

## **Plant Production Specifications --- Suggested Terminology**

### **Trees must have root systems that include the following features:**

1. No circling roots as commonly occurs in conventional plastic containers with smooth interior walls or walls with only minor ribs or undulations or vertical slots.
2. Tap root must be modified at time of seed germination to create large numbers of fibrous roots resulting from air-root-pruning at the bottom as well as sidewall of the propagation container.
3. Seedlings must not have been allowed to remain in the propagation container an excessive period of time. When creating a fibrous root system in the propagation container, as more and more roots are produced, at some point roots become excessively dense and congested. Without further space for root exploration, the seedling becomes stunted. Such stunting is undesirable.
4. When grown on to a larger size such as a three gallon volume container, root development should not exceed the 4-inch rule<sup>1</sup>.
5. Seedlings must NOT have had root tips killed by toxic levels of copper or boron or zinc used as a coating on the inside of the container or as a component of the sidewall<sup>2</sup>. Chemical pruning agents accumulate in plant tissue and retards root extension out into the soil following transplanting.
6. Seedling development in larger containers (two, three or five gallon containers) must be done in a timely manner using air-root-pruning or root-tip-trapping in the sidewall to stop root circling and continue development of a fibrous root system.
7. Tree seedlings must not have been staked at any time during their development.
8. Trees must stand erect in the container with no signs of movement in the root system near the base of the stem. Poor root development and / or excessive time in the propagation container can lead to poor root support for the stem.
9. Lower limbs must remain on all seedlings as they contribute to maximum root growth, stem diameter development and strength. Only pruning to remove narrow V forks or aggressive side branches is allowed.
10. Trees are acceptable only when white root tips are clearly visible on the root ball when removed from the container and with no circling roots.
11. Plants that have had the root system sheared / sliced or shaved (the practice of removing a plant from a container of any size and cutting off all roots on the outer surface) are not acceptable.

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<sup>1</sup> Plant Production in Containers II, by Carl E. Whitcomb, Pages 92-93, The 4-Inch Rule.

<sup>2</sup> Plant Production in Containers II, by Carl E. Whitcomb, Pages 142-145., Copper Toxicity and Root Growth.