

THE WORTH OF MUNICIPALLY-OWNED TREE NURSERIES

by Robert L. Tate

There have been many spirited debates on the pros and cons of buying trees from commercial nurseries versus municipalities growing their own.

In the past, there is no doubt that a municipal shade tree nursery was a very necessary part of the forestry operation. Cities generally planted trees which were indigenous to their particular region. A safe bet would always have been to observe what grew wild and then plant it. Citizens were comfortable with native trees because they were familiar with them and not with exotic ones. Moreover, commercial nurseries were not geared for city shade and ornamental tree planting needs.

In the Midwest and East, for example, sugar maples and American elms were widely planted. It was quite easy to collect these species along country roads and fields free as seedlings or whips and then to plant them in a vacant plot of rent-free public land called a nursery. It wasn't critical if a tree planted in the nursery didn't grow as rapidly as it should to reach the chosen size for street planting in a given future planting season. It could always be left in the ground for an additional period of time until it reached the desired size.

Also, in the past, I suspect the number of trees planted on the streets was relatively small as compared to today's operation. Cities were not as large, tree losses were not as great, and the demand for trees was not as critical.

Then, because the seedlings were free, the low initial cost of collecting a seedling offset the labor cost to line it out and the length of time to grow it to the desired planting size. Because labor costs were generally much lower, digging and preparing it for street planting was less costly than it is today. Since demands placed on the forestry operation were not as great then, some workers could be spared to occasionally perform nursery maintenance operations.

It is fairly certain that most of these nurseries were actually only growing areas rather than production nurseries. Even now, few municipally-

owned nurseries were fertilized, cultivated, and irrigated for the maximum growth potential of their trees. We just don't have the time to spend on our nurseries for optimum production.

However, the conditions that gave rise to the creation of municipal nurseries are vastly altered today. We have shifted our emphasis and no longer do we plant large percentages of indigenous trees like the sugar maple and the American elm. Because of the problems brought about by the increasing impact of the urban environment and our desire to choose the best trees for the situation, we are planting hardier and more maintenance-free species and cultivars.

We cannot collect many of our trees to use as nursery stock as was once done in the past because most of the species and cultivars planted along our streets are patented and don't grow in the wild. Such stock must be purchased from commercial nurseries. These nurseries have geared up to supply our demands and by competitive bidding, their prices have been kept as low as practicable.

These trees purchased from nurseries for use as lining-out stock are generally 5-6' branched stock. Smaller trees are impractical for various reasons. Lining-out stock (unless it is container-grown) should only be planted during the dormant season — the same time street trees are planted. It is also the time that other important tree care operations could be accomplished, among them fertilizing street trees. The planting of lining-out stock competes with these operations, and employees would have to be reassigned from them. Moreover, if all of your available employees are involved in planting, fewer trees would be planted on the streets during a given planting season if these employees must spend some of their time on the planting of lining-out stock.

Once lining-out stock is planted in the municipal nursery, it does not get the degree of intensive care it would receive at a commercial nursery due to the higher priorities imposed on

\$ 6.10 lining-out stock price (including mortality factor)
1.00 planting cost
3.00 nursery maintenance cost
2.50 digging, root- and limb-pruning costs
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\$12.60 Total

So, it costs approximately \$12.60 to "buy" a street tree from our nursery. Using a price of \$15.00 for a ready-to-plant, 1½"-1¾" bare-root commercially-grown tree in lots of 50 or more, we find we "save" \$2.40 per tree by growing our own. In addition, all of us know very well the problems that can plague a nursery operation — employee absenteeism, poor weather, and equipment breakdowns, which tend to further push our costs upwards.

Notice the words "buy" and "save" are in quotes. Because in saving \$2.40 per tree, we are losing the ability to provide other critical services mentioned previously. Moreover, if planting in your city is a critically needed service and your objective is to plant as many trees as possible, you will plant fewer trees per planting season with a given number of employees if you grow and dig your own as compared to buying ready-to-plant trees.

Our "savings" would be even smaller if purchasing practices were changed to contract-growing with commercial nurseries. Going to bid just before each planting season as many of us do now is not good economics. More and more cities are entering into contracts with nurseries to provide them with trees at a given future date. By doing this, nurseries can lower their tree prices because they can accurately forecast our demands.

