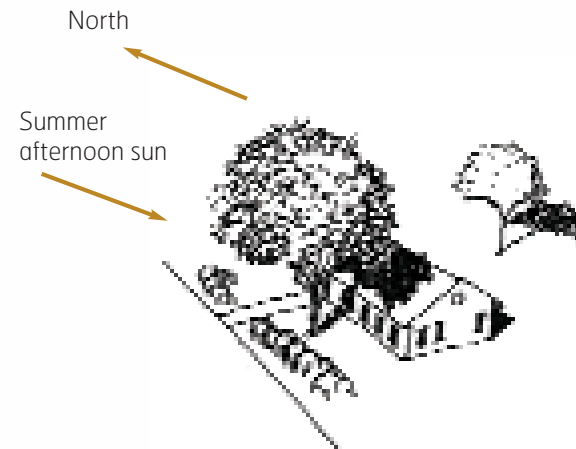
## Desert Garden Design

Spend your water budget where you get the most return. Irrigation design is drawn to meet water-wise garden requirements.

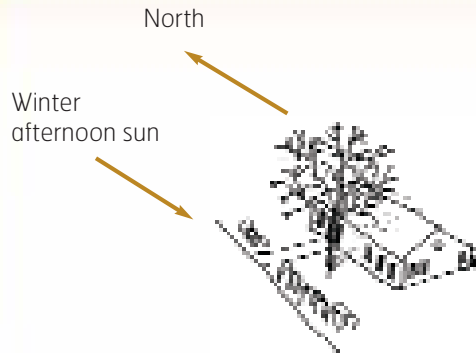
Some lawn in your landscape can cool outdoor areas.



Placing naturalized desert at the dooryard and near the house yields interest and year-round beauty. Trees can be located to achieve up to 25 percent energy savings.

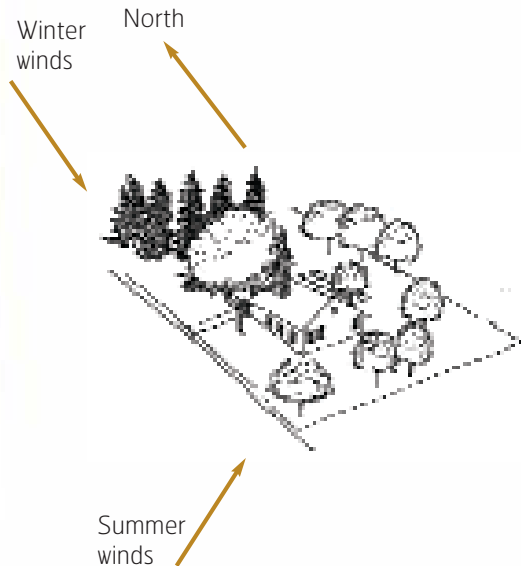


Using deciduous trees allows the Winter sun to heat your home.



When you save power, you save water

Evergreen trees on the northwest of your home block cold winter winds. Evergreen trees should only be used on the north side, so that they don't block the warming Winter sun.



Trees can block summer winds from the southwest.

## Getting the Dirt on our Soil

The late Nanyu Tomiyasu, famed Las Vegas horticulturist, was an expert on the various soil types found in the valley. Sites in the lowest elevation of the valley contained heavy clay or in some cases were quite sandy. Locations on the west side of town contained many rocks and caliche, the dreaded concrete-like layer often hidden beneath the surface. He knew the soil provided for landscape use in Las Vegas is not exactly topsoil; far from it in fact. In addition, new home sites are often built on heavily compacted, restructured soil to ensure stable building pads, with minimal dust. For the homeowner, this makes for extremely hard digging, poor water infiltration and material from a variety of sources. In comparison to the soil of other parts of the county, native desert soil contains a meager percentage of organic matter, which in turn supports only modest amounts of beneficial microorganisms. Many of the nutrients required to support plant life are missing or rendered unavailable by the existing conditions. The pH or the relative alkalinity of the soil may be high, limiting some nutrients we supply artificially. Other nutrients may be excessive, like harmful amounts of sodium and boron. This is not exactly your normal Iowa topsoil.

Tomi, as he was affectionately known, believed in proper soil preparation and care. His words of advice still echo through the valley. He would tell you to evaluate, plan, prepare and execute to get the best results and few problems. First, plan your landscape carefully. If possible, conduct a soil analysis and make your decisions based on the findings. Contact your extension agent for assistance. Then, ensure that you have a good, efficient irrigation design.

Tomi would remind you that there is no need to modify soils that will bear drives, walks, decks or where pools will be located. Concentrate on the areas that will be landscaped. For conventional landscapes or lawns, try to cultivate the entire area prior to landscaping. By ripping or rototilling the entire area, the compaction will be greatly reduced. Prior to cultivating, add organic material to the depth of several inches over the entire site to be landscaped. This is far better than adding amendments to just the planting pit. Adding soil sulfur at this time will also aid in the reduction of alkalinity. You may incorporate light quantities of fertilizer as well, or if you prefer, wait until the planting has been accomplished and apply nutrients to the soil surface.

Recent research indicates that most desert adapted trees and shrubs do not require the addition of organic matter in the planting pits. Organically rich soils may create overly wet conditions possibly resulting in root rot or premature plant failure. This holds especially true for desert native trees such as Mesquites and Palo Verdes.

Tomi's knowledge of soils was unequalled. Even today he would tell us that proper soil care will pay off with strong and rapid plant growth.

## How to Water?

This is probably the most asked question and the most difficult to answer. There are many variables like the type and size of plants being watered, the soil composition, elevation or slope, exposure to sun and reflected heat, and exposure to drying winds to name a few. A practical method to determine how much water is needed is based on three questions: "Where to water," "How much to water," and "How often to water?"



### Where to water?

This question refers to the area to be watered. Apply water to all areas above growing roots and just beyond to encourage growth. Tree roots have the potential to grow far beyond the drip line, however in desert soils, roots will only grow where the soil is moist. The myth, 'Roots grow toward water' is simply not true. Roots do not grow through dry soil. To apply the minimum amount of water, water the entire area under the tree canopy. Note: when converting to a desert landscape, continue to supply water to all existing tree roots. See Protecting Established Trees during a Landscape Conversion on Page 35.

### How much to water?

This question refers to the quantity of water applied to the root area. Apply enough water to penetrate the soil to a depth of 18 to 24 inches. This is where a majority of absorbing roots grow. In clay or compacted soils, roots will be shallower than roots growing in sandy soil. After watering, check how deeply water has penetrated the soil. A metal rod or root feeder shaft will easily penetrate moist soil, while dry soil is difficult or impossible to penetrate with a probe.

### How often to water?

This question refers to frequency of watering. To water a well-established tree, start with the following simple schedule and adjust, as needed, to allow for soil type and seasonal conditions.

#### Non-desert trees

Winter: Deep water once or twice a month  
Spring/Fall: Deep water two to four times a month  
Summer: Deep water once or twice a week

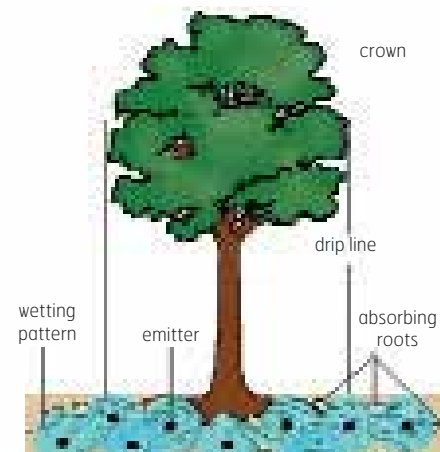
#### Desert trees

All seasons:

Water deeply and less frequently, about half as often

A screwdriver, metal rod, or moisture meter can also be used to check soil moisture at various depths. If there is a distinct residue remaining on the implement, delay watering another day. Dry soil will not stick. For trees in turf, allow the sprinklers near trees to run longer or use a hose to properly water the trees. To prevent or remove salt buildup, periodically apply enough water to push salts away from the roots.

