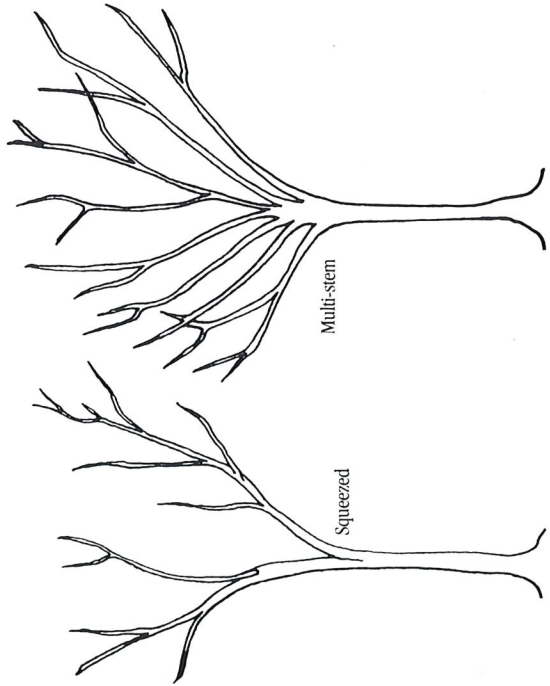


POOR FORM



to the trunk. Once this problem starts, the weak branch attachment could lead to branches cracking or breaking during mild to moderate storms.

When several branches are on the same position on the trunk, the likelihood of weak attachments and cracks increases greatly. As the branches grow larger and tighter together, the chances for splitting increase.

Avoid trees with two or more stems squeezing

together. As stems squeeze together, cracks often form down the trunk. The cracks could start from squeezed multiple leader stems, or where the two trunks come together.

If you desire a tree with multiple trunks, such as a birch clump, make certain that the trunks are well-separated at the ground line.

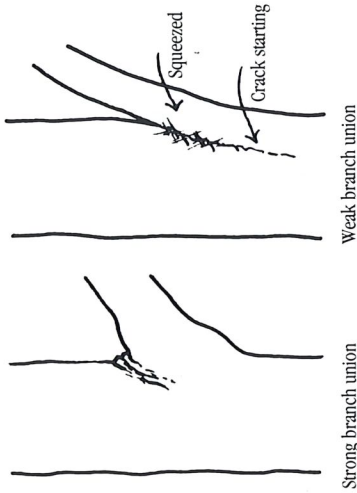
Remember, trunks do expand in diameter as they grow. Two trunks may be slightly separated when small, but as they grow in girth, the trunks will squeeze together.

Look for early signs of vertical trunk cracks. Examine branch unions carefully for small cracks below the unions. Cracks are major starting points for fractures of branches and trunks. The small cracks could be present for many years before a fracture happens. Always keep a close watch for vertical cracks below squeezed branches and squeezed trunks.

Corrective pruning helps.

If your tree has only a few minor problems, corrective pruning may help. Start corrective pruning one year after planting. Space the pruning over several years.

BRANCH ATTACHMENTS



Remove broken or torn branches at the time of planting. After a year, start corrective pruning by removing the branches that died after planting.

Trees Have Dignity Too

Most nurseries produce high-quality trees. When you start with a high-quality tree, you are giving that tree a chance to express its dignity for many years. Remember **R.I.F.**

This brochure is one in a series published by the International Society of Arboriculture as part of its Consumer Information Program. You may have additional interest in the following titles currently in the series:

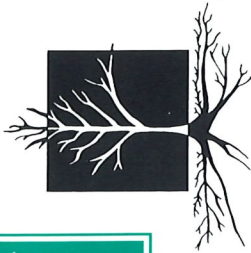
- Avoiding Tree Damage During Construction
- Avoiding Tree and Utility Conflicts
- Benefits of Trees
- Buying High-Quality Trees
- Insect and Disease Problems
- Mature Tree Care
- New Tree Planting
- Plant Health Care
- Proper Mulching Techniques
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- Tree Values
- Trees and Turf
- Why Hire an Arborist?
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www.isa-arbor.com

Buying High-Quality Trees



When you buy a high-quality tree, plant it correctly, and treat it properly, you and your tree will benefit greatly in many ways for many years.