I am not recommending that cities stop growing a certain percentage of their own trees, but I do believe this percentage should be kept fairly low. In Ann Arbor, we grow approximately 30% of our street trees yearly. This seems to work well for us, but varies by season depending on the amount of funds allocated to us for tree purchases. Our city-owned nursery has several advantages. We will be assured of at least some trees to plant if our tree-purchasing budget is severely cut. We will have the ability to grow special varieties for unique situations and we can start planting when weather permits rather than

us by lack of funds allocated to general forestry operations. The trees do not grow as rapidly as they should because of this lack of care. When they do reach the required size for street planting, they must be dug, root-pruned, and limb-pruned. This means more dollars for labor and equipment. No matter how careful we are, some trees are damaged during our digging operation.

A commercial nursery-grown tree reaches us ready for planting. We may perform minor root- and limb-pruning. It is usually well formed and should not be damaged in any way. It has had optimum maintenance during its period at the commercial nursery by professionals who are versed in the latest nursery and horticultural techniques. If it doesn't meet our specifications or has been damaged severely before it reaches us, we can reject it. We pay only for what we get. True, losses are passed on to us by higher prices. However, we still have the opportunity of choosing the low bid, and a nursery that continues to pass on to us higher prices because of sloppy techniques and poor management practices will find itself losing orders to other nurseries that are better managed.

The following costs reflect this fiscal year's labor costs and may be higher or lower than your particular operation. For about \$2.50, my nursery crew can dig, root-prune, and load one 1½"-1¾" bare-root tree on the planting truck. Adding this digging cost of \$2.50 per tree to the initial price of the lining-out stock three years ago (about \$5.50 per tree) and the cost of planting it in our nursery (then \$1.00), we have a cost so far of \$9.00. The cost of nursery maintenance — spraying, weed control, pruning, and occasional watering averages \$1.00 per tree per year. If the tree is in the nursery for three years, the optimum time period, the total nursery maintenance cost per tree is about \$3.00. Our nursery tree mortality rate has been averaging 10% for the three-year period the trees are in the ground. This means we have only nine out of every ten trees originally planted available for street tree planting. Adding this mortality factor onto the initial purchase price of \$5.50, each tree actually costs \$6.10. Summing all of the above figures on a per-tree basis, we have:

waiting for commercially-grown trees to reach us before starting the planting operation. Another important use for a city nursery is to grow trees for tree-spade planting in the 3-4" caliper range. Their high value and low planting cost can make them worthwhile to grow.

If you have a nursery now or are considering creating one in the future, you would be wise to analyze all of the factors mentioned, and look at

these costs critically. It may be that having your own nursery even though it is expensive is right for your needs or some combination of growing your own and buying from commercial nurseries is best.

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FIELD TRIAL COMPARISON OF TECHNIQUES OF ROOT KILL ON PROBLEM SPECIES¹

by Michael C. McNamara

Abstract

Three basic methods of brush control were compared for their control of black locust (*Robinia pseudoacacia* L.) root suckers and stump sprouts found on the right-of-way. The selective basal method showed the best control of the black locust root suckers. Where the brush was cut, the pre cut basal method showed better control than the stump treatment method.

It has been a standard practice for tree trimming and brush cutting crews on Pennsylvania Electric Company property to cut the tall standing brush and then chemically treat the stumps. This method of brush control has worked relatively well for the control of stump sprouts for the majority of tree species treated. The problem with this type of chemical treatment is not so much in the lack of control of the stump sprouts of the treated stumps, but in the lack of control from untreated stumps and the erratic control of the root suckers of the black locust.

The possible reasons for the poor results with the stump treatment method can be listed under two categories:

1. *Untreated Stumps.* When a cutter is cutting the brush on the right-of-way, he is cutting trees from 6 inches in diameter to 1/2 inch in diameter and he is making his cuts as close to the ground as possible. After the brush is cut, it is either dragged to a chipper and chipped, or to the edge of the right-of-way and

piled. During this dragging of brush, some of the stumps will be covered over with debris. These covered stumps will not be chemically treated because they cannot be seen. Also, there will be stumps missed because of human error.

2. *Insufficient amount of chemical solution applied.* So many times, the man spraying the stumps only puts enough chemical down to just dampen the exposed stump. Without a tall stem present to permit the chemical to run down and puddle at the base, many stumps do not receive enough chemical solution to control the stump sprouts, let alone the root suckers. Also, a common problem with inexperienced men is the application of the chemical solution to only the cut surface of the stump. This puts very little, if any solution, where it is needed.

The solution to the problems with stump treatment can be found in the basal spray methods employed during the chemical spray program. With a basal spray, the stem to be removed is treated from 12 inches to 18 inches from the ground and the chemical solution is permitted to run down the stem and puddle at the base. This method of treatment assures a sufficient amount of chemical solution on the plant. Also, because

¹ Presented at the Northeastern Weed Science Society Meeting in January 1977.