GROWING TREES IN WIRE BASKETS[1]

by Carl E. Whitcomb, Ralph Reiger and Mike Hanks[2]

Abstract. Two-year-old trees in 5 gallon containers were planted into wire baskets with bottoms lined with 6 mil polyethylene in the field. After 2 years, the trees were about 3 inch caliper and were dug in 3 minutes using a minimum of effort compared to conventional B&B techniques. The wire basket may be removed but for ease of handling is best left on the tree at planting.

Specimen trees are much in demand by landscapers and the general public. However, the time required to grow a 3 inch caliper specimen tree and the labor required to properly dig a specimen tree at time of sale is rapidly increasing production costs. By using container grown tree seedlings which have been air root pruned to obtain a more fibrous root system in combination with the growth advantages of a 3 or 5 gallon container for 1 or 2 years, a strong well branched tree seedling 4 to 6 feet tall can be obtained. The advantage of the container growing system appears to reach its peak with the 5 gallon size. Our objective was to combine the advantages of air root pruning and container growing for the first 1 to 2 years with field production of specimen trees in such a manner that the trees would be easy to dig.

Methods

Three trees each of *Platanus acerifolia,* London planetree; *Ulmus spp.,* hybrid elm; *Populus alba,* white poplar; and *Betula nigra,* river birch were selected from among existing 2-year-old stock growing in 5 gallon containers. The London planetree and river birch had been air root pruned as seedlings. The elms were bare-root bed-grown seedlings and the white poplar were rooted cuttings before being planted into the 5 gallon containers. All had good branch characteristics and strong central leaders.

The trees were planted April 15, 1978, into wire baskets 24" diameter at the top and 20" at the base and 14" deep with a flat wire bottom (24" clegg baskets). The wire mesh was approximately 3" X 6" and black 6 mil polyethylene was cut to cover the entire bottom of the basket. Holes 24" diameter were augered, the wire basket and plastic set in the hole about 11 to 12" deep leaving the upper loops on the baskets exposed (Fig. 1). The trees were planted using the soil from the augered hole as backfill. The soil was a sandy clay loam of moderate fertility and good tilth. No fertilizer was added at planting time, however, approximately 3 lbs. of nitrogen was applied in 2 applications during the first growing season from 12-24-12 analysis fertilizer and no additional fertilizer was added the second growing season. Weed control was accomplished by surface applications of 5% Treflan granules at approximately 2.5 lbs. aia each spring and spot spraying with Roundup during the growing season.

Results

Tree growth was equal to or better than trees planted in the same field without the baskets. The trees were dug during April, 1980. Digging was accomplished by inserting a square point shovel with a sharp blade around the basket to a depth equal to the flat bottom of the basket. The shovel was angled such that on occasion the outer bottom wire of the basket would be struck. No soil was removed from around the tree except where the soil was too deep for the shovel blade to reach the bottom of the basket. In those instances, no more than 1 to 2 inches of soil was removed from surface area around the tree. After the shovel had been inserted around the perimeter of the basket the tree and root system was easily lifted from the soil using the exposed wire loops as handles (Fig. 2). For ease of handling and to help hold the soil ball together, the tops of the wire loops were laced together (Fig. 3).

None of the tree roots had penetrated the polyethylene in the bottom of the wire baskets.

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Fig. 1. Loops of wire basket above the soil surface. Weed control must be by preemergent herbicides and contact sprays since close cultivation around the tree is impractical.

Likewise, none of the tree roots had grown back under the plastic as was theorized by some viewers of the study during initial installation. Since the bottom of the basket was at approximately the plow depth during land preparation, the soil beneath the basket was more compacted and, thus, had a lower oxygen level and was probably lower in nutrients.

The fact that the trees used in the study had been air root pruned as seedlings to destroy the tap root and stimulate a more fibrous lateral root system probably contributed to the strong lateral root system on the trees which made digging easier. We have observed in conventional field B&B digging that trees from air root-pruned seedlings have more lateral roots and fewer tap or sinker roots compared to bed-grown tree seedlings.

The digging time of the trees was reduced about 5 fold (3 minutes vs. 15 minutes or more for conventional B&B). This would be a great advantage in instances where labor was limited and/or weather conditions allowed little time in the field to dig. The root ball could be easily wrapped in burlap or placed in a polyethylene bag for transport or holding until sold. We have not removed the wire bsket or polyethylene from the bottom of the basket before planting any of the trees. The wire basket will eventually rust away and, although the plastic will remain, the strong lateral root development will reduce the effect of downward root penetration.

The cost of the basket is a significant factor. When the study was begun 24" baskets were $2.60 each and would tie up considerable capital during the growing period. However, for high quality specimen trees, the investment is probably worthwhile.

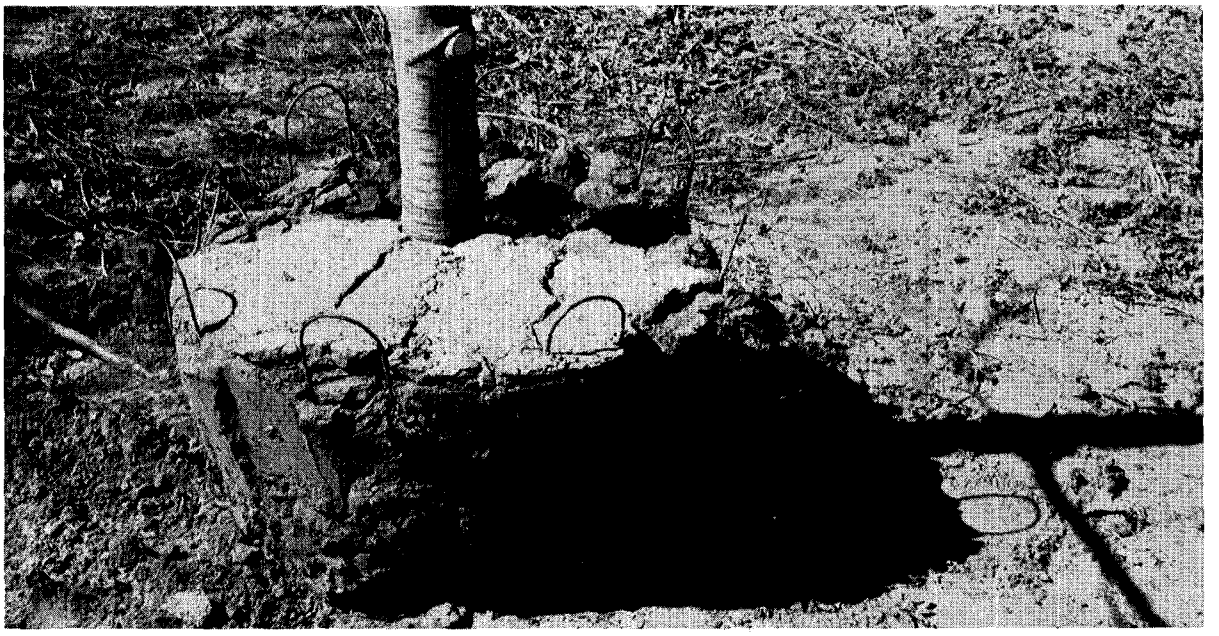

Fig. 2. A 3.5″ caliper white poplar tree just removed from the field. The flat bottom clegg baskets stand up well for ease of display and handling.

Fig. 3. Wire basket with top loops tied to secure the surface soil during handling. Note the black plastic in the bottom of the basket to prevent downward root development beneath the basket.

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