

Planting Bare Root to Prevent Girdling Roots

Many mature tree issues Arborists face in the field are a result of improper planting techniques. These issues include girdling roots, buried root collars and compromised structural root plates. At the Bartlett Tree Research Laboratories (BTRL), we have installed research plots to determine how best to manipulate container trees at planting time to minimize or avoid problems as trees mature. In nursery containers, roots fill the growing media provided in the pot or box. Once roots reach the edge of this container, they often begin to circle or dive deeper along the space between the growing media and the container. If this situation is not corrected at planting, defects can compromise tree health and stability in later years.



Girdling root limiting water and nutrient flow to crown



Smaller container sizes were potted into larger containers without correcting circling roots creating multiple layers of defects.

The problem is exacerbated, because large container trees may have multiple layers of defects at each stage of production in the nursery. For example, a #15 container may have circling root defects at the #10 and #5 container sizes. This makes planting more difficult because we have to correct potential problems, not only on the outside of the root ball, but on the inside as well.

Studies conducted at BTRL and other institutions have shown that when root balls are “disturbed” to break or cut these circling (or diving) roots, there will likely be a reduction in tree health and growth for one to three seasons after planting as compared to trees that were planted directly into the soil without any root disturbance. Studies by other institutions have shown that after these first few years, trees with disturbed root systems begin to outperform those without disturbance. There are many differences in the methods and species used in all of the ongoing studies, but the trends are apparent. The clear message is that the short-term vigor of trees may be affected by root ball disturbance, but the long-term health will be enhanced.



Mechanically disturbed root system ready for planting