

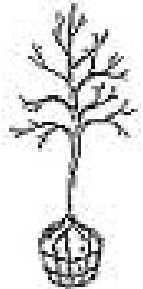
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Transplanting Trees and Shrubs

Transplanting, the act of digging up and moving a tree, shrub or other plant from one place to another, is a very delicate procedure. Like surgery, it is important that the patient be properly prepared for the trauma of the operation and healthy enough to survive the recovery period that follows.

The root systems of most trees grow laterally in the top 18 inches of soil; most shrub roots are in the top eight inches of earth. The roots spread out in all directions (circumstances permitting), forming a circle with a diameter at least one and one half times the height of the tree. A 12-foot tree, for example, may have a root system 18 feet in diameter with the roots on each side extending nine feet or more out from the trunk. On the tips of those roots are very fine roots called root hairs; these root hairs absorb water and nutrients from the soil.



When you dig up a tree or shrub, no matter how careful you are, you cut off up to 95 percent of those fine root hairs, leaving old, heavy, thick roots with limited absorption abilities. That's why moving a tree or shrub during hot, windy weather is a bad idea. Wind acts like a forceful suction pump, pulling water out of the leaves and stems faster than it can be replaced by damaged roots. It takes many weeks for the plant to begin to regenerate these root hairs, but full establishment may take a number of years.

The plant may survive the move **if** you start out with a healthy plant, keep the soil moist (but not soggy) for the critical time period after transplanting, and if weather conditions are not extreme during this time.

Timing of Transplanting

The optimal time to transplant is when plants are dormant and no visible growth is occurring. Ideally, transplant at least six to eight weeks before an anticipated stress period such as summer heat or freezing winter temperatures.

Deciduous Plants (those that drop their leaves)

To take advantage of cool weather before expected stress periods of heat or cold, plan to move your trees and shrubs in April or September in Rockland County. For best survival, transplant dogwood and Japanese maple in the spring only.

Conifers and Broadleaf Evergreens

Since evergreens continue to transpire (lose water through their leaves) throughout the winter, they will be more likely to survive if they have time to produce new roots before the ground freezes. Most evergreens, especially broad-leaved plants, are best planted in spring (April). Some evergreens, particularly needled evergreens, may also be planted in early fall (September). Planting at other times is not as likely to be successful.

Transplanting at Other Times of the Year

If you must move a plant at a stressful time of year (due to construction, perhaps) you can increase your chances of success by keeping the plant well watered and mulched and protecting it from drying winds and hot sun until the roots become established. This could take a number of seasons. Young plants regenerate faster than older ones. It may not be worth the effort and expense to try to move large trees and shrubs even in optimal times; the risk of failure will be very high if the move is done during a stress period.

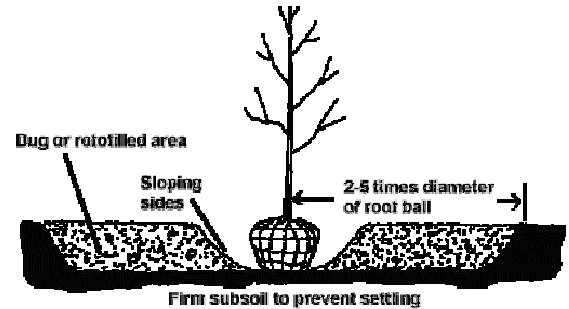
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Preparing the Plant:

Try to plan ahead at least a season before moving a tree or shrub. This will give you time to root-prune your plants. Do this several months in advance of transplanting by perforating the soil with a spade in an outline of where the root ball will be. Make the root ball as large as possible (see chart below for recommended root ball size). At least two days before digging the plant, water the soil around the root zone. Dig carefully to keep the root ball intact. Wrap the ball in burlap or a tarp and tie it up with twine or rope to prevent the ball from cracking as you move it. Make sure the root ball does not dry out.

Preparing the Planting Hole

The planting hole or pit for a tree or shrub should be dug before the tree is moved to the planting site. This will minimize damage to the tree from drying out. The hole should be as deep as the root ball and at least twice as wide. Before you get started, call Dig Safe NY at 1-800-962-7962 to locate and protect any underground utilities.



