

# TREE TRANSPLANTING<sup>1</sup>

by William A. Rae

*Transplant*: the dictionary's definition is "to remove and establish; set out to grow or make live in another place, as trees or people". Basically this is why a tree is transplanted, to grow or make live in another place.

We often think that handling large plant material is something different and unusual. However, for some 2300 years man has been working with nature creating landscape pictures. Theophrastus, who lived from 370 to 285 B.C., refers to tree moving in his writings. In 1636 the Governor of Brazil moved 600-700 cocoa trees, 30 to 50 feet in height, a distance of 4 miles on carriages across two rivers to their new home on an island. In 1828 Sir Henry Stewart published a book entitled *The Planters' Guide*. This book described different methods of transplanting and a transplanting machine developed by the author. The history of our profession is both ancient and

interesting. The methods and equipment used today are, in some instances, refinements and improvements on processes discovered during the earlier years.

Frost and Higgins, the company with whom I am associated, has been handling large plant material for over three quarters of a century. We find it interesting and challenging as each large plant creates an individual problem in logistics.

Basically, the transplanting operation can be broken down into:

1. Digging or preparation of the root ball.
2. Moving or transporting the tree.
3. Digging and preparing the tree pit.
4. Planting and guying the tree.
5. Clean-up.

Temporary storage can also be important if the tree cannot be permanently planted.

Before any work is done, it should be determined that 1) the tree is healthy and worth transplanting, 2) the tree will survive and prosper in its new environment, 3) the tree is accessible to equipment, etc., and 4) existing soil conditions



**Figure 1.** The loading of a large multi-stem Japanes maple; the tree is 22 feet in height and 24 feet in width and had a 9½ foot root ball. Our men dug it at the Bair Lustgarten Nursery on Long Island and transplanted it to Belmont, Massachusetts where it was planted at a private home.

<sup>1</sup>Presented at The International Shade Tree Conference in Detroit, Michigan in 1975.

are suitable for digging a good root ball. Let us discuss these phases as they relate to larger plant material.

For discussion purposes, let us assume that we are transplanting trees having root balls with a minimum diameter of six feet.

### Preparation of the Root Ball

**Digging.** The size of the root ball to be dug is determined. We usually use a ratio of approximately 75% of the diameter of the tree, 6 inches above ground, converted in feet. An example would be:

6 inch diameter tree = 4½ to 5 ft ball

8 inch diameter tree = 6½ to 7 ft ball

10 inch diameter tree = 8 ft ± ball

The exact ball size will vary, depending on the type of soil, variety of tree, nursery grown or collected. The root ball should be large enough for the tree's root system; but additional soil is additional cost and should not be unnecessarily transplanted. The ball is then dug out slightly larger than desired by one of the following methods:

#### Digging methods.

1. By hand
2. Trencher
3. Back-hoe
4. Gradall
5. Mechanical diggers such as the Vermeer Tree Spade

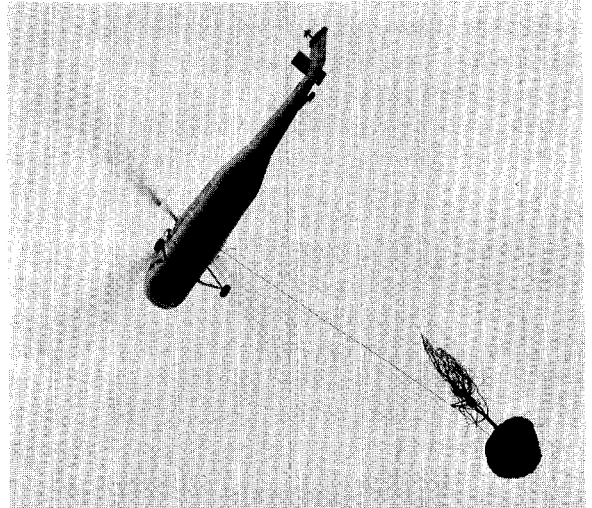
Equipment should be used whenever possible; but should be used carefully so as not to rip or tear large roots or loosen up the root ball. There are existing conditions where digging by hand is still the best method.

The soil in our area of New England is usually gravelly with many rocks and the mechanical tree diggers are not always satisfactory. Under certain conditions we have had good success with Vermeers, however, most of our trees are dug with a back-hoe.