To adjust for seasonal changes in water needs, change the time between watering by decreasing or increasing the days between watering. DO NOT change the number of minutes in each watering cycle because the watering depth remains the same.







## Selecting Trees at the Nursery

Your purchase is an investment and should meet your landscape needs. Trees come in different forms: single trunk (standard), multi-trunk and natural (unpruned). Getting the most for your money demands attention and care. The long-term result is a healthy, happy tree, shade and a better environment.

When selecting your tree or trees at the nursery, you want to look for the following:

### General Appearance

- The container should be free from damage. A damaged container is a sign of damaged roots or rootball.
- The tree should appear in good health, with no drooping branches or leaves, no signs of insect damage or disease. The canopy size should be in relative proportion to the container size.

### Roots

- There should be no visible roots sticking out of the surface or bottom of the container.
- The roots should not be circling the inside of the container.

### Trunk


- The trunk should be free of injuries, discoloration, cracks, missing bark, or sap oozing from the bark.
- The trunk should not have abrasions from tree stakes or tree ties.

### Branches

- The branches should have spaces between, not crowded or crossed.
- The branches should not be discolored, damaged or distorted.

### Leaves

- Leaves should be of uniform size and color throughout the entire canopy.



## The Tree List

Based on a long horticultural history of what can survive and thrive in the Las Vegas area, the following trees are recommended for foolproof shade and beauty. The trees were chosen based on the following criteria:

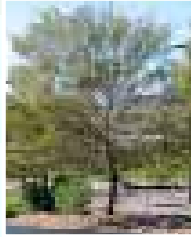
- 1) **tough and adaptable, e.g. tolerant of full sun, various soils, heat, cold and wind;**
- 2) **moderately fast growth, that provides shade quickly;**
- 3) **water efficient, low maintenance and**
- 4) **reasonably easy to find in local nurseries.**

The trees are presented alphabetically by botanical name, followed by common name. Mature tree form or its silhouette is given for each tree entry.

A chart comparing the trees is on Page 21. The chart is sorted by mature tree size—small (under 25 feet), medium (25-40 feet), and large (over 40 feet). Growth rate is defined as slow (less than a foot a year), moderate (1 to 2 feet a year), and fast (3 or more feet a year). Water use varies with location in the landscape, but generally falls into low use—deep watering once a week or less during summer, medium—watering every 2-3 days during summer, and high—daily water during summer. Trees in the chart are arranged by common name.

Whatever your taste is, use trees in your landscape. They age gracefully, add interest and value to your home, and perform important services for the local environment by breaking the wind, cooling air temperatures and making outdoor living more pleasant.

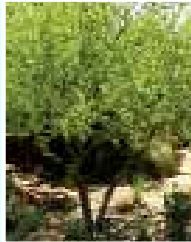
*Here are the Trees for Tomorrow!!*



## Acacia aneura

### Mulga

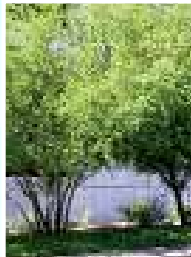
This Australian native is a small, thornless, evergreen tree with a pyramidal to rounded shape. The foliage consists of leathery leaf-like phyllodes that vary from dull gray-green to silvery in color. Adorned with small, fuzzy caterpillar shaped flowers in the spring, small bean pods follow. This hardy plant thrives in full or reflected sun. It prefers not to be overwatered, so once established, water deeply but infrequently.



## Acacia constricta

### White Thorn Acacia

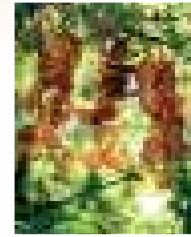
Native to washes and rocky hills, this plant is most commonly a short shrub forming dense thickets. With little effort it may be trained into a small tree. The ferny foliage is medium green in color. Prominent white thorns are common on young trees, although some plants are not spiny at all. Fragrant, yellow puffball flowers appear in spring and continue through Summer. Tolerant of shallow, alkaline and caliche soils, full and reflected sun, it thrives in our climate.



## Acacia farnesiana (Acacia smallii)

### Sweet Acacia

Each spring, sweet acacia perfumes the air with masses of fragrant yellow-orange puffball flowers. This tree is extremely tough, and will thrive in almost any situation, from hot parking lots to turf areas. It has an attractive vase-shaped form that makes it a popular choice for desert landscapes. Although it normally has a shrub-like habit, light pruning will produce an upright tree form. It should be kept away from swimming pools, as its seed pods can create litter. It also bears sharp thorns, so provide ample room near walks.



## Acacia greggii

### Catclaw Acacia

Normally a shrub, it is found in impenetrable thickets. Catclaw acacia is wonderful cover for wildlife. With modest training it may be developed into a small but very attractive tree. Be careful with the location as it is well armed with small but sharp catclaw-like thorns. The tiny, grey-green leaves are fern-like in appearance. Sweet smelling, creamy yellow flowers celebrate Spring.



## Acacia schaffneri

### Twisted Acacia

Native to southern Texas and into Mexico, this wonderful semi-evergreen tree has twisted, arching branches that create a unique silhouette. Yellow puffball flowers adorn the tree in Spring. Sharp thorns occur along the branches so care must be taken with its location. Although a bit ungainly in youth, it develops into a handsome tree. Good drainage is essential. An excellent tree for parking lots and other areas with reflected sun.



## Acacia stenophylla

### Shoestring Acacia

This thornless, rapidly growing evergreen tree produces long, willowy leaf-like phyllodes that resemble shoestrings dangling in the wind. A fairly clean tree, it is often recommended for use near pools or against walls with considerable reflected heat. Creamy white puffball flowers are produced early each Spring followed by long bean pods. This plant is extremely drought tolerant once established.



Acacia aneura



Acacia constricta



Acacia farnesiana



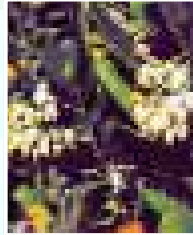
Acacia greggii



Acacia schaffneri



Acacia stenophylla



## Arbutus unedo

### Strawberry Tree

This slow-growing evergreen tree rivals any patio tree. The glossy green leaves have a slightly toothed margin. Clusters of small white urn-shaped flowers are produced each spring, followed by edible, bland fruit that slightly resemble strawberries. Most trees are multi-trunk and form dense canopies. If possible prune to allow a view of the exquisite trunk, which has cinnamon-colored, shaggy bark.



## Brachychiton populneus

### Bottle Tree

An evergreen tree of moderate size that is native to Australia. The bright green leaves have variable shapes, with some shaped like arrowheads and others with sharp lobes. Clusters of creamy white, bell-shaped flowers are produced before Summer, often followed by woody, boat-shaped fruits which may be a bit of a litter nuisance. Bottle trees are useful for windbreaks and shade in extremely hot conditions.



## Celtis reticulata

### Western Hackberry

This hardy deciduous tree tolerates full sun, reflected heat and soils with low fertility. Native along streambeds and hillsides throughout the West, it is tolerant of a wide range of conditions. Although slow growing, it is long lived. The smooth gray bark becomes fissured with age, creating great character. The dark green leaves have the texture of sandpaper. Birds feed on the small orange-red fruit that remain on the tree through the Winter months.



## Cercis canadensis

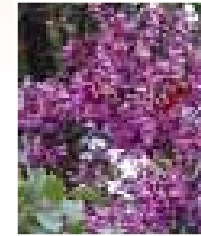
### Eastern Redbud

Redbuds are unrivaled for their incredible spring display of dark purplish-pink flowers. Glossy heart-shaped leaves follow along with papery brown seed pods. There are several fine cultivars available, including a white form. Look for 'Forest Pansy' and 'Oklahoma'.

