

# SPECIFICATIONS FOR QUALITY NURSERY TREES

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The following document is a specification that purchasers of trees should use to ensure a top quality product. This specification can be copied and pasted into your bid documents or quote sheets. You may also modify this specification to meet your local needs that might be different from what this specification requires. For those purchasers using preferred nurseries, send them a copy of this specification and put them on notice that in "X" number of years (one to three?), we will be using this specification to purchase trees. We want them to be in compliance with this spec, so we will be able to order trees from them.

This version is an industry specification intended to guide nurseries to grow quality plant material. If you have any comments or edits, please contact Gordon Mann at [gordon@mmandtrees.com](mailto:gordon@mmandtrees.com).

## SPECIFICATIONS FOR QUALITY NURSERY TREES

This document is intended to provide specifications for quality nursery trees. Key traits of nursery trees are identified and described to provide growers and buyers with the information they need to distinguish acceptable quality stock from unacceptable quality stock. Structural and health characteristics are described, as well as labeling, compliance with laws and regulations, and inspection of nursery stock. If a particular defect or substandard element can be corrected easily, appropriate remedies shall be performed prior to accepting delivery. Unacceptable trees will contain defects and substandard elements that cannot be easily corrected.

### I. GLOSSARY:

**ANSI.** American National Standards Institute. Z60.1 is the national standard for nursery stock.

**Caliper.** Trunk diameter is measured 6 inches (15 cm) from the ground; if the caliper is greater than 4 inches (10 cm), the measurement is taken at 12 inches (30 cm) from the ground.

**Central leader,** also referred to as **leader** or the **dominant leader.** A continuation of the main trunk located more or less in the center of the crown, beginning at the lowest main scaffold branch and extending to the top of the tree.

**Circling root(s).** One or more roots whose diameter is greater than 10% of the trunk caliper circling more than one-third of the trunk. Circling roots are unacceptable.

**Clear trunk.** The portion of the trunk below the main crown which may include shortened temporary branches.

**Co-dominant.** Two or more vigorous, upright branches or stems of relatively equal diameter that originate from a common point, usually where the leader was lost or removed. Co-dominant stems are unacceptable.

**Crown.** The portion of a tree beginning at the lowest main scaffold branch extending to the top of the tree. On younger trees, the crown may be comprised of temporary branches.

**Cultivar.** A named plant selection from which identical or nearly identical plants can be produced, usually by vegetative propagation or cloning.

**Included bark.** Bark embedded in the union between a branch and the trunk or between two or more stems that prevents the formation of a normal branch bark ridge. Included bark is unacceptable.

**Kinked root.** A main root that is sharply bent. Kinked roots are unacceptable.

**Root collar,** also referred to as the **root flare.** The base of a tree where the main roots and trunk meet.

**Scaffold branches.** Large main branches that form the main structure of the crown.

**Stem-girdling root.** A circling, bent, or straight root that touches or rests on the trunk or root flare that can become a permanent root.

**Temporary branch.** A small branch that is temporarily retained along the lower trunk of young trees.

**Trunk.** The main stem of a tree, beginning at the root collar and ending at the lowest main scaffold branch.

**Taper.** The thickening of a trunk or branch toward its base.

### II. GENERAL SPECIFICATIONS

**A. Proper Identification:** All trees shall be true to name as ordered or shown on planting plans and shall be labeled individually or in groups by species and cultivar (as appropriate).

**B. Compliance:** All trees shall comply with federal and state laws and regulations requiring inspection for plant diseases, pests, and weeds. Inspection certificates required by law shall accompany each shipment of plants.

Clearance from the local county agricultural commissioner, if required, shall be obtained before planting trees originating outside the county in which they are to be planted. Even though trees may conform to county, state, and federal laws, the buyer may impose additional requirements that pertain to local issues.

### III. TREE SPECIFICATIONS

These specifications shall apply to deciduous, broadleaf evergreen, and coniferous species. They do not apply to palms. Note that leaf characteristics will not be evident on deciduous trees during the dormant season.

**A. Crown:** The form and density of the crown shall be typical for a young specimen of the species/cultivar. Changes in form caused by wind, pruning practices, pests, or other factors shall not substantially alter the form for the species/cultivar. These crown specifications do not apply to plants that have been specifically trained in the nursery to be: topiary, espalier, multi-stem, or clump; or unique selections such as contorted or weeping cultivars.

1. Trees shall have a single, relatively straight trunk, and central leader. They shall be free of co-dominant stems and vigorous, upright branches that compete with the central leader. If the original leader has been headed, a new leader at least one-half of the diameter of the original leader shall be present.
2. Main branches shall be well-distributed along the central leader, not clustered together. They shall form a balanced crown appropriate for the age of the species/cultivar.
3. Branch diameter shall be no larger than two-thirds (one-half is preferred) the diameter of the central leader measured 1 inch (2.5 cm) above where the branch is attached.
4. The attachment of the largest scaffold branches shall be free of included bark.
5. Temporary branches, unless otherwise specified, should be present along the lower trunk below the lowest scaffold branch, particularly for trees less than 1 inch (2.5 cm) in caliper. These branches should be no greater than 3/8 inch (1 centimeter) diameter. Clear trunk shall be no more than 30% of the total height of the tree.

