A Common-Sense Approach to Root-Pruning

By Connor Shaw, Possibility Place Nursery

The best methods for developing healthy roots have been debated for years. I encountered this debate most recently at the Landscape Below Ground Conference at the Morton Arboretum. The conference was very informative on the care and maintenance of the trees before and after they are placed the landscape. However, one thing became obvious to me – we have a pertinacity to put trees in situations that are not conducive to their success. We then spend a lot of money trying to correct the problems that should have been corrected in the growing, the design and the implementation phases.

As a grower of woody plants for forty years, the part that disturbed me the most was the idea that plants' roots should be sheared or cut before they are moved up in container size or planted in the landscape. I find this idea to be deplorable for a number of reasons.

First the cutting of the plant's roots is detrimental to the health of the plant. Pathogens are allowed into the plant when the roots are cut. An example is crown gall *(Agrobacterium tumefaciens)*, a pathogen that enters wounds on damaged stems and roots. A gall is then formed on stems or branches that reduces or prevents movement of water and nutrients.

Secondly plants growing in containers have many white root tips that will grow out into the larger containers or soil immediately upon being planted. The white root tips are removed during the cutting process. The plant then must create new ones which takes time. When the root tips are cut, establishment is delayed, which can be the difference between surviving or not in the landscape.

Slowing down the growth not only puts the plant at risk; it costs money. Let's just say a shearing of roots retards growth for one to one and a half months. In our production cycle we have three months to bring product on line for fall sales. Plants delayed by one to one and half months will probably not make the fall sale cycle. The plants, which don't grow over winter, will also miss spring sales. The plants will not be ready until after first flush in June. There are not many buyers around at that time. Inventory would need to be doubled in order to supply customers consistently. It would be extremely costly to do so.

Another aspect I am concerned about is labor costs, something I asked at the conference. Many told me there would not be much in of additional costs. I am always impressed by those who do not pay for labor and say there is not much cost. Labor is costly and scarce as hen's teeth. Ask anybody in the landscape or nursery industry in northern Illinois. Did I mention that the help is getting older, a lot older, myself included? In order to assess the additional labor cost, I analyzed one portion of our production line: transplanting 5-gallon containers into 15-gallon containers. I have visited many other nurseries that do the same as us, but their production process is different. They

have a location where all pots are filled. The large finished container is then moved by a large machine to its resting place. At one nursery, they did have a person with a machete chopping roots all day. Our process is different. We put the 15-gallon container in its final position in a row. The 5-gallon container is put in the 15-gallon container, and then the side row muncher fills the 15-gallon container with soil mix. We then move to the next one and down the row we go. I am not particularly intrigued with a person swinging a machete in the middle of this production line. I will also have to find additional labor to accomplish this task.

There is a solution, however, that allows root pruning without extra labor or excessive damaging of the roots: plants can be grown in containers that root prune. Whatever container you chose, make sure the it root prunes correctly. I have used Root-Maker products from seedling to finished product for 30 years. These containers not only root prune, but also prevent roots from circling. There are a number of methods, which are available to successfully root prune plants. One method is to air prune the roots, which desiccates the root tip and stimulates more roots to develop. Another method is what I call root strangulation. The small holes only allow very small roots to escape even though the root on the inside is much bigger. The bigger root is then stimulated to grow more roots. The third method is that the side of the container has a fabric that looks similar to Velcro. The roots get entangled in the fabric and stop growing, which stimulates more roots to develop. I'm sure there are other methods for root pruning, but these are the ones I am familiar with. A word of caution, a plant growing in a root-pruning container does have a shelf life. You could end up with root problems if the plant stays longer in the container than it should. When the plant is ready to go, move it or you are already a day late.

Grown in a smooth-sided container (left) vs. a RootMaker air-pruning container (right). RootMakers produce superior root systems.

There are two options for a grower to grow roots properly. One is to cut the roots and contend with the problems that that creates. The other is to use a root pruning system from start to finish. If you don't want to grow your plants in a root pruning system find somebody who will do it for you. Your plants will grow faster and be healthier, and you will make more money.

This is an example of a typical root system from a RootMaker grown tree. This should be the goal for every container grown tree.