Guideline Specifications for Nursery Tree Quality

Selecting Quality Nursery Stock

A committee comprised of municipal arborists, urban foresters, nurserymen, U.C. Cooperative Extension horticultural advisors, landscape architects, non–profit tree groups, horticultural consultants, etc., developed the attached specifications to ensure high quality landscape trees. After more than a year of work, they succeeded in drafting a document entitled Specification Guidelines for Container–grown Trees for California. This document will be published and the guidelines promoted throughout the nursery and landscape industry. Its intent is to help landscape professionals develop their own comprehensive and detailed specifications to ensure that they obtain high quality container–grown nursery trees. The document is also intended to help nursery professionals in their efforts to improve the quality of trees grown in California. These specifications can be modified for specific simulations.

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Illustrations:

Front page, c) temporary branches C. Trunk Taper Illustration by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida.
All other Illustrations adapted from Integrated Management of Landscape Trees, Shrubs and Vines, Fourth Edition, 2003, Harris, Clark, Matheny
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I. PROPER IDENTIFICATION

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

Illustration by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida.

II. COMPLIANCE

All trees shall comply with federal and state laws and regulations requiring inspection for plant disease, pests and weeds. Inspection certificates required by law shall accompany each shipment of plants. Clearance from the 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.

III. TREE CHARACTERISTICS AT THE TIME OF SALE OR DELIVERY

A. TREE HEALTH

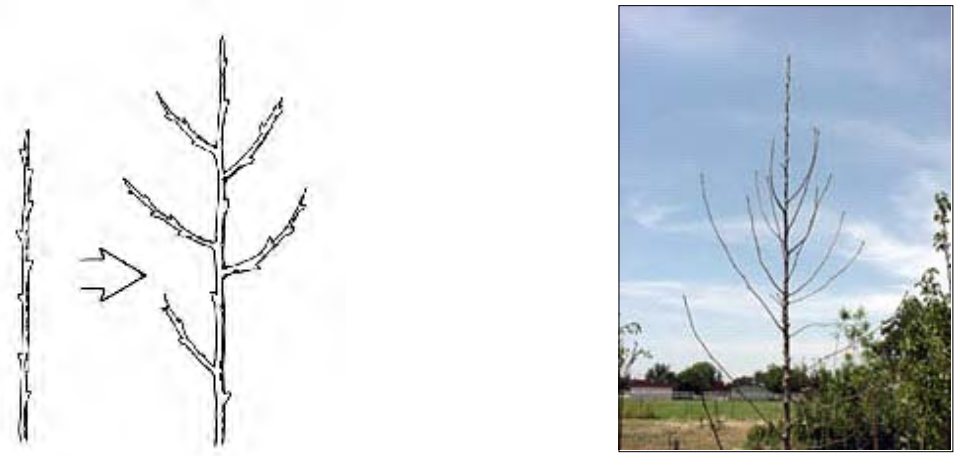
As typical for the species/cultivar, trees shall be healthy and vigorous, as indicated by an inspection for the following:

1. Trees shall be relatively free of pests (*insects, pathogens, nematodes or other injurious organisms*).
2. An inspection of the crown, trunk, and roots shall find the following characteristics:

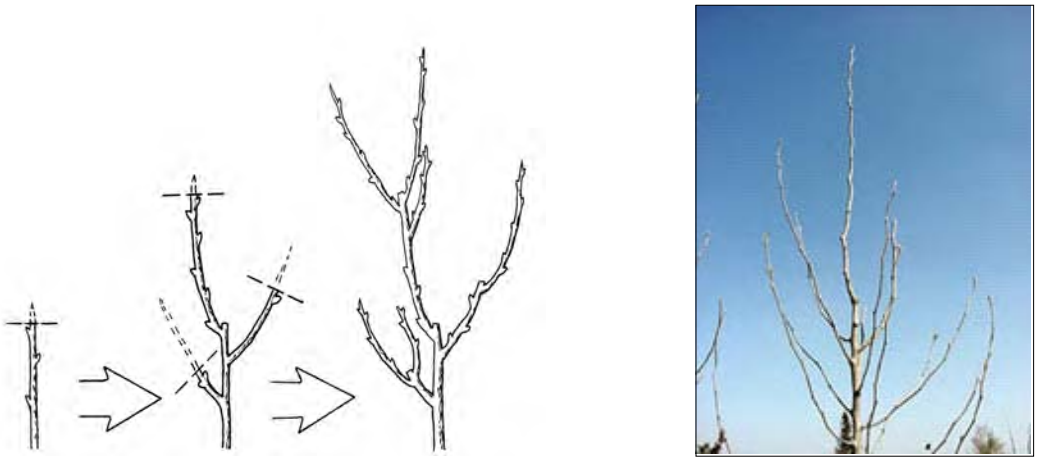
a. Crown Form: The form or shape of the crown is typical for a young specimen of the species/cultivar. The crown is not significantly deformed by wind, pruning practices, pests or other factors.
b. Leaves: The size, color and appearance of leaves are typical for the time of year and stage of growth of the species/cultivar. Leaves are not stunted, misshapen, tattered, discolored (*chlorotic or necrotic*) or otherwise atypical.
c. Branches: Shoot growth (*length and diameter*) throughout the crown is typical for the age/size of the species/cultivar. Trees do not have dead, diseased, broken, distorted or other serious branch injuries.
d. Trunk: The tree trunk should be fairly straight, vertical and free of wounds (*except properly–made pruning cuts*), sunburned areas, conks (*fungal fruiting bodies*), wood cracks, bleeding areas, signs of boring insects, galls, cankers/lesions and girdling ties.
e. Tree height and trunk diameter are typical for the age, species/cultivar and container size.
f. Roots: The root system is free of injury from biotic (*insects, pathogens, etc.*) and abiotic agents (*herbicide toxicity, salt injury, excess irrigation, etc.*). Root distribution is uniform throughout the soil mix or growth media and growth is typical for the species/cultivar.

