

How to Plant Shrubs and Trees

by Frank Hassler
Ecologist and CEO of Good Oak Ecological Services

Considering the Differences between Trees and Shrubs

Often people are confused about the difference between trees and shrubs - and for good reason. There are no strict, hard and fast rules.

One factor is size. Trees will typically get larger and especially taller than shrubs. But some shrubs grow taller than some trees. A better attribute to use is how many stems the plant has. If left alone and un-injured, **a tree will typically have a single trunk, or in some cases a small number (two or three) of trunks. Shrubs, on the other hand, are multi-stemmed** - sometimes with dozens or hundreds of stems. However, there are times when you will find an individual plant from a species that is a tree with more stems than a nearby shrub.

These differences between trees and shrubs come down to their growth strategy. Trees are trying to grow tall, as tall as possible, and will continue to grow upward their entire life. They are habitually trying to grow above surrounding vegetation. In some cases this means up above savanna grasses, flowers and shrubs, and in others this means growing up into a woodland canopy to compete with other trees. Shrubs, on the other hand, do grow upwards, but they are equally, or to a greater extent, focused on growing outwards and taking up as much growing space as possible to compete with neighboring plants.

Typically, if a shrub is injured, it will re-sprout new growth from the ground. A healthy tree on the other hand will more often than not develop new growth after an injury at the highest points up on the plant that will support new growth. So you might say that trees are committed as much as possible to building upon the plant material that they have already grown, whereas shrubs are more flexible, and are better able to cast off injured or non-productive plant material when it is no longer of use.

Placing Trees and Shrubs in the Landscape

When you are planning where to plant trees and shrubs the above characteristics become important. You should expect shrubs to expand outward and take up growing space, so don't plant them too close together or too close to structures. Similarly, be sure there is plenty of room above a tree before you plant it; its canopy should not interfere with power lines or roof lines, and intermingling with the canopies of other trees should be kept to a minimum.

More critically, **trees should never be planted within 10 feet of the foundation of a building**, because once a tree root starts to grow, it will continue to do so. If a fine root finds its way into your foundation it will grow, expand and crack your foundation. However, roots from shrubs are more likely to die off before they do any damage to a building and never get as big as a tree root. Typically, shrubs will have many finer roots rather than a smaller number of massive roots found in a tree. Therefore you can plant shrubs within a few feet of a building, allowing for enough space so that the branches will not scrape on the siding in a wind storm, and bearing in mind that a roof overhang will limit their water supply.

Once you are beyond the practical limitations of planning where to plant trees and shrubs, you need to think about how placement of these woody plants will affect the design and function of your landscape. Entire books have been written about this, so we won't bother going into much detail here. Suffice it to say that you should consider the ultimate size of the plant when making these plans, and think about how effective each type of plant will be at creating shade, blocking views or accenting structures.

Also, be sure you are aware if a particular species of shrub has a tenancy to spread by rhizomes and be colony forming. This can be a problem if you have other plantings nearby you don't want the shrub spreading into, but won't be a problem if the shrub is hemmed in by a building, concrete or lawn. And it can be a benefit if you are trying to develop a visual barrier along a property

line or fence row, since planting just a few well spaced shrubs can fill in the whole area within a few years.

When to Plant?

Woody plants are more sensitive to drought stress than herbaceous plants, so the time of year you can plant them is shorter. The ideal time of year to plant woody plants is the months of April and October when the plants are dormant (or going dormant) and will not be too greatly stressed by either heat, dehydration or physical damage. For large trees, don't stray too far from these time periods. For smaller trees and shrubs however, you have more flexibility. Vigorous shrubs can be planted through the month of June and in the fall they can be planted nearly until the ground is frozen (as long as you cover them with plenty of mulch when you are done!). Avoid July and August unless the plants will be in the shade or planted in water saturated soil.

