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The Myth of Top-Pruning Transplanted Material:

"Transplanted plants should have their crowns pruned to compensate for reduced root mass"

Gardeners are often advised to prune back the crown of transplanted trees and shrubs by as much as 50% to reduce transpiration and compensate for lost root systems. Internet web sites, even the usually reliable ".edu" sites, continue to spread this myth. This is a common practice in nurseries where top-pruning of containerized plants reduces shipping costs and has been shown to increase tree survival and growth *under nursery conditions*. Research performed under landscape conditions, however, shows that pruning when transplanting is not necessarily beneficial, and may even harm the tree.

For example, one study demonstrated that water usage actually increased in several tree species after the first 5-6 weeks in response to new shoot growth. Other studies have reported stunted growth or poor establishment as a result of top pruning. But conflicting evidence does exist regarding the costs and benefits of crown pruning. What's important to keep in mind are the short-term and long-term effects of top-pruning. While there might be immediate benefits from this practice in terms of balancing root and shoot mass, the long-term effects are generally negative. This difference in time scale probably accounts for much of the contradictory evidence in the scientific literature; many studies are relatively short term.

How do plants react to crown pruning?

When growing tips are removed from most plants, the immediate response is bud break below the cuts. This results in a bushier plant and can destroy the natural form of young decurrent and excurrent trees. Such growth requires that the plant put its resources into top growth at the expense of root growth. Gardeners see the top part of the plant growing, but are unaware that root growth is inhibited by reallocation of energy resources. Plants left intact after transplanting appear to be dormant to the untrained eye - but they actually are putting resources into root growth. When roots have become established, shoot growth again resumes.

Obviously, the practice of pruning the crown of a transplanted tree or shrub does not reflect what actually happens to the plant physiologically. In addition to interfering with the plant's ability to establish its roots, the removal of a significant portion of the crown also means the plant has lost biomass and cannot photosynthesize at its previous level. Thus, plants that have been top pruned are hit with a "double whammy:" part of their photosynthetic system is removed, and those resources that are left are directed towards new shoot development. It's no surprise that root establishment under these conditions is difficult.

Bottom line:

- There is no need to top-prune landscape plants if post-transplant irrigation is available (and all new landscapes need post-transplant irrigation!).
- The only time transplanted materials should be pruned is to remove broken, dead, or diseased branches, or to make structural corrections to young trees.
- If pruning is warranted, use thinning rather than heading cuts to preserve tree structure.

For more information, please visit Dr. Chalker-Scott's web page at <http://www.theinformedgardener.com>.