B. CROWN

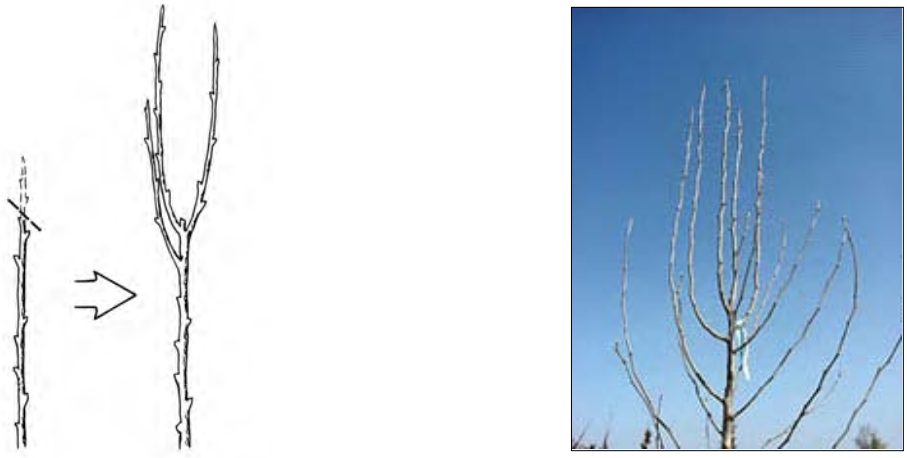
1. **Central Leader**: Trees shall have a single, relatively straight central leader and tapered trunk, free of codominant stems and vigorous, upright branches that compete with the central leader. If the original leader has been headed, a new leader at least ½ (*one–half*) the diameter of the original leader shall be present.



Maintaining a single, centeral leader is preferable.



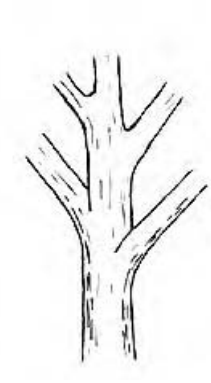
Heading and retaining a leader is acceptable.



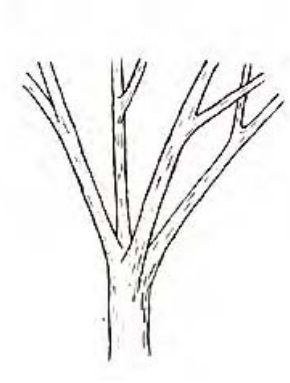
Heading without retaining a leader is unacceptable.

2. **Main Branches** (*scaffolds*): Branches should be distributed radially around and vertically along the trunk, forming a generally symmetrical crown typical for the species.

a) **Main branches**, for the most part, shall be well spaced.



preferable



unacceptable

preferable

unacceptable

b) **Branch diameter** shall be no greater than 2/3 (*two thirds*) the diameter of the trunk, measured 1" (*one inch*) above the branch.

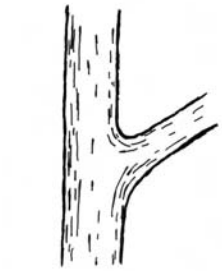
preferable

unacceptable

preferable

unacceptable

c) The attachment of scaffold branches shall be free of **included bark**.



preferable

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preferable

unacceptable

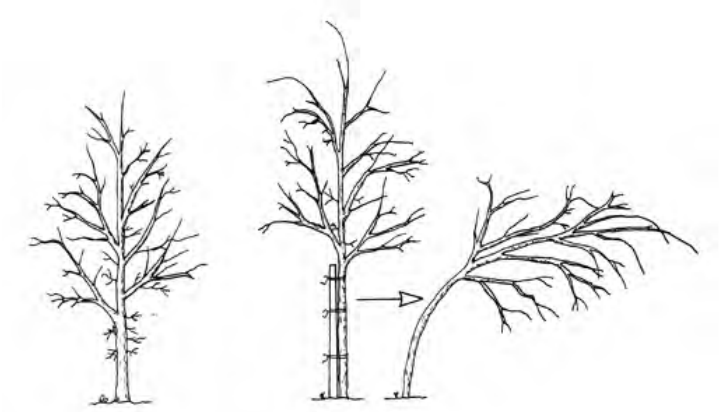
3. **Temporary branches:** Temporary branches should be present along the lower trunk, particularly for trees less than 1–1/2" (*one and one–half inches*) in trunk diameter. They should be no greater than 3/8" (*three–eighths inch*) in diameter. Heading of temporary branches is often necessary to limit their growth.