**B. Trunk:** The tree trunk shall be relatively straight, vertical, and free of wounds, except properly made pruning cuts, which shall be closed over or less than 3/4 inch (2 cm) diameter open, sunburned areas, conks (fungal fruiting bodies), wood cracks, bleeding areas, signs of boring insects, galls, cankers, stem-girdling ties, or lesions (mechanical injury).

1. Trunk caliper and taper shall be sufficient so that the tree will remain vertical without a stake. Trunk caliper at 6 inches (15 centimeters) above the soil media (substrate) surface shall be within the diameter range shown for each container size below and as specified in current edition of ANSI Z60.1. For example:

<u>Container Size</u>	<u>Trunk Diameter</u>
# 5.....	0.5" to 0.75" (1.2 to 2 cm)
# 15.....	0.75" to 1.5" (2 to 4 cm)
24-inch box.....	1.5" to 2.5" (4 to 6.5 cm)

2. The cut made when re-growing the top should be just above the major structural roots. The "shank" that results from this procedure should be at a consistent height above the structural roots and no longer than 5 inches (12 cm), to ensure that the trees are consistently planted at the correct depth. The base of the trunk should not have a large pruning cut from re-growing the top.

**C. Roots:** The root system shall be substantially free of injury from biotic (e. g., insects and pathogens) and abiotic (e. g., herbicide toxicity and salt injury) agents.

1. The uppermost roots or root collar shall be within the upper 2 inches (5 cm) of the soil media (substrate). Depth of the root-ball shall be measured from the top of the ball, which in all cases shall begin at the root flare. Soil above the root flare shall not be included in the root-ball depth measurement, and shall be removed.
2. The root collar and the inside portion of the root-ball shall be free of defects, including circling, kinked, and stem-girdling roots. Soil removal or root washing near the root collar may be necessary to inspect for the aforementioned root defects.
3. Roots on the periphery and bottom of the root-ball shall be less than 1/4 inch (.65 cm) in diameter while 1/8

inch (.3 cm) is preferred.

4. The tree shall be well rooted in the soil media (substrate). Root distribution shall be uniform throughout the soil or media. Structure and growth shall be appropriate for the species/cultivar. When the burlap or container is removed, the root-ball shall remain intact. When the trunk is lifted both the trunk and root system shall move as one.
5. Trees should have several lateral roots or many fibrous roots spaced evenly around the trunk to provide support so the trees are stable when planted. Trees should have as many small roots as possible. These roots are key to the uptake of sufficient water and nutrients. Fibrous roots can be achieved by root-pruning, using air-pruning containers, or under-cutting or root pruning and transplanting at any stage of production.
6. As a general rule for young nursery-grown trees, there should be two or more structural roots within 1 – 3 inches (2.5 – 7.5 cm) of the soil surface. “First order lateral roots” is another term that has been used for these roots. If the roots are deeper than 3 inches (7.5 cm), the stock shall be rejected if the root ball is undersized as specified in current edition of ANSI Z60.1.
7. Field grown trees for balled and burlap delivery shall have the roots pruned at least six inches inside the final root ball size performed within adequate time for the tree to develop fibrous roots at the outer edge of the root-ball prior to harvest and delivery.

**D. Leaves:** The size, color, and appearance of leaves shall be typical for the time of year and stage of growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress as indicated by wilted, shriveled, or dead leaves.

**E. Branches:** Shoot growth (length and diameter) throughout the crown shall be appropriate for the age and size of the species/cultivar. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches.

#### **IV. INSPECTION**

The buyer reserves the right to reject trees that do not meet these specifications. If a particular defect or substandard element or characteristic can be easily corrected, appropriate remedies shall be performed by the nursery to move the plants into compliance. If destructive inspection of a root-ball or balls is to be done, the buyer and seller shall have an agreement as to the time and place of inspection, number or percent of trees or species/cultivars to be inspected, care of acceptable trees following inspection, and financial responsibility for the acceptable inspected trees.

At the time of inspection and delivery, the root-ball shall be moist throughout. If in leaf, the crown shall show no signs of moisture stress or branch dieback. The roots shall show no signs of excess soil moisture as indicated by poor root growth, root discoloration, distortion, death, or foul odor.

#### **V. DELIVERY**

The buyer shall stipulate the date of requested delivery. The nursery shall stipulate how many days prior to delivery that notification must be received, and any special considerations for care between requested delivery date and installation.

#### **VI. ADDITIONAL INFORMATION**

For additional information and guidelines about growing and inspecting quality nursery products, visit “Guiding Principles for Growing Quality Trees for the Landscape” at the following links:

[http://www.fire.ca.gov/resource\\_mgt/downloads/NurseryTreeSpecs10\\_09\[1\].pdf](http://www.fire.ca.gov/resource_mgt/downloads/NurseryTreeSpecs10_09[1].pdf)

[http://www.fire.ca.gov/resource\\_mgt/downloads/NurseryTreeProductionStrategies\\_10\\_2009\[1\].pdf](http://www.fire.ca.gov/resource_mgt/downloads/NurseryTreeProductionStrategies_10_2009[1].pdf)