

## Tree and Shrub Planting and Care Guidelines

Thomas Guggenheim, PhD, ISA Certified Arborist (IN 3447A)

cell: 812-781-8113

[treegoog@att.net](mailto:treegoog@att.net)

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### Basics of Planting and Caring for Trees and Shrubs

1. Planting a tree is easy, *taking care of it requires a commitment.*
2. **Call 811 before you dig! This is a free utilities location service.**
3. Grass is the mortal enemy of a tree, mulch (wood chips and/or leaf matter) its best friend. Grass robs the tree of micronutrients and water; additionally, grass produces chemical substances that retard the fine root growth of trees that are essential for uptake of micronutrients and water. Among the multitude of benefits of mulching are suppression/elimination of grass/weeds under the tree, and protect the tree from weed whackers and lawnmowers (tree enemies #2 and #3!). The use of mulch cannot be overstated. The use of rock, weed suppression fabric, or synthetic ground covers should be avoided: they do nothing to improve the soil health (organic content, soil particle size distribution, moisture retention) or promote a healthy biome for tree roots (foster beneficial insects, fungus, and bacteria).
3. Water trees once per week in times of dryness. Tree roots can rot if continually wet; rather they do best when watered deeply (a good rain) and then dry out for a week.
4. Learn the simple steps to prune a young tree/shrub, it is vital in the life of the tree/shrub. *Google:* Lindsey Purcell, Purdue University for reading and videos.
5. If you know when and how to water, mulch, fertilize, and prune a tree, and how to protect a tree from lawn mowers, weed eaters and deer, and when to call an expert at the first sign of trouble, then you know 90% of what is needed to care for a tree.
6. Trees/shrubs we sell are grown in Southern Indiana soil, in containers with no bottom, allowing for long root growth with no girdling roots. Trees are harvested when dormant, to avoid shocking the plant when roots growing into the soil upon which the tubes sit are severed upon removal from the nursery. Trees grown in native soil stand a better chance of survival when planted in this area. The trees grown in our nursery have a 20" long well-developed root system time of sale. Such a root system decreases mortality rates and provides for a more drought resistant tree than trees grown in a container with a bottom in media other than native soil.

## **Transporting the Tree/Shrub Purchased from New Harmony Native Trees & Shrubs**

*Wear gloves to protect from sharp edges and staples. Be mindful that the tree in the container is heavy and use proper lifting postures.* While transporting, protect plants to prevent wind shock and general damage. Transporting a tree after bud break requires it to be covered. The tree container is ~2 feet long and the tree/shrub is from 2 feet to 5 feet tall. If the plants are dormant then they can be laid down in the back of a pick-up truck and transported without cover. Each tree weighs approximately 35 to 60 pounds. Soil in the tube might become loose, so bring something to protect the inside of a car should you use a vehicle you don't want soiled. The tree should be planted as soon as possible, but can be stood on the ground in an area protected from wind, the soil cylinder kept moist, and planted at a later date.

## **Planting Site Selection**

Choose the site where you want to plant and then choose the right species for that site. For example, do not plant a tree that is large at maturity in an area with limited room for root growth, under overhead lines, or near a sidewalk. Many native shrubs left on their own can reach 15 feet in height. Species selection advice is available if pictures of the location are provided (including dimensions of the root zone space and locations of utilities/roads/sidewalks, etc.). Know the pH of the soil at the planting site. Certain trees are not tolerant of high pH soil (e.g., Pin Oaks). The pH of soil can be determined by your County Purdue Extension Office. Compacted ground must be deeply tilled to provide a suitable site for a tree to thrive. Match the site with the sunlight requirements of the plant (partial shade vs full sun).

The site should be free of any underground hazards (power lines, natural gas lines, water lines, drain tile, sprinkler systems, communication lines, wells, drainage pipes, septic fields, cable lines, building foundations) and overhead hazards (power lines, roof lines). Also consider the distance from buildings, homes, roads, sidewalks, septic fields, and alkaline (basic) gravel, intensity of foot traffic, exposure to pollution (car exhaust, parking lot water runoff), and road salt exposure. The impact of leaf litter on area, precautions needed to guard against native animals, knowledge of prevalent insects, viruses, bacteria and fungus in the area, ways to treat such pathogens/diseases/insects, prevailing wind direction, and property lines must be considered. Light exposure of the site must be matched to requirements of each species planted. Planting near agricultural fields is always problematic due to overspray.