Good


Not as Good

C. TRUNK

1. **Trunk diameter and taper** shall be sufficient so that the tree will remain vertical without the support of a nursery stake.



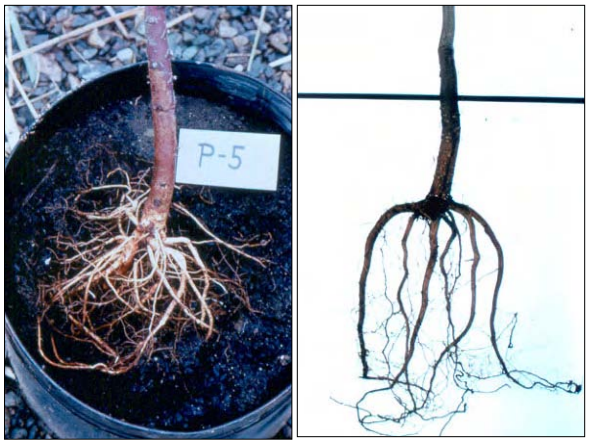
2. The **trunk shall be free of wounds** (*except properly–made pruning cuts*), sunburned areas, conks (*fungal fruiting–bodies*), wood cracks, bleeding areas, signs of boring insects, galls, cankers and/or lesions.

3. **Trunk diameter** at 6" (*six inches*) above the soil surface shall be within the diameter range shown for each container size below:

Container Size	Trunk Diameter (*inches*)
# 5 (gallon)	0.5" to 0.75"
# 15 (gallon)	0.75" to 1.5"
24 inch box	1.5" to 2.5"

D. ROOTS

1. The trunk, **root collar** (*root crown*) and large roots shall be free of circling and/or kinked roots. Soil removal near the root collar may be necessary to inspect for circling and/or kinked roots.



preferable

unacceptable

2. The tree shall be **well rooted** in the soil mix. When the container is removed, the rootball shall remain intact. When the trunk is carefully lifted both the trunk and root system shall move as one.

preferable

unacceptable

3. The **upper–most roots** or root collar shall be within 1" (*one inch*) above or below the soil surface.

preferable

unacceptable

4. The **rootball periphery** should be free of large circling and bottom–matted roots. The acceptable diameter of circling peripheral roots depends on species and size of rootball. The maximum acceptable size should be indicated for the species (*if necessary*).

preferable

unacceptable

E. MOISTURE STATUS

At time of inspection and delivery, the rootball shall be moist throughout. The crown shall show no signs of moisture stress as indicated by wilted, shriveled or dead leaves or branch dieback. The roots shall show no signs of excess soil moisture conditions as indicated by poor root growth, root discoloration, distortion, death or foul odor.

V. INSPECTION

The buyer reserves the right to reject trees that do not meet specifications as set forth in these guidelines or as specified by the buyer. If a particular defect or substandard element or characteristic can be easily corrected, appropriate remedies shall be required. If destructive inspection of a rootball(s) is to be done, the buyer and seller should have a prior agreement as to the time and place of inspection, minimum number of trees or percentage of a species or cultivar to be inspected and financial responsibility for the inspected trees.

DELIVERY

The buyer should stipulate how many days prior to delivery that notification is needed.

GLOSSARY:

Codominant – Two or more vigorous and upright branches of relatively equal size that originate from a common point, usually where the leader has been lost or removed.

Crown – The aboveground part of the tree including the trunk.

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

Girdling root – A root that partially or entirely encircles the trunk and/or buttress roots, which could restrict growth and downward movement of photosynthate and/or water and nutrients up.

Included bark – Bark embedded within the crotch between a branch and the trunk or between two or more stems that prevents the formation of a normal branch bark ridge. This often occurs in branches with narrow-angled attachments or branches resulting from the loss of the leader. Such attachments are weakly attached and subject to splitting out.

Kinked root – A primary root(s), which is sharply bent, causing a restriction to water, nutrient, and photosynthate movement. Kinked roots may compromise the structural stability of root systems.

Leader – The dominant stem which usually develops into the main trunk.

Photosynthate – Pertains to sugar and other carbohydrates that are produced by the foliage during photosynthesis, an energy trapping process.

Root collar – The flared area at the base of a tree where the roots and trunk merge. Also referred to as the "root crown" or "root flare".

Shall – Used to denote a practice that is mandatory.

Should – Used to denote a practice that is recommended.

Scaffold branches – Large, main branches that form the main structure of the tree.

Temporary branch – A small branch that is retained temporarily along the lower trunk of young trees. Temporary branches provide photosynthate to increase trunk caliper and taper and help protect it from sunburn damage and mechanical injury. Such branches should be kept small and gradually removed as the trunk develops.

Trunk – The main stem or axis of a tree that is supported and nourished by the roots and to which branches are attached.