## Cercis occidentalis

### Western Redbud

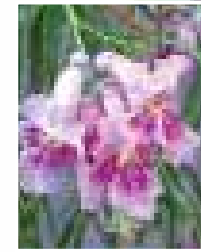
Native to the Southwest, this species of redbud tends to be more shrub-like in appearance and habit than its east-coast cousin, generally developing multiple trunks of short stature. The thick leaves are well suited for Western climates making this redbud quite drought tolerant. Magenta pink flowers adorn the plant prior to leaf emergence in early Spring. Bean pods persist through the year and are nearly as attractive as the flowers.



## Chilopsis linearis

### Desert Willow

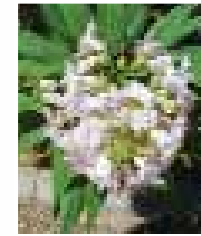
Desert willow is not a true willow, but has narrow willow-like leaves. In the wild, is often found as a multi-trunk shrub. It may be developed into a tree-like form, but it will require a bit of training. Gorgeous pink or white orchid-like flowers are present from late spring into the fall attracting hummingbirds and bees. Cultivars include a variety of dark purple and vivid pink flowers. Try 'Rio Salado', 'Lois Adams', 'Lucretia Hamilton' and 'Warren Jones'. Extremely tough and resilient, this is one of the best flowering trees the desert produces.



## X Chitalpa tashkentensis

### Chitalpa

It has large pink, orchid-like flowers produced in terminal clusters primarily during late Spring and continuing intermittently into the Fall. One of its finest traits is the lack of seed pods. This tree is somewhat brittle and often has awkward branch patterns, but with a little training it can be developed into a nice patio tree. 'Pink Dawn' and 'Morning Cloud' are two cultivar selections found in nurseries.



## Cordia boissieri

### Texas Olive

A large shrub or small tree, this evergreen beauty has large, leathery, dark green leaves. White bell-shaped flowers are borne in clusters from Spring through Fall. The fruit is small, whitish-green somewhat resembling an olive, hence the name. The sweet fruit is edible, but not very tasty. Texas olive can be a bit messy as there is abundant flower and seed litter, so take care where you place it.





### *Ebanopsis ebano* (Pithecellobium)

#### **Texas Ebony**

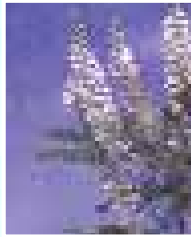
This small southwest native forms a large evergreen shrub or small tree that can vary considerably in size. Normally multi-trunk or low branching they are perfect for desert or native landscapes. It has dark, glossy green leaves on thorny branches with a distinctive zig-zag pattern. Creamy yellow, fragrant flowers are produced in the spring to early Summer, followed by large woody seed pods. It is tolerant of most soils provided drainage is adequate.



### *Eucalyptus microtheca*

#### **Coolibah Tree**

Coolibah is one of the most common Eucalypts planted in the Southwest. This fast-growing, single or multi-trunk tree may become quite large. The leathery leaves have a distinctive blue-green color. Inconspicuous creamy white flowers are followed by small woody capsules that do not pose much of a litter problem. Coolibah can tolerate full sun, reflected heat, strong winds, drought, and modest cold temperatures.



### *Eysenhardtia orthocarpa*

#### **Kidneywood**

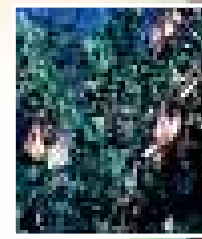
Kidneywood is often considered a large shrub but with modest training it can be developed into a small, multi-trunk tree. The fine-textured foliage is a medium green with a wispy look. Tiny white fragrant (vanilla) flowers occur in terminal spikes throughout the Summer. Butterflies, wasps, and bees are attracted to the flowers for the nectar, and the foliage is larval food. It is tolerant of sun, reflected heat, drought, poor soils, and cold.



### *Fraxinus angustifolia*

#### **Raywood Ash or Claret Ash**

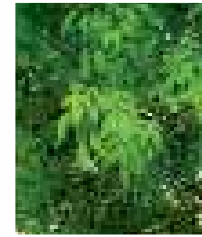
Raywood ash is a refined, decorative tree that produces a dense, pyramidal canopy of dark green, lacy foliage. Sometimes slow to start, once established the Raywood ash will grow quickly even with modest irrigation. Fall color is superb if the weather cooperates, developing a deep purple-red wine color.



### *Fraxinus greggii*

#### **Littleleaf Ash**

This versatile plant is grown as a large shrub, or shaped into a lovely small tree. It will take several years and some judicious pruning for this plant to develop a tree-like form. The bright green foliage looks good all year. Littleleaf ash is a clean and trouble-free plant. The flowers are inconspicuous and fruit is nearly non-existent.



### *Fraxinus velutina*

#### **Arizona Ash**

An exquisite deciduous tree native to much of the Southwestern U.S. Pyramidal in youth, it will eventually develop a broadly oval crown. Fall color is yellow. Cultivars include the vigorous growing 'Modesto' which has smooth, glossy leaves, is more compact and has a superior fall color. 'Fan-Tex' has thicker, darker green leaves and is said to have superior performance in hot climates and poor soils, although Fall color is drab.



### *Gleditsia triacanthos inermis*

#### **Thornless Honey Locust**

Honey locust is a fairly fast growing tree with lacy foliage and an open, graceful habit. Slow to leaf out and early to drop its leaves in the fall, it makes for the perfect lawn tree. The flowers are inconspicuous, but the long, brown seed pods can be a nuisance. There are numerous named cultivars: 'Ruby Lace,' 'Sunburst,' 'Moraine,' 'Skyline' and 'Shademaster'.



### *Koelrueteria paniculata*

#### **Goldenrain Tree**

Similar in appearance to the honey locust, this tree also produces fairly sparse shade. However, it produces very attractive clusters of yellow flowers on the branch tips in the spring. These are followed by reddish-brown fruit that resemble Chinese lanterns. This is an under-used flowering lawn tree.



