

## Transplanting or Moving Trees and Shrubs in the Landscape

Are you experiencing one of those “oops!” moments when you realize that a large shrub or tree was planted in the wrong spot in your landscape? The best way to avoid these moments is to plan from the start. Before planting anything, we suggest you try to take a look into the future of your landscape and install plants that fit your future needs. Are you planning to build an addition onto your home? Will your recreational activities change in the future? How big will that adorable tree or shrub you just brought home from the garden center get when it reaches maturity?

Sometimes, no matter how carefully you planned, a large tree or shrub needs to be removed from its current location. If you decide to try to relocate these plants, first consider hiring a professional with the equipment and knowledge to do the job. Digging and moving trees can be a difficult and very heavy proposition and is not a job for people who have health problems, back conditions, or are out of shape.

To choose a professional, get estimates from at least three companies. Request references for their work and information about their credentials and insurance. Ask for an explanation of how they will prepare and move the plant, as well as instructions on the post-transplanting care you need to provide.

### Site Evaluation

To increase your chances of success, evaluate the suitability of the new planting site by checking the growing conditions, including light levels, soil pH, drainage, and exposure. In other words, assume you are selecting a new plant for the new site and ask the question “do the conditions at the site meet the growing requirements of the plant?” If it does not appear that your plant will survive and thrive in that site you should reconsider moving it there.

### Root Pruning

Transplanting established trees and shrubs is somewhat risky because you will damage many of the feeder roots during the transplanting process. Feeder roots are responsible for absorbing the majority of essential nutrients and water. To minimize the shock to the plant, we recommend root pruning several months to one year in advance of the move, depending on the size and type of the plant.

Pruning the roots will encourage the plant to produce a flush of new feeder roots. The goal is to allow the plant to develop new feeder roots within the zone of the future root ball that will be moved. This will reduce the amount of transplant shock the plant experiences. Before root pruning you should consider the size of the root ball that will be moved. Minimum root ball sizes for specific plant sizes are shown in Table 1. The greater the root ball diameter, the more roots will be included in the move. Also remember that bigger root balls weigh more. Consider how the plant will be lifted and moved. Ball carts, wagons, tarps, or thick folded cardboard can be helpful in transporting the dug plant to its new location.

When to root prune depends on when you wish to move the plant. For most plants, root pruning is recommended in the fall, followed by transplanting in the spring. This allows the plant to grow new feeder roots in the pruned zone over the winter without the burden of supporting new growth. For larger plants, you may want to root prune one year or more before transplanting. Keep in mind larger plants will need more time to become established after transplanting. Alternatively, rooting pruning in the spring for a fall move is possible; however, the root pruned plant will need to be watered during summer dry spells. Be aware some plants do not respond well to being moved in the

fall, especially those with thick and fleshy roots (e.g., Magnolia, tulip poplar, oaks, birch, rhododendrons, hemlocks, and flowering dogwood).

Methods for root pruning vary. One method called spading involves cutting through the existing roots with a spade, making a circular cut all the way around the plant. The edge of this cut should be just inside the edge of the future root ball. Spading works best for small plants or plants that have not been in the old site for a long time.

Another method called trenching involves digging a trench around the plant and refilling the trench where the new feeder roots will develop with soil high in organic matter. Trenching is more appropriate for plants that have been located in the old site for several years or more. Trenching techniques also vary, depending on plant size. Trenching can be done all the way around the plant or only part of the way around the plant, followed by further trenching later in the season. To root prune using trenching, dig a trench 8 to 12 inches wide or wider, 12 inches deeper or deeper with the outer edge of the trench corresponding to the outer edge of the future root ball. Next, fill the trench with soil high in organic matter, made by mixing two parts topsoil with one part compost. If conditions are good, the plant will grow new feeder roots in the trench of rich soil by transplanting time. These feeder roots will give the tree added ability to withstand transplant shock. Be sure to move as many of these new, young roots as you can when you move the plant. Before digging the root ball for transplanting, check to see if a good net of fibrous roots has developed. If few roots are found in the trench, you should consider postponing the move for another year. In addition, when you do decide to move the plant, digging a root ball larger than originally planned may assure that all of the new roots go with it.

