

GREEN TIPS

Department of Horticulture - Michigan State University

TRANSPLANTING LANDSCAPE PLANTS

How should I prepare a plant for moving?

Careful attention to recommended practices--including predigging preparations, root pruning, methods of digging and protection of roots--improves chances of success in getting a plant off to a good start after you move it.

Tying in branches and marking orientation

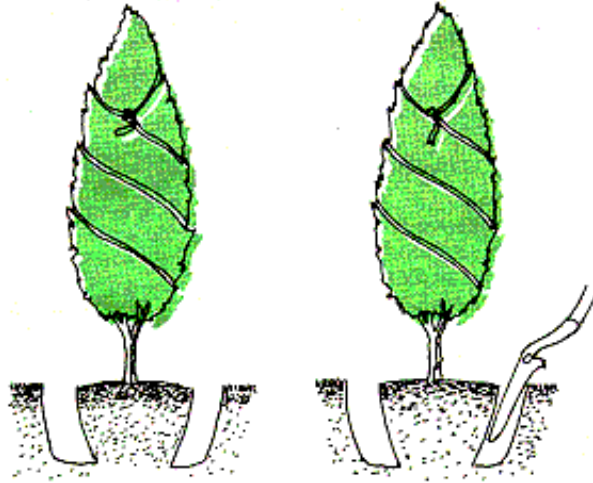
Tying in the branches of low-branched or bushy plants will help avoid injury and keep them out of your way when you're digging and root pruning. Heavy twine is usually used for tying in branches, but burlap strips or 1/4-inch rope may also be used. To tie in the branches, attach the twine or other suitable material to a branch at the base of the plant, wind it spirally around the plant to the top, and tie it in a loop. Tie a flag of cloth or plastic ribbon to a branch to mark the north side of the plant. The flag makes it easier to position the plant properly when it is planted.

Root pruning is an important first step

Roots of trees and shrubs naturally grow well beyond the soil volume that can be moved with balled and burlapped (B&B) or balled and potted (B&P) plants, or beyond the root spread of plants to be handled bare root. To keep most of the roots within a small area, trees and shrubs are root pruned in the spring or fall (see Landscape Management Calendar for Months) before they are moved. Root pruning is done only after leaves have fallen from deciduous plants in fall or before bud break in spring. Root pruning at other times may damage plants severely. The roots within the pruned space grow many branches, forming a strong root system within a confined space. If this root pruning is not done, the plant may die from transplant shock because it lost too many roots when it was dug.

Source: MSU Extension Bulletin E-1947

FIG. 1



ROOT PRUNING CONCENTRATES ROOTS IN THE SOIL RIGHT BELOW THE PLANT. TIE UP BRANCHES AND TRENCH AROUND THE PLANT. DIG WITH THE SHOVEL BLADE FACING AWAY FROM THE PLANT TO AVOID PRYING UP UNCUT ROOTS

Begin root pruning by marking a circle around the tree or shrub, then dig a trench around the outside of the circle (Fig. 1). To determine the diameter of the circle and depth of the trench, see *Table 1*. Take special care to separate the topsoil from the subsoil so that when you backfill the trench, you'll replace the subsoil layer first and then the topsoil. After backfilling, water to settle the disturbed soil, remove air pockets and provide adequate moisture for new root development. Untie the branches after the root pruning is done.

Digging the plant

Before digging the plant, mark a branch that faces north so the plant can be properly oriented when planted. After the branches are tied in, the plant is ready for digging. Deciduous trees less than 1 inch in trunk diameter, measured 6 inches above the ground, or shrubs less than 3 feet in height may be moved bare root. "Bare root" means that most or all of the soil is removed from the roots when the plant is dug.

Table 1. Root Ball Sizes for Plants Dug Either Balled & Burlapped, Balled & Potted or Bare Root.*

Trees			Shrubs & Small Flowering Trees		
Caliper (inches)	Minimum diameter ball (inches)	Depth (inches)	Shrubs to 6 ft. tall & trees over 6 ft. (caliper)	Minimum diameter ball (inches)	Depth (inches)
½	14	11	2 ft.	12	9
¾	16	12	3 ft.	14	11
1	18	14	4 ft.	16	12
1 1/4	20	14	5 ft.	16	12
1 ½	22	15	¾ in.	18	14
1 ¾	24	16	1 in.	20	14
2	28	19	1 ½ in.	22	15
			1 ¾ in.	24	16
			2 in.	28	19

*American Standard for Nursery Stock

If you dig and move a deciduous tree or shrub bare root, you can easily handle a larger root system than you could manage if you dug the plant with a ball of soil around the roots. Broadleaf and narrowleaf evergreens should always be moved B&B or B&P.