19 *Ebanopsis ebano*



*Eucalyptus microtheca*



*Eysenhardtia orthocarpa*



*Fraxinus angustifolia*



*Fraxinus greggii*



*Fraxinus velutina*



*Gleditsia triacanthos inermis*



*Koelrueteria paniculata*

S M A L L T R E E S																						
Common Name	Botanical Name	Height	Width	Flower Season			Tree Type	Growth Rate	Water Use			Litter		Spines or Thorns	Landscape Uses				Attributes			
				SPRING	SUMMER	AUTUMN			DECIDUOUS EVERGREEN	SEMI-EVERGREEN	SLOW	MODERATE	FAST		LOW	MEDIUM	HIGH	LEAVES		FLOWERS	FRUIT SEEDS OR CONES	YES OR NO
Acacia, Cat's Claw	Acacia greggii	15	20	•			D	S	M	⊙	⊙				⊙	YES		⊙	⊙	⊙		feathery leaves, fragrant, flower, native
Acacia, Mulga	Acacia aneura	18	18	•			F	S	M	⊙	⊙					NO		⊙	⊙	⊙		formal, civilized
Acacia, Sweet	Acacia farnesiana (=A. smallii)	25	25	•			F	S	M	⊙	⊙		⊙		⊙	YES		⊙	⊙	⊙		fragrant flowers, lacy leaves, good canopy
Acacia, Twisted	Acacia schaffneri	20	20	•			D	S	S	⊙	⊙		⊙	⊙	⊙	YES				⊙		rambunctious form, fun to live with
Acacia, White Thorn	Acacia constricta	10	15	•			D	S	S	⊙	⊙				⊙	YES			⊙	⊙		fragrant flowers
Ash, Littleleaf	Fraxinus greggii	12-15	10-15	•			SE	S	S	⊙	⊙					NO		⊙	⊙			accent tree
Chaste Tree (Vitex)	Vitex agnus-castus	25	25	•			D	S	S	⊙	⊙		⊙		⊙	NO		⊙	⊙	⊙		butterflies, peppery scent, colorful cultivars
Desert Willow	Chilopsis linearis	25	30	•	•		D	M	M	⊙	⊙		⊙		⊙	NO		⊙	⊙	⊙		orchid-like flowers, fragrant, hummingbirds, native
Elderberry, Mexican	Sambucus nigra ssp. cerulea	10-20	25	•			SE	M	M	⊙	⊙				⊙	NO		⊙	⊙	⊙		attracts birds
Jujube, (Chinese Date)	Ziziphus jujuba	15-20	15-20	•			D	M	M	⊙	⊙				⊙	YES				⊙		edible fruit
Kidneywood	Eysenhardtia orthocarpa	18	25	•			SE	M	M	⊙	⊙				⊙	NO			⊙	⊙		fragrant flowers, dark gray bark, striking by colored walls
Laurel, Bay	Laurus nobilis	12-25	12-25	•			F	M	F	⊙	⊙				⊙	NO	⊙	⊙	⊙			fragrant, herbal uses, north walls only, needs protection
Mesquite, Honey	Prosopis torreyana	25	30	•	•		D	F	F	⊙	⊙		⊙		⊙	YES				⊙		native tree
Mesquite, Native	Prosopis juliflora	25	30	•	•		D	F	F	⊙	⊙		⊙		⊙	YES				⊙		native, broad canopy
Mesquite, Screwbean	Prosopis pubescens	15	20	•	•		D	S	S	⊙	⊙		⊙		⊙	YES				⊙		good small tree, interesting fruit & shaggy bark, native tree
Palo Verde, Foothill	Parkinsonia microphylla	10-20	10-20	•			D	S	M	⊙	⊙		⊙		⊙	YES			⊙			bright yellow-green trunk and stems
Redbud, Eastern	Cercis canadensis	25	25	•			D	M	M	⊙	⊙				⊙	NO				⊙		to die for
Redbud, Western	Cercis occidentalis	25	25	•			D	M	M	⊙	⊙				⊙	NO				⊙		to die for
Strawberry Tree	Arbutus unedo	8-30	10-30	•			E	S	M	⊙	⊙				⊙	NO				⊙		interesting fruit and bark
Western Hackberry	Celtis reticulata	15-20	15-20	•			D	S	S	⊙	⊙				⊙	NO				⊙		interesting fruit and bark
Texas Mountain Laurel	Sophora secundiflora	15	15	•			E	S	M	⊙	⊙				⊙	NO	⊙	⊙	⊙			dappled shade, fragrant flowers
Xylosma	Xylosma congestum	10-15	10-15	•			E	S	M	⊙	⊙				⊙	YES	⊙	⊙	⊙			bright chartreuse color

M E D I U M T R E E S																						
Common Name	Botanical Name	Height	Width	Flower Season			Tree Type	Growth Rate	Water Use			Litter		Spines or Thorns	Landscape Uses				Attributes			
				SPRING	SUMMER	AUTUMN			DECIDUOUS EVERGREEN	SEMI-EVERGREEN	SLOW	MODERATE	FAST		LOW	MEDIUM	HIGH	LEAVES		FLOWERS	FRUIT SEEDS OR CONES	YES OR NO
Acacia, Shoestring	Acacia stenophylla	40	30	•			F	M	F	⊙	⊙				⊙	NO	⊙			⊙		long, narrow leaves
Ash, Raywood	Fraxinus angustifolia	25-35	25	•			D	M	F	⊙	⊙	⊙			⊙	NO				⊙		lacy, elegant, formal, good Fall color
Bottle Tree	Brachychiton populneus	30-50	30	•	•		F	M	F	⊙	⊙		⊙		⊙	NO	⊙			⊙		green trunk, good windbreak
Chitalpa	X Chitalpa tashkentensis	20-30	20-30	•		•	D	M	M	⊙	⊙	⊙	⊙		⊙	NO				⊙		orchid-like flowers, fragrant architectural form
Coolibah Tree	Eucalyptus microtheca	30-40	30-40	•			F	M	M	⊙	⊙		⊙		⊙	NO				⊙		herbal fragrance
Goldenrain Tree	Koelerutaria paniculata	20-35	25-40	•			D	M	M	⊙	⊙		⊙		⊙	NO		⊙	⊙	⊙		beautiful flowers & fruit, use often
Japanese Pagoda Tree	Sophora japonica	30-50	30-50	•		•	D	M	M	⊙	⊙		⊙		⊙	NO			⊙	⊙		use often, elegant
Locust, Honey (thornless)	Gleditsia triacanthos inermis	35	35	•			D	M	M	⊙	⊙		⊙		⊙	NO		⊙		⊙		fragrant, fern-like leaves
Mesquite, Chilean	Prosopis chilensis	30	30	•	•		SE	F	F	⊙	⊙		⊙		⊙	YES			⊙	⊙		thornless varieties available
Oak, Chinquapin	Quercus muhlenbergia	30	30	•			D	S	M	⊙	⊙		⊙		⊙	NO				⊙		excellent shade
Oak, Texas Red	Quercus buckleyi (texana)	25-30	25-30	•			D	S	M	⊙	⊙		⊙		⊙	NO				⊙		great Fall color
Olive, European fruitless	Olea europaea	30	30	•			E	M	M	⊙	⊙		⊙		⊙	NO		⊙		⊙		symbol of peace, fruitless varieties available
Palo Verde, Blue	Parkinsonia florida	30	30	•			SE	S	M	⊙	⊙		⊙		⊙	YES				⊙		dainty leaves, blue-green trunk
Sumac, African	Rhus lancea	20-30	20-35	•	•		E	M	F	⊙	⊙		⊙		⊙	NO		⊙	⊙	⊙		good windbreak
Texas Ebony	Ebanopsis ebano (Pithecellobium)	15-40	15-30	•	•		SE	S	M	⊙	⊙				⊙	YES				⊙		graceful
Texas Olive	Cordia boissieri	25-30	25	•			SE	S	M	⊙	⊙				⊙	NO	⊙	⊙	⊙			buy and plant more of these trees
Yew Pine	Podocarpus macrophyllus	15-40	6-15	•			F	S	M	⊙	⊙				⊙	NO	⊙	⊙	⊙			elegant, formal, good hedge, north facing only

