

Ornamental Tree Care

Introduction

Ornamental or landscape trees are often planted to improve the aesthetics of your property or to improve environmental conditions such as shading a sunny area, providing a wind-break, etc. Because trees are long-term investments, it is important to select trees that are suitable to the climate, soil type, site, and light/wind conditions of the planting location. Initial placement, planting method, and ongoing care can all influence the health and longevity of the tree.



The majority of a tree's roots lie within the top 2 feet of soil and may spread 2 to 3 times wider than the height of the tree. These roots hold the tree in place and absorb water and nutrients. Steps taken during planting to encourage the growth of these roots can reduce establishment time and improve tree survival and stability. Irrigation method, frequency, and duration can also impact tree health.

Site Selection

Things to consider when selecting a planting site.

- Consider the mature tree size. Plant trees far enough away from buildings so that fallen leaves don't clog gutters, branches and debris don't touch roofs, and fire-wise guidelines are maintained.
- Know where the underground and overhead utility lines are located and maintain a safe distance.
- Consider root-growth patterns; they differ by tree species. Some trees have lots of surface roots that can raise sidewalks and driveways.
- Know the location of sewer connections, leach fields, and septic systems. Tree roots do not search for water, but if they happen to be growing where there is a broken or leaking sewer line this could lead to problems.
- Avoid planting trees in lawns. Trees need infrequent, deep watering; lawns need more frequent, shallower watering. Tree trunks growing in lawns are targets for lawn mowers and line trimmers; cuts in the bark are entry points for insects and diseases.

- Test the soil to ensure there is proper drainage. Dig a hole 1-foot deep and fill dry hole with water; do this twice in one day. If water is still standing 24 hours after the second filling, don't plant there (or solve the drainage problem if possible).
- Consider tree placement. Deciduous trees can moderate indoor temperatures when placed on the south and west sides of a building. Evergreens will permanently screen sunlight and can be used to increase privacy.

Tree Selection

Choose the species of tree to be planted according to the available space. Larger trees are often more expensive and you may be able to plant smaller. Seedling trees have the greatest success when replanted and grown in containers for at least one year. One-gallon trees are successful in protected areas such as private yards. Five-gallon trees and larger should be planted in public areas where there is potential for dogs, cats, and kids to damage smaller trees.

Select trees that are known to perform well in your local area. Consider the elevation, water requirements, tolerance for alkaline soil, cold hardiness, etc. Trees that do well in elevations above 7000 feet, like aspen, are susceptible to diseases in Yavapai County. Trees such as poplar, cottonwood, and willow that are indigenous to riparian areas require unlimited access to water and usually have a short life span in our arid environment.

Consider planting both evergreen and deciduous trees for year-round eye appeal. Many damaging insects are specific to one tree species. Planting a variety of species will help ensure minimal impact to your landscape.

Planting

Planting ornamental trees in native soil (i.e. no soil amendments such as mulch) will help the trees acclimate more quickly. Adding amendments to the planting hole will encourage the roots to stay in that "safe" environment, rather than spreading, which will help with stability and moisture absorption.

Yavapai County soil can be very alkaline. Adding some soil sulfur to the bottom of the planting hole will help reduce alkalinity, which may be helpful for some trees. Fertilizers are not recommended for newly planted trees.

Container grown trees

Plant in spring or fall. Dig the planting hole only as deep as the root ball, and 3 to 5 times as wide as the root ball; the sides of the hole should be rough and sloped (not smooth or vertical). Fill hole with water and let it drain out. Remove plant from container. Check for circling roots, especially near the base of the root ball. If present, cut the roots in two places to avoid a root-bound condition in later years. Set the tree in the hole; the top of the root ball should be even or slightly above the ground. Backfill with non-amended, native soil, firming it until the hole is filled. Make a watering basin. Water deeply.

Ball and burlap trees

Plant in spring or fall. Dig hole as stated above. Set tree in hole with burlap still around the roots. Add enough non-amended soil around the root ball to hold the tree stable. Cut the twine that is holding the burlap and spread burlap open - do not remove the burlap; it will rot away in time. Continue adding soil and tamping. Make watering basin and water deeply.

