

Transplanting Established Trees & Shrubs

Moving established shrubs from one location to another is one method of changing your landscape and saving money at the same time. The job may be intimidating, but good preparation will make the project somewhat easier and less time-consuming. Careful attention to recommended practices (root pruning, methods of digging and root protection) will improve your chances of success in getting a plant off to a good start after you move it.

Root Pruning

Roots of trees and shrubs normally grow well beyond the soil volume that can be moved. To keep most of the roots within a small area, root prune in the spring or fall before transplanting. Plants to be moved in the fall (October or November) should be root pruned in March, and those to be moved in spring (March) should be root pruned in October. Root prune only after leaves have fallen from deciduous plants in fall or before bud break in the spring. Plants may be damaged severely if done at other times. Roots within the pruned area grow many branches and form a strong root system within a confined area. If not root pruned, the plant may die from transplant shock because of root loss.

Before beginning, tie up the branches of low-branched or bushy plants to help avoid injury and keep them out of your way. Heavy twine is usually used, but burlap strips or one-quarter-inch rope is acceptable. Attach the twine to a branch at the base of the plant, wind it around the plant to the top and tie it in a loop.

Begin root pruning by marking a circle the size of the desired ball around the tree or shrub, and then dig a trench just outside the circle. The depth of the trench and diameter of the circle are listed in the tables following the text. (These ball sizes are

recommended by the American Association of Nurserymen.) Be careful to separate the topsoil and subsoil so that when you backfill the trench you will replace the subsoil layer first and topsoil on top. After backfilling, water the area to settle the disturbed soil, remove air pockets and provide adequate moisture for new root development. Untie branches after root pruning.

Digging the Plant

Before digging the plant, tie up the branches as for root pruning. Mark a branch that faces north so the plant can be properly oriented when planted. Also, mark the trunk where it meets the soil. When replanting, make sure you plant so that this mark is an inch above the soil line of the planting hole. The plant is now ready to be transplanted.

Shrubs less than 3 feet tall and deciduous trees less than an inch in trunk diameter (measured 6 inches above the ground) may be moved bareroot. "Bareroot" means that most or all of the soil is removed from the roots after digging the plant. You can more easily handle a larger root system with the bareroot method than if you dig a plant with a ball of soil around the roots. Bareroot plants should be planted while they are dormant.

Trees greater than an inch in trunk diameter (measured 6 inches off the ground) and all broadleaf and narrowleaf evergreens should be moved with the soil attached. Ball sizes should always be large enough in diameter and depth to encompass enough of the fibrous and feeding root system to provide for the full recovery of the plant.

Trees that are difficult to move (beech, hickory, sweet gum, hornbeam, sassafras, tupelo, walnut and white oak) need larger root balls than trees that are

easy to transplant. Trees growing in loose, well-drained soil, such as a sandy soil, will have more extensive or spreading root systems than trees growing in a hard, poorly drained soil such as tight clay.

The digging operation consists of digging a trench around the plant and removing the soil. The trench should be dug far enough from the plant to preserve a large proportion of the fibrous roots and deep enough to extend below the level of the lateral roots (see tables). If you have root pruned, this trench should be outside the root pruning trench.

Before starting to dig, remove loose soil above the roots. Make a circle around the plant about 12 inches beyond the anticipated diameter of the finished root ball. Cut the roots with a sharp spade, inserting the spade at the marked circle with the backside of the spade facing the plant. Be sure the spade is sharp so the cuts will heal rapidly. Next, dig a trench outside and adjacent to the marked circle.

Plants With Soil Attached: For trees to be moved with the soil attached, trim the ball to the proper size and shape with the spade, keeping the backside of the spade toward the plant. Round off the trimmed ball at the top and taper it inward toward the base. You can avoid loosening the soil around the roots by cutting large roots with hand or lopping shears and small roots with a sharp spade. Next, undercut the ball of soil at an angle of about 45 degrees to loosen the ball from the soil beneath and sever any remaining roots.

To prevent drying, cracking and crumbling of soil, wrap the ball tightly with burlap (balled-and-burlapped). Balls up to 15 inches in diameter can be completely covered with one piece of burlap. Tip the ball to the side and place a piece of rolled burlap under half of the ball. Then tip the ball in the opposite direction and pull the burlap under the other half. Pull the burlap up around the ball and tie diagonal corners together at the top. Secure loose burlap around the base of the trunk with twine, and support the ball by wrapping twine around and under the burlapped ball. You can also protect the root system by placing the soil ball in a pot (balled-and-potted) rather than burlapping.

Balls of soil are heavy and can be difficult to move. A ball of soil 15 inches in diameter and 15 inches deep may weigh 200 pounds or more. Lift a plant with a small ball of soil out of the hole by placing a piece of burlap under the ball and lifting by the four corners of the burlap. Consider hiring a professional arborist or landscape manager to move balls of soil weighing several hundred pounds. They are familiar with the procedures of moving such large balls.

Bareroot Plants: For bareroot transplanting, after digging the trench, wash the soil off the lateral roots with water. This minimizes root injury during soil removal. To provide some protection for roots, move the tree with "semi-bare" roots, leaving some soil clinging to the fibrous roots. This helps the tree recover more rapidly.

When the lateral roots are free of soil, tip the tree to one side to remove the soil under the plant. This should be done gradually to avoid straining or breaking the roots and loosening the bark near the base of the trunk. Cut any taproots or anchor roots that still hold at a depth of 9 to 19 inches. To lift the tree out of the hole, grasp it at the base of the trunk, close to the soil line.

Perhaps the single most important cause of failure with bareroot plants is that the roots dry out. Keep the roots moist in peat moss or wrapped in plastic or wet paper until you are ready to plant. Immediate re-planting is best.