Once the roots are pruned, special care should be taken to assure the root ball receives sufficient moisture, especially in the event of a dry fall or winter season. Check for soil moisture levels by feeling the soil. If the soil is dry two to three inches below the surface, give the tree a good soaking, assuring that the trench area is well watered. A two to three inch layer of mulch over the root ball but not in contact with the trunk or stems of the plant can help hold moisture in the soil and also protect the roots from cold temperatures during the winter.

### Transplanting

Prior to moving the plant, prepare and dig the hole for the plant in the new location. Also soak the root ball of the plant before moving so that the soil will remain

together during the digging process. Carefully dig the soil away from the root ball, and then wrap the whole ball in untreated natural burlap. Be very careful not to use synthetic burlap because it will not rot away and will eventually restrict the growth of the roots. Lash the burlap together securely to hold the roots firmly in place. You can do this by using a large upholstery needle and untreated natural twine to stitch the burlap tightly around the root ball.

Carefully move the plant using a cart, a rented ball cart, burlap, or cardboard. The goal is to keep the root ball intact. If the soil ball breaks, it will break the roots inside and may lead to the death of the plant. Make sure the plant is set at the same depth in the new hole and fill in around the root ball with topsoil. Mulch lightly with three to four inches of mulch, keeping the mulch off of the trunk or stems of the plant, and be sure to provide adequate water throughout the entire next growing season.

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JULY 9, 2004

*The Horticulture Fact Sheet series is produced for home gardeners and professionals by the Consumer Horticulture Center at Penn State. The complete series is available on the Web at [www.hortweb.cas.psu.edu](http://www.hortweb.cas.psu.edu).*

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Issued in furtherance of Cooperative Extension Work, Acts of Congress May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and the Pennsylvania Legislature. T. R. Alter, Director of Cooperative Extension, The Pennsylvania State University.

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**Table 1.** Recommended root ball sizes and approximate ball and plant weight based on plant form. Minimum ball diameters increase incrementally with increase in plant size. Data presented here is based on the American Standard for Nursery Stock (ANSI Z60.1-2004, American Nursery and Landscape Association) and Watson and Himelick 1997 (*Principles and Practices of Planting Trees and Shrubs*, International Society of Arboriculture Books).

<b>Plant type</b>	<b>Plant size</b>	<b>Minimum ball diameter (inches)</b>	<b>Change in ball size with changes in plant weight (lbs)</b>	<b>Minimum ball depth (inches)</b>	<b>Approximate soil ball and plant size</b>
Shade trees	1 inch caliper	16	8-10 inches/inch in caliper	10	124
Small ornamental trees	5 feet tall	16	2 inches/inch in caliper	10	124
	1 inch caliper	18	or foot in height	12	193
Multiple stemmed trees					
Upright	6 feet tall	22	2-4 inches/foot	14	323
Spreading	6 feet tall	32	in height	21	867
Deciduous shrubs	3 feet tall	14	4-6 inches/foot	9	91
Needle or broad leaf evergreen spreading shrubs	2 ft spread	16	6 inches/foot of spread	10	124
Needle or broad leaf evergreen upright shrub	2 feet tall	14	2-4 inches/foot of height	9	91
Needle leaf evergreen tree	9 feet tall (or) 3" in caliper	32	6-12 inches/inch caliper above 3" caliper	21	867

Note: This table is a representation of plant size, minimum root ball sizes, and approximate soil ball and plant weight in pounds. If your plant is larger than the listed sizes, the change in ball size with change in plant size column can help you roughly estimate the size of ball needed for the plant to be transplanted. Be aware that for ball weight, a two inch change in ball diameter can add 30 or more pounds to the weight of the plant and soil being moved. Weight change is not linear with increase in ball and plant size.