



Extension Extra

ExEx 6021
May 1993
Horticulture

SOUTH DAKOTA STATE UNIVERSITY / U.S. DEPARTMENT OF AGRICULTURE

Planting a Tree with a Tree Moving Machine

by John Ball, assistant professor, and
David Graper, Extension horticulture specialist,
SDSU Horticulture, Forestry, Landscape, and Parks Department

Using a tree moving machine, often called a tree spade, can provide an economical way of obtaining larger trees in the landscape. The tree spade moves a tree with a soil plug attached.

Tree spade trees are moved either from nurseries, where they have been especially prepared for transplanting, or from sites where they are already growing in a landscape. Nursery-grown trees generally provide better transplanting success, but, with proper selection and care, trees can be moved from one landscape to another.

Moving large trees with a tree spade requires a good knowledge of the different species' reactions to transplanting. *An experienced tree spade operator can make the difference between success and failure.*

When to Plant . . .

Trees moved by a tree spade retain very little of their original root system. In many instances, over 95% of the roots are removed when the tree is moved. This can be a tremendous stress on the tree.

The best time to move trees with a tree spade is early spring while the tree is dormant. Trees moved at this time generally recover enough of their root system by summer to meet the season's higher water demands. Another time, which is generally successful, is late summer and early fall. Trees are beginning to slow their growth and become dormant at this time.

Most trees, and in particular evergreens, do well with late-season transplanting in many East River and Black Hills

locations. Do not move evergreens too late in the season, however. Transplanting in late October may result in winter burn and some branch dieback.

If the tree is selected properly and sufficient after-planting care is provided, many tree species can be moved during the summer. Avoid periods of active shoot growth, high temperatures, or drought, however.

How Large a Tree to Move . . .

People often have the attitude that if the tree spade can lift it, you can move it. This often produces disappointing results. Since most of the original root system is lost in the moving operation, give careful attention to the size of tree being moved. The following table gives guidelines to consider when matching tree size to tree spade size. These are only guides and tree size may be increased or decreased depending on individual species' needs and the season.

Tree spade size (inches)	Trunk diameter of deciduous trees (inches)*	Height of evergreens (feet)
44	2 to 3	5 to 7
66	3 to 5	7 to 10
85	6 to 8	12 to 15

* Trunk diameter measured at caliper; six inches above the ground for tree four inches in diameter or smaller, 12 inches above the ground for trees with large diameters.

Another important consideration, when deciding how large a tree to move, is the time it takes for different size trees to recover. Generally, the larger the tree, the longer it takes for a tree to recover and resume normal growth. A smaller tree will recover sooner and may actually be taller than a larger transplanted tree 10 years later. The general rule of thumb for recovery is one year for every inch of trunk diameter. This means if you move a 6-inch diameter tree it may take six years for it to recover and resume normal growth. This also means the tree could die from transplant shock during this time period.

Before Bringing the Tree Home . . .

Carefully select the tree planting site. Too often people buy plants, then decide where to place them. When this happens, trees often are placed in locations they soon outgrow.

Find out how large the tree will become at maturity and leave adequate space. Stand over the spot you have selected for planting and look up to check for power lines. Do not plant tall tree species beneath power lines. Once the tree begins to grow into the wires, the trees will become a nuisance to the utilities, requiring frequent pruning or perhaps removal.

Utilities also may exist beneath the spot you want to plant. Contact local utilities before planting to be sure the location you select is not directly over cable, phone or other utilities. Generally, if you do not clear the location with the utilities before digging, you are responsible for all damages.

Planting the Tree . . .

While the operator is generally responsible for moving the tree, here is a brief outline of the procedure:

- The tree is watered heavily a day or two before moving. This is done to hydrate the tree and hold the soil plug together during the move.
- On moving day, the plug of soil where the tree is to be placed is removed and taken away.

Often, particularly in heavy clay soils, the sides of this hole becomes glazed. This compacted glaze can prevent roots from expanding beyond the soil plug. The tree spade operator often will use a rake or shovel to break up this glazing before setting the tree.

- The tree is lowered into the hole. Usually it is set slightly higher than its original depth. This is done to quicken root growth into the surrounding soil.

- As the spade blades are being removed, moist soil is forced down the gap between the tree's soil plug and the surrounding soil which helps prevent air gaps from occurring.

Occasionally, for large trees or compacted soils, the tree spade is not used to dig the planting hole. Instead, a backhoe is used to dig a larger hole. The tree is positioned over the center of the larger hole and as the blades are pulled up, backfill soil is placed around the tree. This larger area of moist, open soil allows for faster penetration of the roots into the soil. This is the best but most expensive way to transplant trees with a tree spade.

After-planting Care . . .