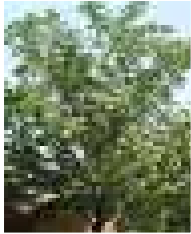
L A R G E T R E E S																						
Common Name	Botanical Name	Height	Width	Flower Season			Tree Type	Growth Rate	Water Use			Litter		Spines or Thorns	Landscape Uses				Attributes			
				SPRING	SUMMER	AUTUMN			DECIDUOUS EVERGREEN	SEMI-EVERGREEN	SLOW	MODERATE	FAST		LOW	MEDIUM	HIGH	LEAVES		FLOWERS	FRUIT SEEDS OR CONES	YES OR NO
Ash, Arizona	Fraxinus velutina	30-60	30-40	•			D	S	M	⊙	⊙				⊙	NO				⊙		good fall color, good canopy
Ash, Fan-Tex	Fraxinus velutina 'Rio Grande'	50	30	•			D	M	F	⊙	⊙				⊙	NO				⊙		very civil, light green color
Ash, Modesto	Fraxinus velutina 'Glabra'	50	30	•			D	M	F	⊙	⊙				⊙	NO				⊙		refined look, strong Fall color
Elm, Lacebark	Ulmus parvifolia	40-60	50+	•			SE	M	F	⊙	⊙		⊙		⊙	NO				⊙		disease free, beautiful bark, must have this tree
Locust, Black	Robinia pseudoacacia	40	30-50	•			D	M	F	⊙	⊙				⊙	YES				⊙		thorny branches, fragrant
Locust, 'Purple Robe'	Robinia x ambigua 'Purple Robe'	40	30	•			D	M	F	⊙	⊙				⊙	NO				⊙		great flower display in Spring, fragrant
Oak, Cork	Quercus suber	30-60	30-60	•			SE	S	M	⊙	⊙		⊙		⊙	NO				⊙		slow growing first 300 years, neat bark, giant canopy
Oak, Escarpment	Quercus fusiformis	50	50	•			F	M	F	⊙	⊙				⊙	NO				⊙		tolerant of alkaline
Oak, Holly	Quercus ilex	30-60	30-60	•			F	S	M	⊙	⊙		⊙		⊙	NO				⊙		great shade tree
Oak, Live	Quercus virginiana	40-50	40-50	•	•		F	S	M	⊙	⊙		⊙		⊙	NO				⊙		good urban tree, elegant form
Oak, Valley	Quercus lobata	40-50	40-50	•	•		D	M	M	⊙	⊙		⊙		⊙	NO				⊙		large acorns
Pine, Aleppo	Pinus halepensis	30-60	20-40	•			E	M	F	⊙	⊙				⊙	NO				⊙		best pine for shade
Pine, Mondel (Afghan Pine)	Pinus eldarica	30-60	15-25	•			E	M	F	⊙	⊙				⊙	NO				⊙		stately tree, good windbreak, uniform size
Pine, Stone	Pinus pinea	40-80	40-60	•	•		E	S	M	⊙	⊙				⊙	NO				⊙		elegant tree, slow growing
Pistache, Chinese	Pistacia chinensis	50	50	•			D	M	M	⊙	⊙		⊙		⊙	NO				⊙		vibrant red Fall color
Texas Umbrella (Chinaberry)	Melia azedarach	30-50	30	•			D	M	F	⊙	⊙				⊙	NO				⊙		fast growing shade tree, fragrant
Zelkova, Japanese (Sawleaf)	Zelkova serrata	40-60	40-60	•			D	S	M	⊙	⊙				⊙	NO				⊙		majestic tree, colorful bark



### *Laurus nobilis*

#### **Bay Laurel**

More commonly found as multi-stemmed shrubs, this quick growing evergreen may be easily trained into a tree-like form. The thick, leathery leaves are highly fragrant and are used to flavor food. This is the bay leaf you would purchase in stores. Inconspicuous flowers are followed by small dark fruit. Plants tend to sucker easily so some effort is required to keep tree-like.



### *Melia azedarach*

#### **Texas Umbrella or Chinaberry**

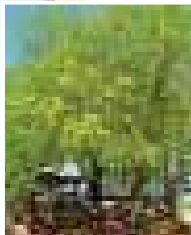
This native of Indochina is tolerant of heat and poor alkaline soils. The species is upright and stately while 'Umbraculiformis' has a dense dome shaped crown. Fragrant lilac flowers are produced in clusters in the spring. Hard, berry-like fruit are messy. Despite this, it is a good choice for small areas.



### *Olea europaea*

#### **Fruitless Olives – Certified 'Wilson' or 'Swan Hill'**

The fruitless varieties are low pollen producers and are the only olives approved by Clark County. Olive trees are tough evergreens adapting to a wide range of soil conditions and temperatures. They can be used as a focal point or a screen. Olives are most commonly grown as a multi-trunk tree. They are extremely drought tolerant once established.



### *Parkinsonia florida*

#### **Blue Palo Verde**

This thorny southwest tree makes for a perfect fit in native and low water use landscapes. It has an open and airy growth habit with blue-green branches bearing tiny blue-green leaves. Masses of light yellow flowers cover the tree in spring. Extremely drought tolerant once it is established, it requires infrequent and deep watering. This beauty is not recommended for lawns.



### *Parkinsonia microphylla*

#### **Foothill Palo Verde**

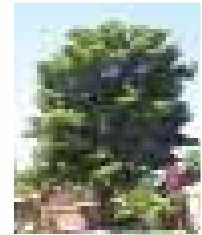
Similar to the blue palo verde, this species is smaller and the floral display is not quite as showy in the spring. It can be trained into a small patio tree or used anywhere in a desert garden because of its small size. Place it away from foot traffic because of the thorny branches. It requires deep and infrequent watering and should not be placed in lawns. Varieties include 'Desert Museum', 'AZT' and 'Sonoran Emerald'.



### *Pinus eldarica*

#### **Mondel Pine**

This pine is native to the deserts of Afghanistan. It has dark green needles and a uniform pyramidal growth pattern that makes it a great wind screen. The afternoon shadow cast from the tree can shade your house or patio saving energy or creating a bearable living space in the heat of the summer. It is a moderate to fast grower so make sure that it is planted where it will have ample room to grow.



### *Pinus halepensis*

#### **Aleppo Pine**

Another desert pine of the Mediterranean, this pine has lighter green needles than those of the Mondel. It has an irregular growth habit that makes a unique silhouette. Provide ample space. Aleppo pines grow in many soil types and are quite drought tolerant.



### *Pinus pinea*

#### **Italian Stone Pine**

Italian stone pine is originally from the Mediterranean region. Tolerant of heat and drought, this pine has a globe shape while young but broadens into an umbrella canopy as it matures, slowly reaching 50 feet in diameter. It may be planted as a screen or specimen tree.



23 *Laurus nobilis*



*Melia azedarach*



*Olea europaea*



*Parkinsonia florida*



*Parkinsonia microphylla*



*Pinus eldarica*



*Pinus halepensis*



*Pinus pinea*



### *Pistacia chinensis*

#### **Chinese Pistache**

This ornamental pistache is a medium size, slow-growing tree. Separately sexed, both male and female trees have inconspicuous flowers with the female producing small inedible red fruit. Plant this tree in well drained soils and water deeply. 'Sarah's Radiance' is a cultivar with pale purple fall coloring. 'Red Push' is a very attractive hybrid with a riot of Fall color.



### *Podocarpus macrophyllus*

#### **Yew Pine**

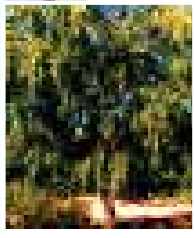
This narrow, upright evergreen medium tree can be used as a hedge, screen or background plant. The slow to moderate growth makes it an excellent plant for small yards. Small narrow leaves allow for shearing into a formal look if desired. Although quite tough once established, most plants look best if provided some afternoon shade.



### *Prosopis chilensis*

#### **Chilean Mesquite**

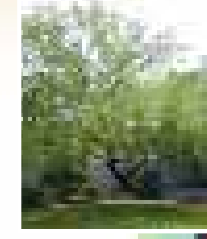
This fast growing semi-evergreen tree has a full, wide spreading canopy. Most seedlings produce prominent thorns, but there are many selections of hybrid, thornless varieties including 'Phoenix' and 'AZT'. Mesquites should be irrigated deeply and infrequently to encourage deep rooting and to slow top growth.



### *Prosopis glandulosa var. torreyana*

#### **Honey Mesquite**

A native to the southwestern U.S, this deciduous tree is most commonly grown as a multi-trunk specimen. This tree has a picturesque structure with sprawling, wide-spreading branches. The deep green compound leaves also have a pair of sharp spines at the base. A thornless variety known as 'Maverick' is available.



### *Prosopis juliflora*

#### **Native Mesquite**

This thorny deciduous tree is also known as *Prosopis velutina* or velvet mesquite. One of the hardiest mesquites, it is extremely drought and cold tolerant. It has ferny gray-green leaves and yellow caterpillar-like flowers. Generally multi-trunked or low-branching it develops dark, shaggy bark on twisting trunks.



