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11. © Root manipulation in containers. Cooley, J. International Plant Propagators' Society, combined proceedings, 2009, 59:233-236. 2010.

Root Manipulation in Containers©

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Good roots are the primary objective of any plant propagator. This might not be so true with quick-growing annuals but is particularly so with any perennial or woody plant, and especially trees. However, the majority of containers in use today do not do a good job of developing good root systems.

We need to aim to produce a root system as close as possible to the one the plant would develop when grown from a seed in its natural environment. Figure 1 shows a natural root system on a tree, note the dominant tap root plus strong lateral roots to give support and adventitious feeder roots to take up water and fertilizer.

Figure 1. Natural tree root system with dominant tap root plus strong laterals.

Figure 2, by contrast, shows the type of root system that is found all too often in container-grown nursery stock, this being an example of a tree root circling in a black pot. A plant with such a root system will never establish successfully and growth will never be fully healthy. The culprit here is the black pot, it is cheap, practical, and most growers use them despite the fact that they know it produces a poor root system.

Figure 2. Typical root system in container-grown nursery stock.

Any type of root system growing in a container — including those in propagation cell trays or liner containers — is a manipulated root system. It is, however, possible to have good manipulated roots and in this paper I will outline some examples of positive root manipulation practice.

ROOT MANIPULATION TECHNIQUES

Mechanical Root Pruning. This has been used for many years to manipulate the roots or, more precisely, to get rid of the bad roots. This is still used very extensively today as part of the guidelines for producing an adequate quality of root system for trees in Florida, for example. However, one problem is that it obviously causes a large check to plant growth which in turn has effects on both speed and percentage establishment.

Chemical Treatment. Another way of stopping bad roots developing in a container is to treat its inside surface with a copper compound. This works because