Bare-root trees

Plant in winter or early spring. Dig hole as stated above. Spread roots evenly over a cone of soil, snipping off any broken roots. Place tree in hole so old soil mark (visible on stem) will be at surface level of surrounding soil. Add more non-amended soil and firm it around the tree. Water slowly. Finish filling the hole to ground level. Make watering basin and soak soil.

For more planting information, see U of A publication "Planting Guidelines: Container Trees and Shrubs", Number AZ1022.



Staking

When planting, remove the nursery stake, as it prevents the tree from developing strength and taper. Tree wood strengthens in response to wind and its own weight. If the tree will not stand on its own after removing the nursery stake or if you live in a very windy area, install two wooden tree stakes on opposite sides of the tree. Drive the stakes at least six inches into undisturbed soil below the root ball. Use flexible tree ties and allow some movement while preventing damage to the trunk. Cut off the tops of the stakes to prevent damage to nearby branches. Staking should also prevent movement of the root ball allowing new roots to extend into the native soil.

To determine the height to place the ties, after removing the nursery stake from the tree, hold the trunk with one hand a few inches above the ground. If the trunk leans over, move a few inches up the trunk, and try again. Continue until you find the lowest point at which the tree will not bend. Place ties about six inches above this point. Attach only one tie to each stake.

Check ties periodically to ensure they are not damaging the tree. Remove the stakes as soon as possible, usually 1 to 2 years after planting.

If sunburn could be a problem, you may consider painting the trunk with a solution of 50% white latex paint and 50% water.

Mulching

Applying a 3- to 4-inch layer of mulch on top of the soil conserves water, cools the soil, and prevents some weeds from establishing. Tree roots can extend out up to three times the diameter of the canopy, so apply mulch to as much of that area as possible, keeping it a few inches away from the trunk. Chipped woody material, leaves, gravel, landscape fabrics, even cardboard can be used as mulch. The soil surface should not have plastic under mulch material. Plastic not only prevents water from soaking in, but also prevents oxygen from getting to living roots. Organic mulches are preferable to inorganic.

Transplant Time

Winter is the best time to transplant deciduous trees, after they have dropped their leaves. Fall is the best time to plant evergreens.

Fertilizing

If you have selected appropriate species and your irrigation is effective, there should be no need to fertilize landscape trees. Fertilization encourages fast growth and creates greater leaf area. This growth will only increase water demand and will likely make the tree more attractive to damaging insects or diseases. The only appropriate time to fertilize is when the tree displays a nutrient deficiency.

Iron Chlorosis

Iron is one of the essential elements for plant growth. Factors that reduce the availability of iron include over-watering, poor drainage, and high soil alkalinity. Symptoms of iron deficiency are chlorosis (green veins with yellow or whitish areas in between) on new growth. Older leaves remain green. Severely affected plants may fail to grow, flower, or fruit. In conifers, the needles turn yellow and drop. Trees most frequently affected include poplar, maple, cottonwood, sycamore and willow.

Adding soil sulfur to the soil can help acidify the soil to overcome this deficiency, but it is very difficult to apply enough to make a significant difference on trees.

If the iron deficiency is due to soil alkalinity, the fastest way to overcome it is to apply chelated (pronounced kee-lated) iron to the foliage. Chelated iron may also be applied to the soil, but will take longer to work. Chelated products have been prepared in a specific way to keep them readily available for absorption once they are introduced into the soil. The chelation process prevents them from being rendered unavailable by alkaline compounds in soil.

If the iron deficiency is caused by over-watering or poor drainage, applying iron may not cure the problem. As stated above, trees should be watered deeply and infrequently.

Pruning

Landscape trees establish faster and develop stronger trunks if they are not pruned for at least the first year after planting. Leave small, "temporary" branches on the lower trunk. If they are too large, they can be headed back to 6 to 10 inches; these small branches provide carbohydrates that are necessary for trunk caliper development, making it more resistant to wind, producing more taper, and reducing the need for staking. Also, if too much foliage is removed too early, tender young bark may sunburn. Selectively prune out misplaced branches the following winter.