Planting

It is important to prepare the hole properly depending on the method used to dig the plant up. Preparing a hole for a bareroot plant is different from preparing one for a plant with a root ball. Regardless of the type of plant, it is important to have the soil tested well beforehand. If the test indicates a need for phosphorous, add it to the planting hole. Do not add fertilizer containing nitrogen.

Bareroot: Dig the hole for a bareroot plant 50 percent wider than the root system so the roots can be fully expanded and arranged in their natural position. To prevent settling of the plant, leave the center of the bottom portion of the hole higher than the edges. The mound height is determined by placing the plant on the mound so that the marked

soil line is an inch above the soil line of the planting hole. As the soil settles over time, the plant will settle so that it will come to rest with the previously marked soil line matching that of the new location. When digging, place the topsoil (the top 6-inch layer) in one pile and the subsoil in another.

Place the plant on the mound and spread the roots in the planting hole. Roots should not be crowded or twisted, or arranged in a circle against the wall of the hole or all in one direction. Roots that have been improperly arranged at planting can result in slow growth or even the death of a tree or shrub after a few years. Be sure that the root collar is no deeper than an inch below the soil surface. If plants are placed too deep, the roots will suffocate from a lack of oxygen.

While holding the tree in the proper position (at the center of the hole, at the proper depth and with the tagged side facing north) add subsoil to the hole, gently working it among the roots and firming with the fingers. After all the subsoil has been put in the hole, water with a half-gallon per square foot for well-drained soil (sandy) or 1 quart per square foot for poorly drained soil (clay). Once the water has drained (settling the soil and eliminating air pockets), add the topsoil. Tamp the soil lightly with your foot, but do not tamp so heavily as to compact the soil. Water again to settle the topsoil.

Balled-&-Burlapped or Balled-&-Potted: Dig a hole for balled plants 50 percent wider than the soil ball. The hole should be just deep enough that the root system is at the same depth it was before it was dug. When digging, place the topsoil (the top 6-inch layer) in one pile and the subsoil in another.

Set the plant in the center of the hole (leave the burlap on the rootball if present). Cut any twine or wire supports, peel the burlap off the top and sides of the rootball and lay it in the bottom of the hole. Leave the burlap under the ball, but remove any wire supports (pulling the burlap out may injure plant roots). To fill the hole, add subsoil by gently working it around the soil ball and firming with the fingers. After all the subsoil has been put in the hole, water with a half gallon per square foot for well-drained soil (sandy) or 1 quart per square foot for poorly drained soil (clay). Once the water has drained (settling the soil and eliminating air pockets), add the topsoil. Tamp the soil lightly with your foot, but do not tamp so heavily as to compact the soil. Water again to settle the topsoil.

Watering After Planting

Many plants die from too little or too much water during the first few months after planting. Those in well-drained soil are likely to get too little water, while those in poorly drained soil get too much. The proper frequency and length of watering is rarely the same from one site to the next. Determine when and how much to water by becoming familiar with the characteristics of the planting site. Try to maintain constant moisture (not saturation) of the root ball.

Mulch

Mulch helps conserve moisture in the soil, moderates temperature extremes and reduces weeds. Place 2 to 3 inches of mulch over the soil, pulling it away from the trunk of the plant.

Table 1. Root Ball Sizes for Deciduous Trees

Small Trees		
Height (up to 6 feet)	Minimum Diameter Ball	Depth
2 feet	12 inches	9 inches
3 feet	14 inches	11 inches
4 feet	16 inches	12 inches
5 feet	18 inches	14 inches
Caliper (6 feet and over)	Minimum Diameter Ball	Depth
¾ inches	18 inches	14 inches
1 inch	20 inches	14 inches
1½ inches	22 inches	15 inches
1¾ inches	24 inches	16 inches
2 inches	28 inches	19 inches

Shade Trees		
Caliper	Minimum Diameter Ball	Depth
½ inches	14 inches	11 inches
¾ inches	16 inches	12 inches
1 inch	18 inches	14 inches
1½ inches	22 inches	15 inches
1¾ inches	24 inches	16 inches
2 inches	28 inches	19 inches

Table 2. Root Ball Sizes for Deciduous Shrubs

Height	Minimum Diameter Ball	Depth
12 inches	9 inches	7 inches
18 inches	10 inches	8 inches
2 feet	12 inches	9 inches
3 feet	14 inches	11 inches
4 feet	16 inches	12 inches
5 feet	18 inches	14 inches
6 feet	20 inches	14 inches
7 feet	22 inches	15 inches

Table 3. Root Ball Sizes for Evergreens

Spreading, Semi-Spreading & Globe (or Dwarf) Types (Broadleaf & Narrowleaf)		
Spread	Minimum Diameter Ball	Depth
9 inches	8 inches	6 inches
12 inches	10 inches	8 inches
18 inches	12 inches	9 inches
2 feet	14 inches	11 inches
2½ feet	16 inches	12 inches
3 feet	18 inches	14 inches
3½ feet	21 inches	14 inches
4 feet	24 inches	16 inches
Cone & Upright Types (Broadleaf & Narrowleaf)		
Spread	Minimum Diameter Ball	Depth
18 inches	12 inches	9 inches
2 feet	14 inches	11 inches
3 feet	16 inches	12 inches
4 feet	20 inches	14 inches
5 feet	22 inches	15 inches
6 feet	24 inches	16 inches
7 feet	27 inches	18 inches
Columnar Types (Narrowleaf)		
Spread	Minimum Diameter Ball	Depth
12 inches	10 inches	8 inches
2 feet	13 inches	10 inches
3 feet	14 inches	11 inches
4 feet	16 inches	12 inches
5 feet	18 inches	14 inches

Source:

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