What Size Plant to Choose

Larger trees give a more immediate impact, but usually suffer more from transplant stress. In nature a tree has as much mass below ground as it does above. When you get a large caliper dug tree you will see that the root mass is a fraction of the above ground mass. The tree takes several years to recover and regrow a sufficient root mass to support top growth. As a result, a smaller tree, say of 1" caliper could actually be larger after 10 years in the ground than a tree that was 3" caliper planted at the same time.

If you want the largest tree as soon as possible, we recommend choosing a plant no more than 2" caliper. These trees will be much less expensive than larger trees as well, and much less work to install. It won't be large right away, but it will be much healthier than a larger tree, and in time it will grow more quickly for you. If you don't need a large tree right away, choosing something even smaller will give you a healthy tree that is well adapted to the site. For shrubs, something in the 5 to 10 gallon size range (or something equivalent field dug or bare root) is a good size, as often these plants have a reasonable root size compared to the above ground portion of the tree, and they are relatively easy to handle and install.

Tools You Will Need

Before you begin work, make sure you have all the tools you need and be sure they are in good working order. A common round-tipped garden shovel or spade is ideal for this kind of digging. It should be good and sharp since this will allow you to dig and slice through roots more easily. You will work faster, expend less effort and be much less likely to injure yourself. A few minutes with a grinder and a file and your shovel can be sharp enough to cut paper. Other tools you might need include a knife, wire cutters and a tarp.

Digging the Hole

Most trees and shrubs are available in containers or as field dug "ball and burlap". For containerized plants, you will want to look at the size of the container and **dig a hole about three times the diameter of the container and half as deep**. The extra width is necessary because there are likely many roots coiled up in the container that will need to be spread out into the surrounding soil. For ball and burlaped plants, the roots have been largely cut off in the digging process, so a hole for these plants only needs to be twice as wide and roughly 2/3rds as deep as the rootball. Be sure the hole has a broad flat bottom that is relatively level. Excess dirt can be piled on a tarp conveniently placed near the hole you are digging. Most of this soil will be put back in the ground around the tree roots.

"Teasing Out" the Roots and Arranging the Plant in the Hole

Next you will take the roots out of the pot or out of the burlap and/or wire cage. You must act quickly now, and it is a good idea to have a water source handy to prevent the roots from drying out too much while you are working. Never plant a tree with burlap or wire still around the root ball. Use a knife to cut away the burlap. If you need to cut a wire cage off of a tree, make sure you have wire cutters with you before you start.

Now, you will need to clear away as much of the potting soil (or whatever soil is in the root ball) as possible, so that the tree or shrub can have as much contact with the soil from your yard as is

possible. Washing with a hose is helpful but you will also have to scrape, shake and dig away dirt, and your hands are the most gentle tool for doing this. **Be sure to remove as much soil as possible from the top of the mass, exposing the trunk or trunks of the tree or shrub all the way down to the root crown.** The root crown is the point at which the roots start to flair away from the trunk of the tree, and really marks the transition line between these below ground and above ground structures. Sometimes several inches of soil have been piled over the root crown, so keep digging! If you do it right there should be very little potting soil remaining when you are done.

Next, you need to start teasing the roots out. Carefully start pulling at the roots to unwind them from within the pot shape and spread them out. Your goal is to loosen up the root mass as much as possible and spread it out horizontally as much as you can, so as to invite and encourage your new tree or shrub to spread its roots out into the surrounding soil. Usually we place the plant in the hole at this point to work with it there so we can be sure the hole is wide enough, and not too deep. If roots spread farther than the diameter of the hole, you should dig trenches into the surrounding soil and move these longer roots out into the trenches rather than circling the roots around in the hole..

Again, with ball and burlapped plants there is often less of this work to do since most of the roots have been cut off, still you should gently spread what is left out horizontally.

Overall this is a careful, slow, and time consuming process, but the extra minutes you spend now will provide you with a healthier and happier tree or shrub in the future.

