



## Selecting Plants In The Nursery

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The quality of the trees, shrubs, vines, and ground covers selected in a nursery can be just as important as species selection, site evaluation, planting, and maintenance in determining their success in the landscape. Carefully inspect plants from top to bottom before purchase to ensure that they meet crown, trunk, and root standards and are healthy, vigorous, and free from injury, disease, and pests.

Nurseries stock mostly container-grown plants. Container-grown plants can be transplanted successfully any time during the year in all areas of the state except those that experience extended periods of subfreezing weather. During the dormant winter season, however, a variety of deciduous, woody fruit, shade, and ornamental trees and vines are usually readily available bare-root. If handled and planted properly, bare-root plants are normally less expensive and grow just as well as container-grown ones, and their roots are easier to inspect.

### Crown and Trunk Characteristics

The aboveground portions of plants are the easiest to inspect. Check the crown of leaves and shoots for health, turgidity, presence of disease or insects, and shape and structure. If the plant is staked, untie it and see if it bends over sharply at the soil line or if the trunk is loose in the soil, both of which indicate poor trunk and root development.

If trees were grown in the nursery with adequate space and without staking or severe pruning, they are usually capable of supporting themselves, even in wind. They should return to an upright position when bent down by the wind or hand if they have developed proper crown-to-trunk and crown-to-root ratios, trunk taper, and branch distribution. Proper development of these characteristics ensures even distribution of wind stress and less breakage and damage. Plants are often crowded in nurseries during production and may not attain these desirable characteristics.

The height and size of the crown should be in moderate proportion to the caliper of the trunk and size of root mass. If the tree has been grown in a series of containers for many years, the crown may be too large or too small in proportion to the roots. Trees in this condition require relatively high postplanting care. Judicious thinning or pruning will reduce the crown-to-root ratio and improve moisture and nutritional levels, lessening the need for continued high levels of care.

The trunk should be tapered, wider at the bottom and more slender near the top, bending only along a section near the ground when subjected to sufficient stress. Tapered trunks distribute wind loads evenly in their lower portions, thus minimizing the possibility of breakage or damage. Excessive crowding, staking, and severe pruning can produce trees without proper taper, leading to trunks that break easily or remain bent over even after the wind has stopped.

Branches along the trunk of a tree, especially a young one, will distribute wind stress evenly. The crown should have branches placed along the trunk so that about half of the foliage is on branches originating in the upper third of the trunk and the other half of the foliage is on branches originating in the lower two-thirds of the trunk. Lower branches on young trees not only help to distribute stress more evenly but also help the tree attain greater caliper and taper. Lower branches should be kept short in relation to higher, permanent, scaffold branches and can be removed altogether with time.

Future, main scaffold branches should be well-spaced both up and down the trunk as well as around it and should form wide angles at the point of attachment.

### Roots

A healthy, well-developed root system is essential to establishing a plant successfully in the landscape. Carefully remove a plant from its container to inspect the roots. Plants in 1-gallon containers can be turned upside down and, while holding the stem between the fingers with the hand spread flatly against the soil surface, the rim of the pot tapped gently onto a solid object until the root ball slides out easily. Plants in 2- and 5-gallon containers can be carefully and slowly picked up at the base of the stem and, by tapping on the container rim, the container gently pushed down to expose the roots. If a plant this size begins to pull out of the soil ball, as it is being lifted, it is a poorly rooted specimen.

To inspect the roots of ground covers in flats, carefully place the flat nearly on edge and gently pull back on the plants in one corner to reveal the roots. Lift bare-root material and shake off the sawdust or other holding material to expose the roots.

When plants are removed from the container, the roots should be fibrous and of sufficient density to hold the soil and root mass together. Roots enclosing the outside of the root ball should be small- to medium--sized and not too densely entwined or matted. Main roots should be free of kinks and circles; all roots should be free of disease, insects, and nematodes.

Not all kinked and circling roots are necessarily harmful. Only main roots with more than a 90-degree turn and 80 percent of the root system below the kink and at the surface or center, or those that circle 80 percent or more of the root system by at least 360 degrees, generally cause problems. If necessary, remove or wash away some of the potting soil at the center around the trunk-surface area to examine the roots.

Circling roots on the outside of the root ball are fairly common, especially in container-grown plants, are usually not a problem and can be corrected at planting. The root system is probably not abnormally pot-bound if plant tops are healthy and vigorous.

Generally, healthy root tips are white or light-colored. Diseased or rotten roots are usually soft, dark, and mushy, and when pulled, the outer portion strips away easily, leaving a slender, threadlike core.

Although plants are generally sold by container size, there is not necessarily a relationship between the size of plants and their containers. If inspection of the root mass reveals few roots on the outside, one is probably paying for a larger plant than one receives.

### Plant Health

Plant health is characterized by vigor (a measure of a plant's ability to do well once planted) and freedom from injury and pests. Indicators of vigor include green to dark green color, relatively large leaves and dense foliage, smooth bright bark, and adequate shoot growth. Evaluation of plant vigor is relatively subjective and requires a good knowledge of a species when making such assessments, because many of the indicators vary from species to species. Obviously, plants should be free in all their parts from injury, disease, and pests.

Donald R. Hodel  
Environmental and Landscape Horticulturist  
University of California  
Cooperative Extension  
Los Angeles

Dennis R. Pittenger  
Editor  
Area Environmental Horticulture Advisor  
UCCE Central Coast & South Region/  
UCCE Los Angeles County/ Botany and  
Plant Sciences Department, UC Riverside