As the tree matures, do not prune unnecessarily. Pruning produces wounds and consumes energy that would otherwise be available for metabolism and growth. Never use pruning paints or sealers. They keep the wound moist and protected, creating perfect conditions for growth of decay micro-organisms, and they retard the healing process.



When to prune:

- Conifers - anytime, but pruning during dormant season (late fall/early winter) may minimize sap and resin flow from cut branches
- Live oaks - late winter
- Deciduous trees - when dormant (avoid pruning sap producers like maple in late winter & early spring)

Watering

For maximum tree growth, the water needs must be satisfied throughout the year - even in winter. Watering frequency during the growing season can vary from 7 to 28 days, depending on variety, age of tree, climate, and soil type. It is important to soak the entire root zone of the tree during each irrigation. Keep the water away from the trunk of the tree. On mature trees, most of the roots are within the top 2 to 4 feet of soil. Trees in planted beds should be watered from a sprinkler valve separate from frequently watered plants such as grass and annual flowers. Water trees deeply and infrequently. Use a soil probe, a metal rod, or an auger to determine soil moisture before watering. Irrigate trees in the early morning or evening. Do not spray water on the leaves at night as it could promote fungal diseases. Avoid situations where water contacts the bark and/or foliage. This can lead to disease and deposit salts.

Young trees have small root systems and require close attention. To establish trees the first month, water every other day for about two weeks. Cut back to two or three soakings a week for two more weeks. Always check soil moisture before watering, especially if the weather is cool or wet. Continue watering most trees once a week in the summer. If a tree is drooping or has leaf burn, you may not be watering enough. During the second year, cut back on the frequency, but not the duration of your watering. It may take 3 to 5 years of regular watering before drought-tolerant trees can survive a low-water schedule.

As long as the leaves remain on the tree, they will use water. Irrigation may also be required in the winter, especially if winter rains are inadequate.

Trees can be effectively watered with drip emitters, bubblers, soaker hoses, or flood irrigation (i.e. filling basins). Most tree roots that absorb the water are not at the trunk, but rather out to the drip line and even further.

Drip emitters—After the first year or two, add more drip emitters and move them out toward the drip line. Check emitters often, as they can clog. The length of time the water should be applied depends on how many gallons per minute the device emits and how many emitters are around the tree.

Soaker hoses are effective but must be moved from tree to tree.



Basins are a common way to water trees where there is relatively level ground. Three to four inches of water can soak in and provide long lasting irrigation. Water can be applied manually or with bubblers. The basin should be enlarged as the tree grows. Water should be applied above the root system and should not be concentrated at the base of the trunk; this can lead to butt rot. To avoid this situation build a small berm just away from the trunk and a larger berm at the tree's drip line (like a donut). Water in the donut, not the donut hole.

Some landscape trees are very sensitive to excess salt - either in the soil or in the irrigation water. Symptoms of salt burn may be brown or yellow margins on leaves and a white powdery crust on the soil surface when dry. Frequent, shallow irrigations can cause salt to accumulate in the root zone. You can remove much of this salt by leaching the soil. To leach the soil, apply a slow, steady irrigation over a period of 6 to 8 hours. Late fall is a good time to do this leaching because trees are less physiologically active and not as susceptible to water logging.

Common Problems

Fertilization or Over-fertilization

When a tree is stressed, we need to slow down the metabolism so DON'T add nitrogen fertilizers. Nitrogen increases the tree's processes and can cause the tree to decline at a faster rate.

Water Stress (not enough water)

Water stress symptoms are slow loss of leaves during the growing season from the bottom upward or from the inside outward. Decreased growth may also be evident. Pest and disease problems are also common on water stressed trees.

Compacted Soil

For optimum tree growth soils require water as well as an adequate oxygen supply and relatively low levels of carbon dioxide. When soils are extremely compacted, the normal balance of oxygen and carbon dioxide is interrupted, and water may be unable to penetrate the soil. Symptoms of soil compaction do not occur immediately, but trees show signs of progressive decline over a period of years. Symptoms include reduced twig growth, reduced leaf size, yellowing of foliage, and twig dieback. Minimize traffic and do not park cars above a tree's root system. If construction projects are scheduled, place a temporary fence above the tree roots.