Many container grown plants become so root bound that the soil is lodged into a matrix of densely formed roots that form roughly the shape of the pot they were planted in. There isn't a lot you can do for these shrubs, and they are going to be less vigorous than shrubs that are not so badly root bound. Try to tease out the roots as much as you can. You can even cut several vertical slashes in the side of the root mass 2 to 3 inches deep which will promote the growth of new roots from the damaged areas. Do the best you can to maximize the number of roots that will be reaching out into the surrounding soil, and hope for the best.

Backfilling the Soil

Now that you have the roots all spread out it's time to start refilling the hole with soil that is originally from this site. Take another look at that root crown that you exposed earlier. **It is critical that the root crown be right at the soil surface when the planting is complete.** This will assure that all of the trunk is above ground so it won't rot, and all of the root is below ground where it can do its job. When in doubt, a little exposed root is better than burying any of the trunk. Use a shovel handle leveled on the surrounding soil surface to determine the height of the root ball compared to the surrounding landscape.

If it turns out the hole is too deep, start by filling in underneath the tree or shrub. If planting in a lawn, I often like to start by putting the hunks of sod on the bottom so as to bury this grass and prevent it from sprouting again. Also once the grass dies and breaks down it will add nutrients to the soil that the tree can use.

Once you have got the plant in the ground at the right depth, it's time to start backfilling in earnest. Break the soil up into the smallest sized particles you can with your shovel, hands, and/or feet. Carefully fill in around the roots with these finer chunks of soil, and use the larger ones you can't break up as much near the edges of the hole. Air gaps are inevitable in-between these hunks of soil and the roots. So once the hole seems to be mostly filled with soil use a hose to soak and physically break up the soil and cause it to settle in so that you can add more soil. Repeat this process several times. Gentle poke at the slurry with your shovel to break up larger chunks of soil and release trapped air. Some very light tamping with your feet will also help compress the soil to its natural density, working out air bubbles as you squish down on it. If you do it right, you should use about 90% of the soil that you dug out of the hole in the first place. Again, a little extra patience at this point will help ensure a healthy and vigorous plant, so take your time.

Once the tree or shrub is in the ground it should be thoroughly watered if that has not already been accomplished while you were settling the back-filled soil.

Mulch!

Mulch is critical to keep landscape plants healthy. It provides improved moisture retention to the soil, helps keep the soil surface cool so roots don't overheat and die and also inhibits the establishment of weeds in the area. **A new tree or shrub should be planted with mulch around it at least as wide as the canopy (above ground portion) of the plant, and as much as twice the diameter of the tree canopy.** For example, even for small, 5 gallon plants we will typically mulch a circle around the plant that is four feet in diameter. The mulch in this circle should be **four to six**

inches deep and relatively level across the whole area. However, **no mulch should touch the trunk of the tree** or shrub, and you should carefully clear the mulch a few inches away from the trunk all the way down to the base so that the root crown is exposed. This helps prevent the trunk from being too moist, getting a fungal infection and rotting.

This may not sound like the way you have seen “professional landscapers” installing mulch around trees, but rest assured that this is the correct way to do it.

Care After Planting

Watering should be done frequently and intensely. **Initially after planting, water *intensely every other day for two weeks***. Once the young woody plant has been in the ground it will be slightly better able to handle drought stress so you can back off a bit. A tree or shrub will do best with the equivalent of 2” of rainfall a week. If you are using a sprinkler to water your plants (recommended) then leave out a small container in the area, and once it fills up with water 2” deep, you can turn the sprinkler off. If you are watering by hand, my general rule of thumb is that you should water the plant for so long that you are quite sure that you are drowning it. Then water it a little more, and that should be just enough. Remember, you are trying to saturate the soil in the entire area surrounding the plant.

Any tree or shrub will need lots of watering in its first year of life. Larger trees will need watering for even longer since so much of their root mass is missing. As a general rule, trees less than 1” in diameter (or shrubs of equivalent size) will only need watering for the first growing season they are in the ground. For each additional inch of width, you should water it for one more year. So a 4” caliper tree will need regular watering for *four years* after you have installed it. This is another good reason to choose a smaller plant to begin with. Typically, shrubs in 5 or 10 gallon containers will only need watering during their first year on site.