## **Planting Instruction for Trees/Shrubs Grown in Tubes (US Patent 9,414,547)**

1. **Call 811 before you dig!** Remove all growth (grass/weeds) that is growing within 2 feet from the center of the hole to be dug. This can be done with a shovel or other appropriate tool. Dig a cylindrical hole using a shovel, post-hole digger or power auger, the depth of which is one inch less than the length of the soil cylinder in the removable

container, and is 10 to 12 inches in diameter. It is best to err on the side where the hole is just not deep enough. The root flair (the base of the tree where the roots emanate) should be just below the soil surface (<0.5 inches). DO NOT bury the trunk flair (the base of the tree trunk) by even as little as an inch, as this could result in the death of the young tree. The sides of the hole should not be glazed (hard and smooth), as this will retard root growth. Remove glazed surfaces by clawing the sides of the hole with a hand-held garden claw.

2. Finely divide the soil that was removed from the hole. Chop it up with a shovel. Remove any grass or weed roots from the soil. One advantage of using a power auger is that the soil is finely divided by the action of the drilling bit. Soil amendment at time of planting is generally not required. If amendment is desired then amend the dug soil with 10% (by volume) peat moss, humus or sand. For some species, particularly pines, spruces, and cedars, amending the soil with 10 to 20 volume percent of sand is beneficial, as these species don't like 'wet feet'.

### 3. To plant a tree in a tube constructed with a cable-tie lace:

a. Wearing gloves, unfasten the staples at the top and bottom of the tube with a flat-head screwdriver and pliers (caution: the staples are sharp). Unlace the cable tie from the bottom two or three holes that are drilled in the plastic container.

b. Examine the tree to be planted. It may lean. Drop the tube into the hole such that the lean of the tree is directed into the prevailing wind. Orient the soil cylinder such that the tree is as vertical as possible, where the angle of the trunk is as close to 90° to the surface of the earth; this may require tilting the soil cylinder in the hole. Remove the cable tie completely from the holes drilled in the plastic container, then remove the sheet of plastic from the hole, while holding the soil cylinder in the proper position. (The sheet can be reused and can be returned to our nursery, if feasible.)

c. Fill the space between the sides of the hole and the soil cylinder with the finely divided soil (amended or not). Water the soil that was added to the hole; this will settle it. Add more soil to the hole until it no longer settles when watered. At this point, the bottom of the trunk flair should be at the surface of the earth (at grade) and all the roots under the top half-inch of soil. Inspect the hole once a week for a month and add more soil to the hole if the soil has settled.

d. Planting a balled and burlapped tree is very similar to the above procedure except the hole is in the shape of a shallow bowl (check out Purdue University on-line instructions). Planting a tree or shrub grown in this patented container does not require any pruning or cutting of the root system as is common when planting a tree grown in a container with a bottom in a growing media devoid of soil: these trees typically have a poorly developed, tangled root structure that requires aggressive cutting and pruning at time of planting.

4. No fertilizer is needed at the time of planting, but you can broadcast a small amount of slow-release nitrogen fertilizer around the tree before mulching. Do not over-fertilize as this can harm the tree.

5. Spread mulch around the tree to 3 to 4 inches in depth. Wood chips and/or leaf matter work fine, aged chips/leaves are better, but fresh chips can be used. If you know anyone in the tree pruning or removal business, they might be willing to dump a load of chips at your property. The mulch should be at least 2 inches from the trunk of the tree and should never touch the trunk. If mulch touches the trunk, it will promote bark rot during periods of high moisture and can provide shelter for small ground animals, putting them in close proximity to the bark of the tree, which significantly raises the chance they will gnaw on the bark, resulting in tree death. Ideally the mulch should extend to the drip line of the tree, with a minimum of an eight-foot diameter circle around the trunk of the tree. Rock, synthetic ground covers, weed suppression cloth and dyed mulch (which is expensive and tends to fuse and decompose slowly) are not recommended.
6. Generally, the trees do not need to be staked. If the lean of the trunk is substantial, then staking may be warranted. Generally, any staking can be removed 1 year after planting. Use a material to hold the tree to the stake that does not damage the bark, such as strips cut from a T-shirt.
7. In areas where deer and rabbit are an issue, it is recommended to place a wire protective basket around the tree. A basket can be crafted from wire fencing made of approximately 2 mm diameter wire that has rectangular openings that are approximately 2" x 4" and is at least 4' high. Liquid Fence (available at Rural King) is a good deer deterrent but must be applied on a regular basis.
8. We will take back the used plastic sheets at the nursery. Return them if and when feasible.