### *Prosopis pubescens*

#### **Screwbean Mesquite**

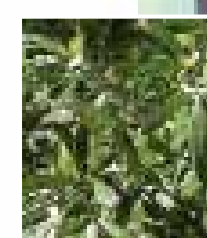
This deciduous, thorny southwest native forms a small multi-trunked, shaggy bark tree. The small compound leaves are a bluish green. Fuzzy, yellow caterpillar-like flowers are produced in the spring followed by seedpods that spiral like a corkscrew.



### *Quercus buckleyi (Quercus texana)*

#### **Texas Red Oak**

Native to Oklahoma and Texas, this deciduous oak has large, deeply lobed bright green leaves. If the weather cooperates the foliage turns bright red in the Fall. Growing slowly to create a stately specimen, this tree should be given adequate room to develop. It is best suited for areas near lawn and away from reflected heat exposure.



### *Quercus fusiformis*

#### **Escarpment oak**

A slow growing and long lived tree native to west Texas, this oak is more drought tolerant and cold hardy than the coastal live oak. It has small, oblong, leathery dark green leaves that create a dense shade. It will eventually form a rounded canopy 50 feet in diameter.





### *Quercus ilex*

#### **Holly Oak**

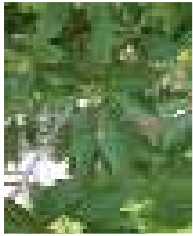
This evergreen oak is native to the Mediterranean where it is known as the Holm Oak. The dark green leaves are variable, with some having smooth margins and others with small teeth much like a holly. This oak is tolerant of lawn conditions, growing slowly to create a large rounded canopy.



### *Quercus lobata*

#### **Valley Oak**

This large deciduous tree grows slowly to develop into a stately specimen. The trunk and limbs are a mottled gray color. The rather small, medium green leaves have prominent, deep lobes. The acorns produced are massive, often over 2 inches in length. It is considered quite tolerant of heat and alkalinity and makes for a decent lawn tree.



### *Quercus muehlenbergia*

#### **Chinquapin Oak**

Native to west Texas, this deciduous tree has large oval green leaves with wavy margins. In the fall, the leaves turn orange and bronze. A large number of acorns are produced each year. This species of oak will grow more rapidly than others in hot desert conditions. It is tolerant of alkaline soil, heat and wind. This tree does quite well in lawn conditions.



### *Quercus suber*

#### **Cork Oak**

This slow growing evergreen is native to the Mediterranean. The dark green leaves are similar to the holly oak. The thick bark is the source of natural cork that is harvested for commercial use without harm to the tree. Older trees eventually create massive specimens so allow plenty of room to spread. An excellent tree for desert conditions, it prefers amended soils.



### *Quercus virginiana*

#### **Southern Live Oak**

This stately tree creates a wide spreading canopy with dense shade. Mostly evergreen, the small leaves are quite variable in size and shape. Extremely long-lived, and tolerant of a wide variety of conditions, this is an excellent tree for turf conditions. Variety 'Heritage' is more tolerant of alkaline soils.



### *Rhus lancea*

#### **African Sumac**

This evergreen tree may be grown as a single trunk or multi-trunked specimen with light green, compound leaves. Inconspicuous Spring flowers are followed by clusters of small white berries. An excellent tree for hot, reflected heat locations, this sumac is well suited for desert conditions.



### *Robinia X ambigua*

#### **Common Locust**

This fast growing, thornless shade tree is tolerant of poor soils and extreme heat. It is prized for its beautiful bouquets of fragrant, wisteria-like Spring flowers. Cultivars include 'Idahoensis' with rose-pink flowers and 'Purple Robe' with dark magenta flowers.



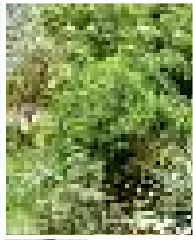
### *Robinia pseudoacacia*

#### **Black Locust**

This is a large fast growing deciduous tree. While the bark of young saplings is smooth and green, mature trees can be distinguished by bark that is dark brown and deeply furrowed. Leaves are dark green and pale beneath. Fragrant white flowers appear in drooping clusters in May and June, producing long smooth fruit pods.







### *Sambucus nigra ssp. cerulea*

#### **Mexican Elderberry**

This elderberry is a large, multi-branched, thicket-forming shrub or small tree often with several trunks. It has a compact, rounded crown. The numerous, small, whitish flowers appear in large fragrant clusters, resulting in a bluish fruit used in jams and pies. Elderberry prefers moist, well drained, sunny sites, requiring little to moderate water once established.



### *Sophora japonica*

#### **Japanese Pagoda Tree**

This is a medium size deciduous tree. Fruiting pods are bright green changing finally to yellow-brown. Japanese pagoda tree will take sun and partial shade and performs best in loamy well-drained soil. Once established, it withstands heat and drought well.



### *Sophora secundiflora*

#### **Texas Mountain Laurel**

This attractive spring-flowering small tree has glossy, evergreen leaves and beautiful purple wisteria-like blooms smelling of grape "Kool-aid." They often produce multiple trunks, and over time grow into show-stopping specimens. Texas mountain laurel are generally disease and pest-free, tolerate a wide range of well-drained soils, and will tolerate full sun or light shade.



### *Ulmus parvifolia*

#### **Lacebark Elm**

This elm has colorful bark that flakes in small thin plates. This is a handsome, fast growing tree, often with a trunk that forks and produces a vase shape. Lacebark elm is considered semi-evergreen and almost evergreen in areas with mild winters. It is adaptable to most soil types. Foliage in Autumn often turns shades of red and purple. Lacebark elm is especially attractive in Winter. It is a tough tree, tolerant of urban air and soils and resistant to Dutch elm disease. Fast-growing and adaptable, this is a good choice when you want a shade tree for a large landscape.



### *Vitex agnus-castus*

#### **Chaste Tree or Vitex**

This deciduous, large shrub or small tree grows rapidly. The grayish green leaves are strongly aromatic. Numerous lilac-like flowers at the branch tips, are either blue or cream color. Vitex is extremely tolerant of dry soils once established. With ample water it tends to grow quickly, but generally remains shrubby. Chaste tree does well in lawns.



### *Xylosma congestum*

#### **Xylosma or Shiny Xylosma**

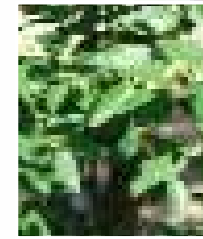
Xylosma is a multi purpose evergreen landscape plant. As a large spiny shrub, Xylosma always looks good and is easy to maintain. Once established, growth is moderate to fast. Trained as a small, single trunk garden tree, it can reach 20 feet high in 15 years. Leaves are shiny, bright green with the new leaves giving a bronzy cast. It is well suited for small planters and large containers.



### *Zelkova serrata*

#### **Japanese or Sawleaf Zelkova**

This deciduous tree has an attractive vase shaped form when young and a rounded umbrella-like habit when mature. Older trees produce a majestic canopy. The bark is smooth and light gray which peels to reveal orange patches. The foliage usually puts on a showy display in Fall when the leaves turn yellow then orange or red before dropping. This tree performs well in lawns.



### *Ziziphus jujuba*

#### **Jujube or Chinese Date**

The jujube is a small, deciduous tree with graceful, branches growing in a zig-zag pattern. The wood is very hard and strong. The leaves are shiny bright green and turn bright yellow in the Fall. Small yellow flowers in late Spring or early Summer produce brown, fleshy edible fruit. The jujube can withstand a wide range of temperatures.



## Guide for Planting a New Tree

Dig your hole so that the bottom of the pit is at least 2 times wider than the rootball and the top is at least 3-5 times wider. The hole should be only as deep as the rootball.

Reserve the displaced soil, removing large (over 3/4 inch) rocks.

Fill the hole with water. If it drains within two hours, proceed. If not, dig a chimney tunnel at the base of the hole to break through to a more porous level.