The digging operation consists of trenching around the plant and removing the soil. Dig the trench far enough from the plant to preserve a large proportion of the fibrous roots (*Table 1*). Make the trench deep enough to extend below the level of the lateral roots; the depth may vary from 9 to 19 inches.

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--with some soil left clinging to the fibrous roots. This will help the tree recover more rapidly.

After the lateral roots are free of soil, gently tip the tree to one side to remove the soil under the plant. Tip the tree very gradually to avoid straining or breaking the roots and loosening the bark near the base of the trunk. Cut any anchor roots or taproots that still hold at a depth of 9 to 19 inches. To lift the tree out of the hole, grasp it at the junction of the roots and trunk and pull with continuous, even pressure.

Balled and burlapped (B&B) or balled and potted (B&P) plants are dug and moved with the soil in place around the roots. Trees greater than 1 inch in trunk diameter, measured 6 inches above the ground, and all evergreens are usually moved and planted with balls of soil covering their roots. The ball sizes in Table 1 are recommended by the American Association of Nurserymen. Trees that are difficult to move--such as beech, hickory, hornbeam, sassafras, sweet gum, tupelo, walnut and white oak--need larger root balls than trees that are easy to move. 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 a tight clay.

The American Association of Nurserymen emphasizes in the *American Standard for Nursery Stock* that ball sizes should always be big enough in diameter and depth to encompass enough of the fibrous and feeding root system to provide for the full recovery of the plant.

Before starting to dig, remove any loose soil above the roots. Then make a circle around the plant approximately 12 inches beyond the anticipated diameter of the finished ball (*Fig. 2*). Cut the roots by inserting a spade at the marked circle with the back side of the spade toward the plant. Use a sharp spade to make clean cuts that will heal rapidly. Next, dig a trench outside and adjacent to the marked circle to the depth listed in *Table 1*.

Trim the ball to proper size and shape with the spade, keeping the back side of the spade toward the plant (*Fig. 2*). Round off the trimmed ball at the top edge and taper it inward toward the base. Avoid loosening the soil around the roots by cutting small roots with a sharp spade and large roots with hand or lopping shears. Next, undercut the ball of soil at an angle of about 45 degrees to sever any remaining roots and to loosen the ball from the soil beneath.

FIG. 2



TO TRANSPLANT, TRENCH AROUND A PLANT YOU ROOT PRUNED EARLIER. CUT THE ROOTS UNDER THE PLANT AND SHAPE THE ROOT BALL. TO TIP THE PLANT SO YOU CAN PUT THE BURLAP UNDER THE BALL, PUSH ON THE ROOT BALL, NOT THE STEM.

To prevent drying, cracking and crumbling of soil, wrap the ball tightly with burlap. Balls up to 15 inches in diameter can be completely covered with burlap. One method is to tip the ball 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 the diagonal corners at the top. Secure loose folds of burlap tightly around the base of the trunk with twine, then support the ball by wrapping twine under and around the burlapped ball (*Fig. 2*). You may 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 difficult to move. A ball of soil 15 inches in diameter and 15 inches deep may weigh 200 pounds or more. A plant with a small ball of soil can be lifted out of the hole by placing a piece of burlap under the ball and lifting by the four corners of the burlap. Balls of soil weighing several hundred pounds are best moved by professional arborists or landscape managers who are familiar with the procedures of digging, burlapping, rope lacing and moving such large balls.

Transporting and protecting ornamentals

From the time a plant is dug until it is planted in its new location, the roots should never be allowed to dry. Prolonged exposure to air will cause the roots of bare root plants to dry out and die. Roots can be protected by packing them in moist straw, sphagnum, peat moss, bark or other suitable material and then wrapping with moist burlap. Tops of plants should be protected from drying winds when you're transporting them by car or truck. Cover the shoots with a sturdy fabric or transport in a covered van or truck. Guard against trunk and stem injury by using protective padding.

It is important to plan ahead to allow sufficient time to transplant ornamentals, so you can dig and then plant without delay.

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