When you buy a low-quality tree, you and your tree will have many costly problems even if you take great care in planting and maintenance.

What Determines Tree Quality?

A High-Quality Tree Has:

1. An adequate-sized root ball. If possible, check to ensure there are enough sound roots to support healthy growth.
2. A trunk free of mechanical wounds and wounds from incorrect pruning.
3. A strong form with well-spaced, firmly-attached branches.

A Low-Quality Tree Has:

1. Crushed or circling roots in a small root ball or small container.
2. A trunk with wounds from mechanical impacts or incorrect pruning.
3. A weak form where multiple stems squeeze against each other or where branches squeeze against the trunk.

Any of these problems alone or in combination with the others will greatly reduce the tree's chances for a long, attractive, healthy, and productive life.

When buying a tree, inspect it carefully to make certain it does not have problems with roots, injuries, or form. (Remember **"R.I.F."** —it will help you remember **Roots, Injuries, and Form.**)

ISA

Here are some details on potential problems, and some other considerations, that you should be aware of when buying a tree.

Root Problems

Roots on trees for sale are in three categories:

1. Bare roots, no soil; usually on small trees.
2. Roots in soil held in place by burlap or some other fabric. The root ball may be in a wire basket.
3. Roots and soil in a container.

Bare Root Stock

Bare roots should not be crushed or torn. The ends of the roots should be clean cut. If a few roots are crushed, recut them to remove the injured portions. Use sharp tools. Make straight cuts. Do not paint the ends. The cuts should be made immediately before planting and watering.

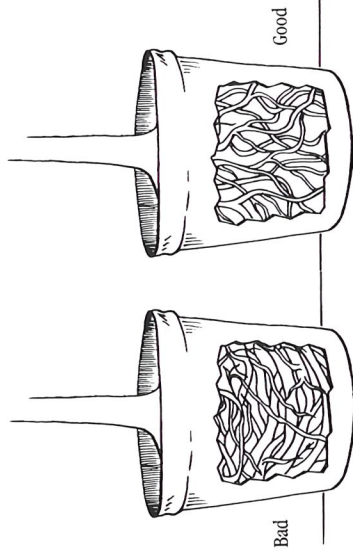
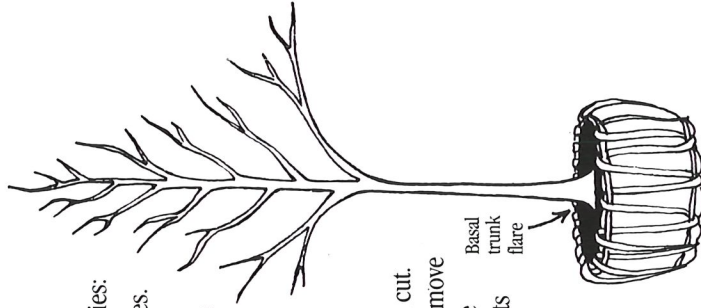
Root Balled Stock

You should be able to see the basal trunk flare. The flare is the spreading trunk base that connects with the roots. Root balls should be flat on top.

Roots in soil in round bags often have many major woody roots cut or torn during the bagging process.

The diameter of the root ball should be at least ten to twelve times the diameter of the trunk as measured 6" above the trunk flare.

Roots should not be crushed or torn. After placing the root ball in the planting site, cut the cords and carefully pull away the burlap or other fabric. Examine any roots that protrude from the soil. If many roots are obviously crushed or



torn, the tree will have severe growth problems. If only a few roots are injured, cut away only the injured portions. Use a sharp tool. Use care not to break the soil ball about the roots.

Cut the wire on wire baskets. Place the basket into the planting site. Cut away at least the top two wires without disturbing the root ball. Inspect exposed roots for injuries. If many roots are injured, the tree may have serious growth problems.