Mix your reserved soil thoroughly with a planting mix or organic material at a rate of 2 parts native soil to 1 part amendment (You may decide not to include organic material when planting desert trees. Additional information is provided on Page 32 in this booklet.) Soil sulfur mixed in at this time will help to neutralize alkaline soils. Set aside a portion of the native soil to build a raised berm for deep watering.

Carefully set the rootball into the hole making sure that the trunk flare remains above grade.

Backfill the hole with amended soil and/or native soil, tamping lightly as you go. Bring soil level even with the top of the rootball. If you are using slow-release fertilizer tablets, add them at this time.

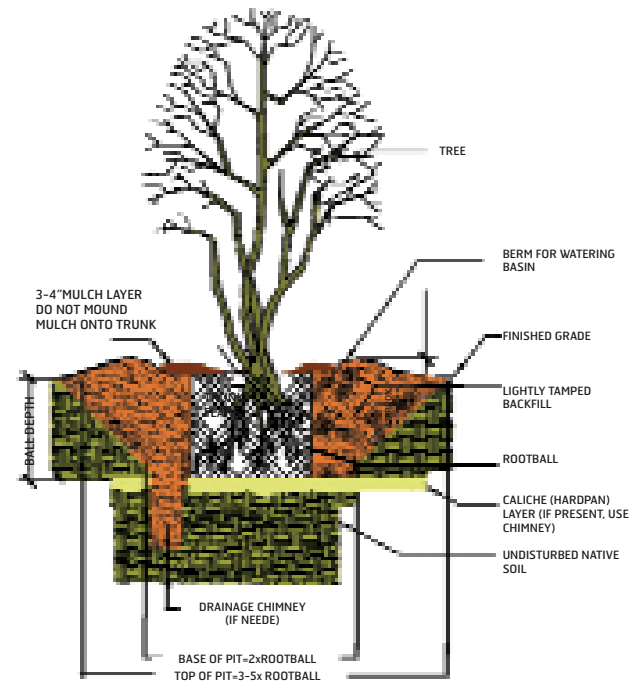
Build a 4 inch ring of soil (berm) at the outer edge of the planting pit. This will keep the water in the area of the rootball. Water in and let settle; add additional soil to compensate for settling.

Add a 3-4 inch top layer of organic mulch. This will help conserve soil moisture. Be careful not to mound mulch up onto the trunk of the tree.

Remove the nursery (transportation) stake at this time. This stake, which is tied securely to the tree by the grower should never be left in place following planting. If staking is required, do so utilizing the proper technique as described in Page 33.

## Guide for Planting a New Desert Tree

Recent research seems to indicate that most desert trees and shrubs ultimately do better when planted in soil that has **not** been amended with organic material. This seems to be because rich organic material often harbors disease causing microorganisms against which desert plants have no defense, coming as they do from organically deprived soils. Most researchers recommend simply digging a large hole, removing rocks and correcting drainage if necessary, and then providing organic material at a slow rate through surface mulching. Since most of these studies occurred in regions with somewhat richer soil than ours, avoiding organic amendment altogether may not be wise, but it is certain that the use of lots of humus combined with excessive Summer watering has killed many desert landscape plants in Southern Nevada.

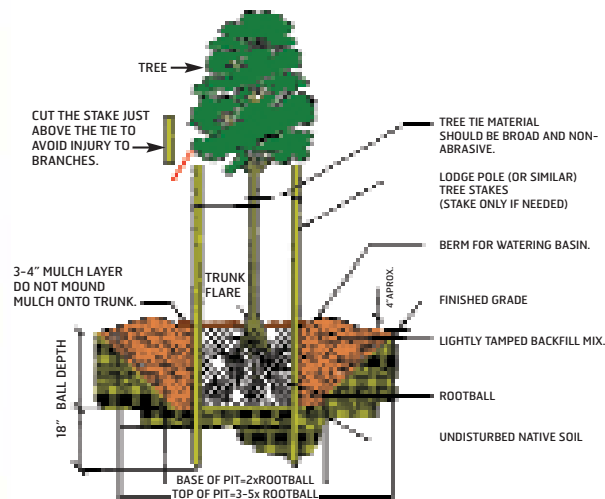


## Stakes Should be “Well Done!”

**If you recall nothing else after reading this, please remember these three items:**

- 1) Always remove the transportation (nursery) stake that is supplied with the tree!
- 2) Do not stake a tree unless it is absolutely necessary!
- 3) Remove the stakes and tie material as soon as possible!

Most trees, if installed and maintained properly, should not require support from stakes or guy wires. The trunk of a healthy, well-developed tree should be strong enough to hold itself upright.



The primary reasons for staking a tree are to support the trunk in an upright position and/or anchor and stabilize it during periods of high wind. Trees in open, exposed areas such as commercial parking lots and parks are more likely to require staking than those planted in protected areas. Wind can push against the crown (upper branches, leaves, etc.) as it does against a sail and can blow the tree over or move it in the soil. Even slight rootball movement can break new roots and slow down establishment. Stakes help to stabilize the tree until sufficient root mass grows to hold the tree firmly in the soil and the trunk develops sufficient girth to hold the tree upright.

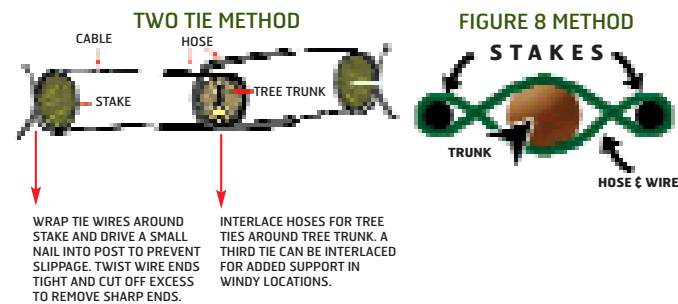
If staking is deemed necessary, it should be done properly as incorrect staking and/or tying can do more harm than good. Trees with trunk diameters of 1 to 3 inches usually require two stakes. Wooden poles are the most popular type and are readily available at most nurseries. One stake should be set on the opposite side of the other. Keep the stakes at least 12 inches from the trunk to prevent damage to the bark tissue. You will be tempted to keep the stakes close to the tree as the soil will be soft and easy to penetrate. However, doing this will not properly anchor the tree. Stakes need to be set outside the planting pit or driven through the pit into undisturbed soil (do not drive the stake through the rootball).

Once the stakes are in place, the tree then needs to be secured to them with tie material. The tie material needs to be placed where the tree needs the support. To determine this location, simply grasp the tree near the base and slowly move your hand up the trunk. Where the tree stands erect (it is no longer bending over), tie the tree in that spot.

There are numerous types of tie material available. Regardless of the material used, it should contact the trunk with a broad, flat, flexible, non-abrasive surface. Nylon cord, wire and/or string should never be used. Two separate ties, one secured to each stake, or one “figure 8” tie can be used (see diagrams). The stakes should remain stationary and the upper portion of the tree and ties should sway slightly. Some movement is necessary for the development of a strong, tapered trunk.

Finally, cut the top of the stake off above the ties. This will prevent branches from rubbing against the stakes and being damaged.

Remember: If you decide to stake your tree, make certain to check the stakes and the ties periodically and adjust them as needed to avoid injury to the tree. Stakes need to be removed as soon as possible.





## Impermeable Subsoil

- Increase soil depth.
- Select shallow-rooted and water-tolerant plants.
- Install drain pipe/tile system.
- Plant trees on the higher location to encourage natural drainage.
- Avoid planting trees in low-lying areas.
- Install site or inspection tubes in planting pits.

Poor drainage can be improved with drain tiles or other artificial drainage systems. Drainage can and should be improved if possible by grading or installing drain tiles to carry water away. Pipe systems should be covered with a geotextile sock to prevent infiltration of soil and/or roots.