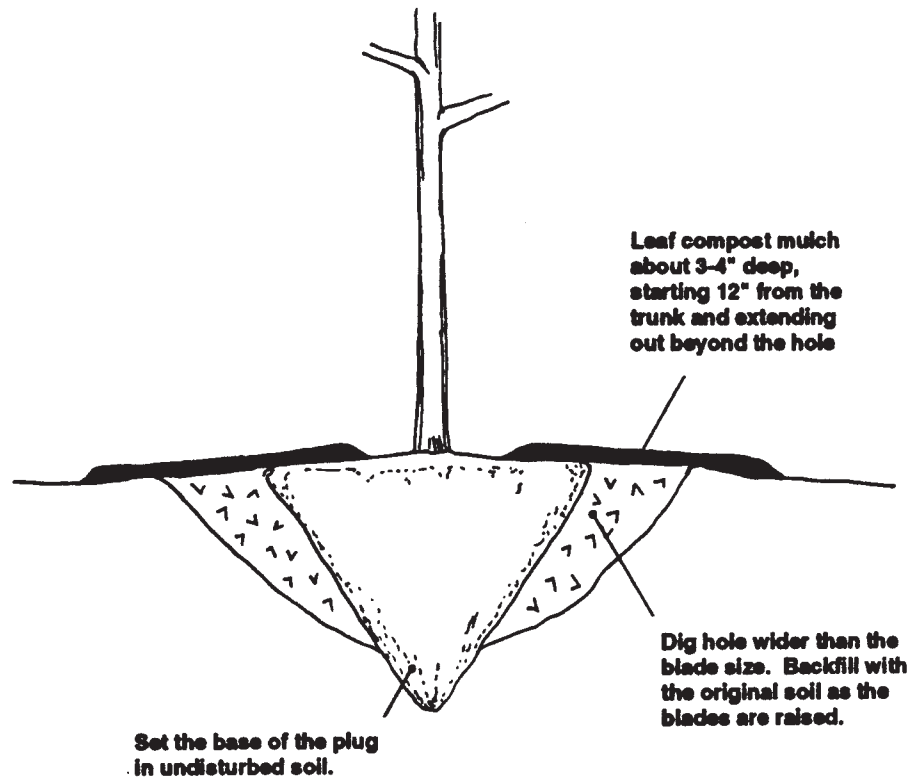
Do not build a soil saucer around the trunk. While it is important to keep the present root area moist, it is equally important to water the soil extending out from the planting hole. New tree roots can grow from the planting hole into the surrounding soil within the first growing season if this soil is kept moist. The sooner the tree roots move into the surrounding soil, the sooner the tree recovers from the transplant stress. However, be sure to check the moisture level of the soil ball and the surrounding backfill frequently. Depending upon the difference in soil texture between the two, the soil ball may dry out sooner.

A mulch circle around the tree can double its growth and speed reestablishment. Mulch lightly with about 3-4 inches of a composted material. Incorporate this material into the upper one inch of the soil and extend out as far as the edge of the planting hole. Do not apply the mulch too deeply as this may interfere with the exchange of air between the soil and the atmosphere. Leave a 12-inch circle free of mulch around the trunk to discourage rodents. If weeds are a concern, place a porous weed barrier fabric beneath the mulch to reduce weed growth rather than incorporating the mulch into the soil.

Do not wrap the trunk. The trunks of young trees often serve a similar function as the leaves, manufacturing food. Wrapping the trunk may slow the rate of recovery for the tree.

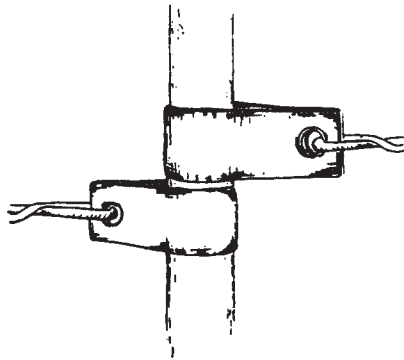
If you feel you must wrap the trunk, be sure to remove the wrap before the second growing season begins. Wrap left on more than one growing season can girdle the trunk.

Instead of wrapping the trunk, consider one of the following methods to protect from rodents, rabbits, weedwhips and mower damage. Slit a one foot length of plastic tile, and place it around the base of the trunk. Be sure the tile is at least several inches larger than the trunk. Or, use a ring of quarter-inch hardware cloth one to two feet high and several inches larger than the trunk.



Whatever the method you choose, remove in a few years before it contacts the trunk.

If the tree has been planted in a windy location you may want to stake and brace the tree for the first growing season. Do not stake the trunk too high or too tight. Doing either may prevent the tree from developing good support. Use a wide belt-like strap attached by wire to two stakes. Do not use the wire itself to support the trunk. If the tree is very large, instead of staking, guying may be necessary. To guy the tree, attach three of the belt-like straps around the trunk, just above a lower branch. Connect each strap to a wire and stake.



Avoid pruning the tree heavily at planting. Confine pruning to removal of dead and broken branches. Only

remove additional branches if the tree's leaves begin to wilt. The more leaves the tree has, the more food it can produce and the faster new roots will develop. Do not prune back the branches, since doing so will slow root recovery. After the tree becomes established, usually in several years, pruning to shape can begin.

Fertilizing generally is not necessary until the tree begins recovering from transplanting. This usually takes several years.

Watering is the most important form of after-care. Newly transplanted trees often die from too little or *too much* water. Check the soil plug and the soil around the tree once a week during the growing season. The top two to four inches of soil should stay moist enough to form a ball when gripped in your hand. If the soil is dry, add more water. A 3-inch diameter tree moved by a tree spade may require 60 to 80 gallons of water every 10 days if rain does not occur.

For More Information . . .

- ExEx 6018 -- Planting a Bare-Root Tree
- ExEx 6019 -- Planting a Container Tree
- ExEx 6020 -- Planting a Balled and Burlapped Tree



Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the USDA. Mylo A. Hellickson, Director of CES, SDSU, Brookings. Educational programs and materials offered without regard to age, race, color, religion, sex, handicap, or national origin. An Equal Opportunity Employer.

150 copies printed by CES at a cost of 10 cents each. May 1993.