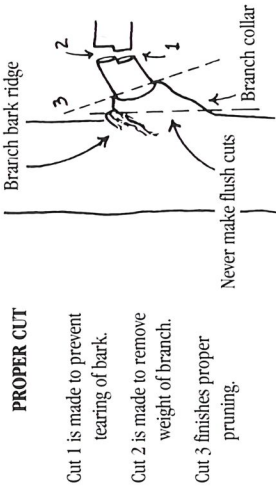
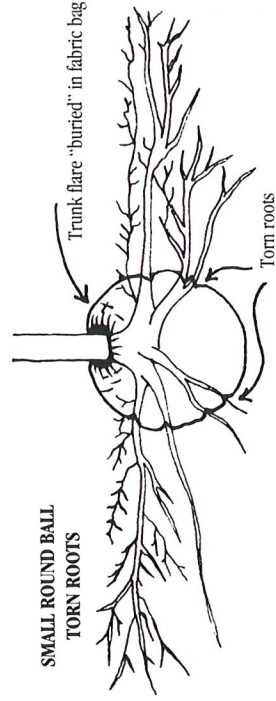
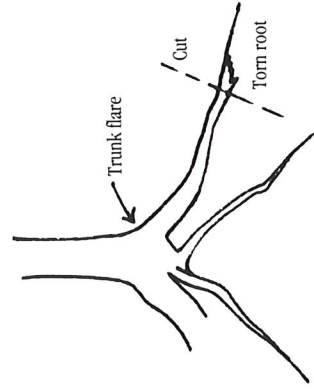
Container Stock

Roots should not twist or circle in the container. Remove the root ball from the container. Inspect the exposed larger roots carefully to see if they are twisting or turning in circles. Circling roots often girdle and kill other roots. If only a few roots are circling, cut them away with a sharp tool.

Trunk flare should be obvious. Be on alert for trees planted too deeply in containers, or trees "buried" in fabric bags. As with root balled stock, you should be able to see the basal trunk flare with container grown plants.

Injuries

Beware of injuries beneath trunk wraps. Trunk wraps may hide wounds, incorrect pruning cuts, and insect injuries. Never buy a tree without thoroughly checking the trunk. If the tree is wrapped, remove the wrap, inspect the trunk for wounds,

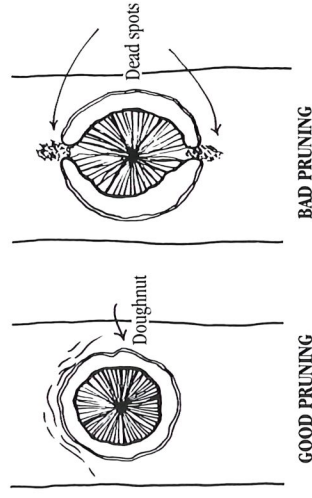


incorrect pruning cuts and insect injuries. Wrap can be used to protect the trunk during transit, but should be removed after planting.

Incorrect pruning cuts are major problems. Incorrect pruning cuts that remove or injure the swollen collar at the base of branches can start many serious tree problems—cankers, decay, cracks.

Incorrect pruning cuts that leave branch and leader stubs also start disease and defect problems. Do not leave stubs.

A correct pruning cut removes the branch just outside of the collar. A ring or "doughnut" of sound tissues then grows around the cut. Do not make cuts flush to the trunk. The closing tissues may form only to the sides of the flush cuts. Trunk tissues above and below flush cut branches often die. When the heat of the sun or the cold of frost occur, cracks or long dead streaks may develop above and below the dead spots.



Form

Good, strong form, or architecture, starts with branches evenly spaced along the trunk. The branches will have firm, strong attachments with the trunk.

Squeezed branches signal problems. Weak branch unions occur where the branch and trunk squeeze together. As the squeezing increases during diameter growth, dead spots or cracks often begin to form below where the branch is attached