Special planting methods can also be used to deal with poor drainage. On flat sites or sites with moderate drainage or compaction problems trees can be planted shallow, with one-third or more of the rootball above grade and the backfill soil mounded up to cover the root system. Trees can even be placed on top of the existing problem soil with their roots surrounded by a mound or berm. Such trees can do well but might have a fairly small root system. They will need more care and attention than trees on better sites.

## Protecting Established Trees During a Landscape Conversion

The removal of turf grass greatly reduces water usage. Therefore, it helps the environment and saves you money. Unfortunately, there are some risks involved and if you don't protect your established trees during this procedure, they can be put under a great deal of stress and possibly die.

Trees and lawns don't necessarily get along as they both compete for sunlight, water, nutrients, and oxygen. However, once the tree has established itself in a lawn disruption to the growing conditions such as removing the grass can also carry its share of problems.

So, how can we protect our trees and minimize stress during the landscape transformation? First, make certain that the trees are healthy enough to undergo the environmental change. Are the trees already declining? Are they worth saving? Will they be able to adapt to their new environment? If so, you will need to take some precautions.



Plan turf removal during cooler times of the year. Moisture loss from tree leaves is usually lower and, therefore, the need to replenish water will also be less. Water the tree deeply several times in the weeks prior to the project date enabling it to build up some reserves.

The use of herbicides and a dethatcher are preferred to tractors to kill and remove the grass. Heavy equipment can crush existing tree roots, break branches, and wound bark tissue. In the event it becomes necessary to use a sod cutter, tractor, or other heavy equipment, a protective barrier should be erected at the dripline of the tree(s).

A temporary fence around the tree at the edge of the canopy (dripline) will help to keep renovation equipment a safe distance from the tree and avoid physical injury to the trunk, branches and roots. Also, examine the area around the trees and attempt to identify some of the roots that are close to the surface and protect them.

Irrigation renovation is probably the most important step and is usually done incorrectly. When installing the new irrigation system you must supply water where it will be most needed: under the canopy, at the drip line and beyond!

Too often in landscape conversion projects, 3 or 4 drip irrigation emitters are installed at the base of the tree. Now, this is fine for a newly planted tree, but an established tree? No Way! Emitters must be installed in a pattern and quantity that will most benefit the tree. The regeneration of feeder roots will require the application of adequate amounts of water. Your goal is to provide 50 to 75 percent of the water (depending on tree variety) that was being applied to the root zone before you removed the turf grass.

As you finish the project, don't use plastic sheeting under the rock or organic mulches. Water and oxygen cannot penetrate the film. Use landscape fabric (weed barrier), which allows the penetration of water and oxygen yet reduce weed growth. Fabric generally costs a little more than plastic, but the benefits and longevity of the material are far greater.

Finally, the mulch, whether rock or some other type, must be installed correctly. If it is too deep, it can actually cause significant harm to trees and other landscape plants, by keeping excessive amounts of water in the root zone. Avoid piling mulch against the trunk or stems of plants, as this can also lead to a stressful condition. Keeping mulch to 2-4 inches thick and tapered away from the base of your trees will provide much better results.



## Heat Stress

Some of the trees that we plant in our landscapes will suffer from heat stress when temperatures rise above 95°F. This happens because the trees are unable to transpire or use water evaporation to cool their tissues. Heat stress is usually caused by high temperature, high winds, high light intensity, reflected sunlight and heat, and low humidity. Symptoms include leaf scorch, sunburn, sunscald, wilting and an overall unhealthy appearance. Most drought-tolerant and native trees handle heat stress through specialized mechanisms.

To aid your tree in handling heat stress always remember to water properly, aerate the soil under the tree at least once a year, and never prune or fertilize during the hot months.

To avoid or lessen the effects of heat stress choose the right tree for the right place in your landscape. Things to consider when choosing the right tree: 1) the exposure of the tree to the sun, buildings, walls, sidewalks, etc; 2) soils that will be used to plant the tree; 3) types of mulch being used; 4) time of year of planting and 5) long-term care of the tree. Heat stress is a temporary condition and the symptoms should disappear when cooler temperatures prevail.

## Pruning and Fertilizing

Light pruning can be done any time of year; heavy corrective pruning should be done mid-winter for deciduous trees and early spring for evergreens. Low branches on young trees should be left whenever possible; they shade the trunk and help build strong trunks. Never remove more than the lower 1/3 of the branches.

The purpose of pruning is to enhance the look and health of a tree. Good pruning is difficult to copy by just looking at a well-pruned tree. On the other hand, anyone can copy bad pruning. Don't maim your trees and shorten their lives by incorrect and uncorrectable pruning. Good pruning takes good tools and a little training but the results are healthy, shady, beautiful trees. If you are unsure of how to prune, see Resources (Page 40) for educational classes or seek professional arborist help. It will be worth your investment.

Fertilizing can be done twice a year or more often if care is used. Try a granular fertilizer such as 7-7-7, 15-15-15 or 16-8-4 applied according to directions. More is not better.



## DO'S and DON'TS of Tree Care

1. Do water properly—don't under or overwater.
2. Do plant your tree at the proper level—don't plant it too shallow or too deep.
3. Do protect its roots—don't damage them during planting or construction.
4. Do plant the tree where it will have room to grow—don't plant it where it will grow into your house, pool, walls, sidewalks, power lines, etc.
5. Do make sure that you are planting the right tree for the right place in the landscape—don't plant desert trees in the lawn.
6. Do make sure that you maintain a healthy growing environment—don't drastically alter its environment after the tree has been planted.
7. Do prune correctly—don't do excessive pruning that causes stress and unhealthy trees.
8. Do protect your trees from mechanical damage—don't hit it with the lawnmower or weed-eater constantly.
9. Do fertilize or use pesticides when necessary—don't overuse fertilizer or pesticides thinking that more is better.

## EEO statement

All programs and assistance of the High Desert RC&D Council are available without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. High Desert RC&D is an equal opportunity service provider.

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### Contributing Editors

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## Photos / Illustrations

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Thank you, Teri!

## Resources

### Public Gardens and Parks:

Acacia Demonstration Gardens  
Alan Bible Interpretive Center, Lake Mead  
Bootleg Canyon Park  
City of North Las Vegas Civic Center Garden  
Clark County Museum Mojave Outdoor Classroom  
Clark County Wetlands Park  
Ethel M Chocolates Botanical Cactus Garden  
The Gardens at the Springs Preserve  
Red Rock Canyon National Conservation Area  
Southern Nevada Veterans Home, Boulder City  
UNLV Arboretum  
Veterans Memorial Park, Boulder City

### Agencies

City of Boulder City  
City of Henderson Parks and Recreation  
City of Las Vegas  
Clark County Parks and Community Services  
Nevada Division of Forestry  
Nevada Department of Agriculture  
North Las Vegas Parks and Recreation  
Southern Nevada Water Authority  
University of Nevada Cooperative Extension

### Groups

H2O University  
Nevada Federation of Garden Clubs  
Nevada Shade Tree Council  
Nevada State Tree Nursery  
Southern Nevada Arborists Group

### Important Websites

[www.azt.com](http://www.azt.com)  
[www.desertuse.com](http://www.desertuse.com)  
[www.lvsnag.org](http://www.lvsnag.org)  
[www.msw.n.com](http://www.msw.n.com)  
[www.treesaregood.com](http://www.treesaregood.com)  
[www.unce.unr.edu](http://www.unce.unr.edu)  
[www.usda.gov](http://www.usda.gov)

### Recommended Reading

Arboriculture – Integrated Management of Landscape Trees, Shrubs and Vines. Richard Harris, James Clark and Nelda Matheny. 3rd edition. Prentice-Hall, Upper Saddle River, NJ. 1999.

Desert Landscaping: How to Start and Maintain a Healthy Landscape in the Southwest. George Brookbank. University of Arizona Press, Tucson, AZ. 1992.