Changed Grade

The construction of new sidewalks, roads, and housing developments often results in severe damage to existing trees. The resulting symptoms are similar to those caused by soil compaction. Excessive fills or even just the establishment of turf will reduce water and air movement through the soil. Grade changes by excavation or addition of more than 6 inches of soil over the existing soil level around a mature tree limits water and air availability to roots and can retard growth and cause branches to die. For a severe change in level, a stone or brick dry well or retaining wall is needed to maintain the existing soil level.

Herbicides

Many lawn fertilizers contain one or a combination of weed killer materials. Fertilizers containing these materials can cause severe problems to shade trees. Symptoms include distorted leaves, twisted petioles and branchlets, and yellowed or white foliage. The best practice to follow is to apply herbicides separately according to the manufacturer's recommendation. Some soil sterilants and weed killers are not meant to be used near living plants. These products should be avoided.

Damage from Spray Materials

The symptoms of the injury will vary with the trees and materials used. Cold damp weather increases the possibility of injury from copper compounds, whereas high temperatures may lead to injury from sulfur sprays.

Girdling or Circling Roots

It is easiest to diagnose this problem in the fall. Symptoms are growth decline, early fall color, dying branches, and sunken areas of the trunk. If the girdling root is not observed on the soil surface, usually digging around the trunk area to a depth of 2 to 4 inches will reveal the problem. Severing and removing the girdling root can sometimes correct the condition.

Lightning injury

Lightning can loosen or shatter bark and even burn tree roots. The amount of damage depends upon the moisture content of the tree and the voltage discharge. Pruning dead wood should be delayed until the extent of the injury is determined. If the trunk is damaged, give the tree one year to recover.

Low temperature injury

Low temperature injury can be observed in many different forms. Trees may develop frost cracks that are characteristic of rapid temperature fluctuations. This injury is most prevalent on the south or west side of a tree. Most forms of low temperature injury can be reduced if hardy trees are selected, properly planted, and maintained.

Research indicates that trees that grow on well drained soil and have the proper nutrients will have minimal winter injury.

Insects

Aphid populations explode during the spring and fall. Pressure sprays of mild soap solutions are effective. Such solutions wash off the protective sticky coating from aphids, subjecting them to desiccation.

Either insecticidal soap or a home remedy of 1 gallon water, 1 tablespoon non-detergent dish washing liquid or baby shampoo and 2 drops vegetable oil may be used. These should be applied late in the day to avoid leaf burn, and repeated applications may be required.

Chemical insecticides should be used with caution on aphids. Several insecticides are registered for aphid control but their residual activity is short. Natural enemies (lady bugs, lacewings, etc.) are often present and insecticides will have a negative effect on these beneficial insects.

Spider mites thrive in dry weather; they are more active during warm seasons. They pose a particular threat to cypress, junipers, arborvitae, and pyracantha. The most common early symptom is dusty appearing foliage. Closer inspection usually reveals a fine silvery webbing on the leaves. Gently rubbing your fingers over the leaf surface reveals a gritty dusty residue. Washing plants periodically with a forceful spray of water discourages spider mite build-ups. If webbing is evident, miticide applications may be justified.

Elm leaf beetle skeletonizes the leaves. If detected early, it can be controlled with the application of a registered pesticide such as carbaryl. See Yavapai County Bulletin #18, "Elm Leaf Beetle".

Borers are usually secondary to some other injury such as sunburn or pruning cuts. They seldom invade healthy bark. Maintaining a healthy tree is the best control.

Tent caterpillars are often seen in the spring on cottonwoods. These voracious caterpillars feed within a tent-like webbing on branch tips. Try a high pressure wash with water to disrupt the protective tent. The best control is to physically remove/destroy the web.

No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Pesticides are poisonous. Always read and carefully follow all label instructions for safety, use, and disposal.



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