Positioning the Tree or Shrub

The plant should be placed so it will stand straight in the pit and set so it is slightly (**no more than two inches**) above the existing ground level. This will allow the plant to settle. Plants that are planted too deeply may develop girdling roots. Remove all rope or wire from the trunk of your tree. Remove burlap from the sides of the root ball as far down as possible. Burlap that sticks up above the soil line will wick moisture away from the roots of your tree or shrub. Burlap around the root ball will prevent rapid establishment of new roots into the surrounding soil. You do not have to remove all natural burlap beneath the root ball – roots will grow over the top of this burlap or it will eventually rot away.

Backfilling the Hole

Before placing the tree or shrub in the hole, add a layer of backfill so the tree will be at the correct planting depth as previously described. Lightly pack the backfill under and around the ball to eliminate air pockets. Gradually add more soil and water until the hole is full.

The soil that was removed from the planting hole will be satisfactory for backfilling around the plant's roots. **Do not** add any amendments to the soil, such as compost or peat moss, unless you don't have enough soil to fill the hole. If this is the case, you may add up to one shovelful of compost or peat moss for every two shovelfuls of soil. Remove rocks or other debris as you find it. **Do not fertilize** the plant for at least one year.

Post-planting Maintenance

Water is required for all plant functions – providing adequate water is the most important thing you can do to help your plants become established. Remember that the plants have lost up to 95 percent of their root systems. Your plants will need one inch of rainfall or its equivalent weekly, especially during the first year after planting. A thorough watering once weekly is better than more frequent, light applications. An easy way to water is to lay a soaker hose near the dripline (the area where the branches end) of the plants. Water until the top six inches of soil are moist: do not overwater. A two-inch thick layer of mulch that extends at least to the dripline will help conserve moisture in the soil and keep soil temperatures even. Keep mulch away from the trunk or stems of the plant. If the plant is evergreen, consider protecting it for winter with a burlap windscreen on the windy side (usually west to northwest) of the plant. Be prepared to follow this maintenance schedule for a few seasons at a minimum, or longer if stressful conditions, such as drought occur.

Sources: Paul Trader, Cornell Cooperative Extension Educator, Rockland County
Dr. Donald Rakow, Dept. of Floriculture and Ornamental Horticulture, Cornell University

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Recommended Minimum Ball Sizes

TYPE I		TYPE II		TYPE III		TYPE IV		TYPE V	
Columnar Coniferous Evergreens		Coniferous Evergreens		Spreading Evergreens Coniferous and Broad-Leaved		Shrubs and Small Trees		Standard Shade Trees	
HEIGHT OF PLANT	DIAMETER OF BALL	HEIGHT OF PLANT	DIAMETER OF BALL	SPREAD OF PLANT	DIAMETER OF BALL	HEIGHT OF PLANT	DIAMETER OF BALL	HEIGHT OF PLANT	DIAMETER OF BALL
18-24'	11"	18-24"	11"	18-24"	11"	18-24'	11"	1 1/4-1 1/2"	18"
2-3'	12"	2-3"	13"	2 1/2'	13"	2-3"	12"	1 1/2-1 3/4"	20"
3-4'	14"	3-4'	15"	2 1/2-3'	15"	3-4'	14"	1 3/4-2"	22"
4-5'	16"	4-5'	17"	2-3 1/2'	17"	4-5'	16"	2-2 1/2"	24"
5-6'	17"	5-6'	19"	3 1/2-4'	19"	5-6'	18"	2 1/2-3"	28"
6-7'	19"	6-7'	21"	4-5'	21"	6-7'	20"	3-3 1/2"	33"
7-8'	21"	7-8'	24"	5-6'	25"	7-8'	22"	3 1/2-4"	38"
8-9'	22"	8-9'	26"	6-7'	29"	8-9'	24"	4-4 1/2"	43"
9-10'	24"	9-10'	28"	7-8'	32"	9-10'	26"	4 1/2-5"	48"
10-12'	27"	10-12'	31"	8-9'	36"	10-12'	29"	5-5 1/2"	53"
12-14'	30"	12-14'	35"			12-14'	32"	5 1/2-6"	58"
14-16'	33"	14-16'	40"			14-16'	36"	6-7"	65"
16-18'	37"	16-18'	44"					7-8"	75"
18-20'	40"	18-20"	48"					8-9"	85"

Reprinted from *Transplanting of Trees and Shrubs in the Northeastern and North Central United States*; National Shade Tree Conference and National Arborist Association.

THE DEPTH OF BALLS will necessarily vary but should be sufficiently deep to include the majority of the fibrous roots. In general the ratios of the depth to diameter of the ball areas are as follows:

Diameter (inches)	Depth of Ball (inches)
10-12	8-15
20-30	15-20
30-48	20-30