### **Care of the Tree After Planting**

#### **A. The three most important practices to maintain the health of a tree is to mulch it properly, water in times of dryness and protect from deer.**

B. Keep the tree mulched. Mulching (3 to 4 inches deep) is one of the best means to maintain the health of a tree by suppressing grass/weed growth. If you use just-chipped fresh mulch (< 6 months old), then apply a small amount of slow-release nitrogen fertilizer to the area to be mulched before the mulch is applied. Do not over-fertilize as this can cause damage to the tree.

C. Round-Up® (1% by weight aqueous solution) can be used to kill weeds/grass within 4 feet of the tree trunk, which will result in an 8-foot diameter circle of growth-cleared soil surface, with the tree in the center of the circle. Generally, this is not required because the mulch, when properly applied, will prevent grass and weed growth. Grass and weeds will result in poor growth of the tree or shrub. Never get the Round-Up® on the tree trunk, stems or leaves. Never Round-Up® if there is significant wind, and adjust the spray nozzle so that small droplets are produced and not a fine mist that can carry in even a gentle breeze. **Use Round-Up only as a last resort as it harmful to bees and beneficial insects, and can damage surrounding vegetation.**

One way to manage mulch and Roundup® is to hand pull weeds growing out of the mulch, or hit them with Round-Up, then Round-Up® at the outside border of the mulch, killing a 6" to 8" strip of growth just outside the mulch ring. This makes mowing easier as the mulch ring will not be disturbed.

D. Water the tree once per week in times of dryness (1" of water over the mulched area). Do not overwater the tree at any time (this can cause root rot). Trees like to be deluged, and then dry out for a week or so, then watered again.

E. Fertilize the tree in mid to late October with a 10-10-10 granular fertilizer (10% nitrogen, 10% phosphorus, 10% potassium), best if one can apply a 3-1-2 N-P-K granular fertilizer. Use the prescribed amount to avoid damaging the tree. One to two cups of fertilizer over the area of the 8-foot diameter circle around the tree should be sufficient. The fertilizer can be sprinkled on top of the mulch, or the mulch can be moved with a rake, the fertilizer applied to the soil surface, and the mulch returned. Fertilize again in early spring before bud break using a slow-release nitrogen fertilizer at the stipulated application rate.

F. Weeds/grass, lack of water, weed trimmers, mowers, improper pruning, and deer are the main reasons why young trees don't grow well. Address these issues as they arise.

g. Know how to properly prune a tree before you do so (Check-out Lindsey Purcell, at Purdue University on the web for reading and videos.). Do not prune the tree for the first two years, other than to remove a co-leader or damaged stems. *Never* top a tree (prune the leader of a tree) or stub-cut. The best time to prune a tree is a matter of debate. However, pruning Oaks in the winter months is fine, and others just after the spring rains. Topping or improperly pruning a tree will likely harm the tree, increasing the chance of death 1 to 10 years down the road.

H. Inspect the tree frequently for pests (insects and fungus) and treat accordingly (contact a tree nursery, an arborist, or the Purdue Plant and Pest Diagnostic Lab). Many trees are chlorotic in Southwest Indiana (yellow leaves due to a deficiency in iron, manganese, and/or zinc) due to the prevalence of soil that is alkaline in pH. This happens primarily to Oaks (Pin, Shingle, Scarlet, Southern Red, Nuttall in particular). There are procedures to treat such trees. It is best, however, to avoid planting trees that are intolerant of soil with a pH >6.5.

I. Following these instructions and knowing proper pruning techniques (particularly for small growing trees) is 90% of what you need to do to grow a robust tree. You can get the other 10% from an arborist or the Purdue Disease and Pest Diagnostic Laboratory: <https://ag.purdue.edu/btny/ppdl/Pages/default.aspx>

If you understand/remember this document, you can consider yourself a

**Junior Arborist**