**Shaping and balling.** As previously mentioned, the ball is dug larger than desired and the final shaping is done by hand by experienced men.

**Covering the root ball.** Burlap, canvas, plastic sheets or other materials have been used. We prefer burlap as it is easy to handle, is porous so water and air will penetrate it, the roots will grow

through it, and it usually rots away within a few weeks after planting. We salvage as much burlap as possible for re-use. Plastic materials must be removed when the tree is planted. On large balls



**Figure 2.** A six inch caliper honeylocust being moved by helicopter into an interior courtyard. Eighteen locusts were moved in twenty-six minutes a distance of a mile. These trees were planted at the American Can Company, Corporate Headquarters, Greenwich, Connecticut.

we sometimes double burlap for more strength; especially if the soil is gravelly. At times chicken or hog wire is wrapped around the root ball over the burlap to help hold the ball securely. This is done when the soil is loose and will not hold together. The root ball is then laced with heavy twine or rope; this secures the burlap and holds the soil in place.

**Slings.** This is the apparatus fastened around the root ball and used to lift the root ball and the plant. Slings can be made of rope, chains, belting, or a combination of these materials. The type of sling and the method used depends on the size of the root ball, soil and the equipment to be used. Platforms are used in many sections of the country. The tree is placed on the platform and secured to it by rope or chain.

### Moving — Transplanting

The plant is now ready to be transplanted, and should be handled carefully to reduce the pos-

sibilities of damaging it. Whenever possible, Frost and Higgins uses specialized tree moving equipment; but over the years we have used various pieces of equipment available in the construction industry.

Briefly, equipment we have used are front-end loaders of various sizes, hydraulic booms, truck cranes, trailers, gradalls, shovel-dozers, boats, and helicopters. The landscape contractor must improvise and take advantage of equipment available that will make his operations more efficient. The equipment is only as good as the personnel using it. Experience is necessary to successfully move a large tree.

### *Planting*

The planting procedure for large material is very much the same as that of planting smaller plant material. It is very important to have good planting soil and proper drainage. Good drainage is very important and if the existing site is wet or water does not percolate through easily a drainage system should be considered. We have had situations where an extensive drainage system had to be installed in order to allow the tree to grow properly.

Because of the size and weight of the large plant material, care must be taken to protect lawns, paving or any surface the equipment must travel on. It is easier to prevent the damage than to repair it later.

Tree pits should be dug large enough to allow adequate planting soil; approximately two feet outside of the root ball and six to 12 inches below the ball. Equipment should be used to dig the tree pits or planting beds where you have sufficient room to operate.

### **Guying**

Standard procedure for our company is to guy all large trees for at least one growing season. We use cable with turnbuckles and cable clips; at the trunk the cable is covered by hose to protect the trunk; fasteners are not inserted into the tree. In the ground, metal land anchors or deadmen are used.

### **Clean-Up**

After the tree is properly planted, be sure that an adequate ring or saucer is made around the tree, large enough to hold water, but not unsightly. Be sure the tree is well mulched. Leave the site clean; repair any damage. Check tree for broken branches, loose guy wires, etc. Prune or thin tree without spoiling its shape.

Most Important. Be sure the results have a professional appearance. It should if you are a professional.

### **Storage**

Storing or holding large plant material has been a practice for many years at Frost and Higgins. We store plants for various reasons: 1) temporary storage until the site is ready for planting, 2) speculation for future sales.

To be able to plant trees at any time of the year, the plant material is balled and burlapped and placed in our holding or nursery area on the ground. We then cover the root ball with bark mulch, wood chips, or a prepared soil mixture. We normally place a wire barrier or fence around the root ball. This fence is placed approximately 18 inches from the root ball; the wire fence is staked to keep it upright and sturdy. Roofing paper is placed on the inside of the wire to prevent the mulch material from going through the openings in the wire.

Another method used is to dig a trench and place the plant material in the trench and back-fill around the root ball with the mulch. Frost and Higgins uses this method with good results. With proper maintenance, a good root system is developed in the mulch and the plant is ready for planting at any time of the year.

Handling large plant material successfully requires experienced, well trained personnel and good equipment.

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