

MINIMIZING TREE AND SHRUB HEALTH PROBLEMS

In this age of valuable plant materials, the transplanting process must be done correctly. If it's not, the company stands to lose money.

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Shown here is a properly planted shade tree. Note the wrap, staking and water well.

Tree health problems with nursery stock can be placed into two broad categories: (1) pre-sale failure and (2) post-sale failure. Due to the high value of plants at the time of sale and to the role of the customer, the category of post-sale failure is most important to landscape managers.

No one expects the failure of plant materials that have been recently sold. The customer expects (usually there is a written or oral guarantee for a specific time period after purchase) that the tree or shrub purchased will remain healthy and vigorous after it has been transplanted. If the initial quality of the sold plants, the proper placement in the planting hole, or the follow-up care after planting have not all been performed correctly, the customer may be disappointed with the result.

The customer also will not be pleased with the seller.

Replacement of trees and shrubs that fail is costly to the seller and does not address a practical solution to this problem.

Let's explore some ways that landscape managers can minimize their losses in recent transplants.

Placement in soil

The correct placement of the tree or shrub would seem to be a simple and straightforward matter with little chance for error. Unfortunately, it isn't.

The confusion is often caused by the uncertainty over exactly where the root system begins, due to wrapping and ties that are not properly removed during planting, and due to settling in the planting hold of large stock with heavy root balls. In addition to how a plant is set in a planting hole, the location and condition of the planting hole can often be sources of transplant failure.

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Hemp cords left around a newly transplanted shrub will eventually cause stem girdling.

Determining the correct planting depth of each tree and shrub is a critical first step in proper placement. To do this, you must first untie all cords around the trunk and peel back all wrapping to examine the lower trunk and soil ball. Using the point where the trunk buttress forms at the root collar is the best location to aim for.

If you cannot see this point, begin digging carefully by hand around the soil ball until the major roots are found. Just above these is the buttress swell and the correct planting depth. Soil stains on the lower trunk can be misleading indicators of proper depth, as soil may have been mounded up during cultivation.

Wrapping and cords around the root ball are great for handling and storage, but become somewhat of a liability once a plant is set in the planting hole. Cords, regardless of type, do not biodegrade rapidly and can girdle or strangle the trunk.

Cord location around the lower trunk can also give the mistaken impression that it represents the correct planting level. Many times, cords are wound around the stem at a point a considerable distance up the trunk from where the roots begin to form.

Wrapping can be a biodegradable material like burlap or can be a non-biodegradable material like plastic, whether in a sheet or woven to look like burlap. Needless to say, non-biodegradable materials can cause a number of plant health problems if not removed at planting time.

Plastic wrap creates a low-oxygen/high-moisture condition that is ideal for microbial pathogens but not at all favorable for trees and shrubs. Plastic wrap is acceptable for transport and short-term storage, but often becomes

deadly when placed into the transplant hole. Plastic "burlap" is not as bad as plastic wrap, initially, since it is a mesh. However, plastic "burlap" will only expand to a limited extent as roots pass through it, resulting in root girdling at the edge of the root ball.

Examination of all layers of wrapping and removal of any non-biodegradable wraps is a must for proper planting.

The planting hole

The planting hole is a key factor in transplant survival. There is a general agreement that it should be at least twice the diameter of the root ball, but what about depth, backfill material and drainage?

A deep hole, improperly packed, will allow substantial settlement downward of a heavy root ball, and create an unhealthy deep planting condition.

Use of high quality loam to fill the transplant hole around the ball is

often a standard specification in landscaping contracts. However, much research on urban soils has shown that this practice often discourages the plant's roots from exploring soil outside the planting hole, and in the long run the tree or shrub becomes stunted or "pot-bound." Most urban soils are not similar to garden loam. Plants transplanted into them would adapt more successfully if parent soil were to be incorporated as much as possible into the backfill mix.

In addition, the resulting soil discontinuity can cause a "teacup" effect, where the soil around the tree is effectively isolated from soil moisture outside the planting hole. Surrounding soil can be wet, while the soil in the planting hole can be dry if soil texture inconsistencies exist around the planting hole.

Drainage out of the planting hole is crucial for essential aeration of the soil. Trees in poorly-draining holes usually die quickly from root suffoca-

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The author, Terry Tattar, installs wire mesh to protect a crabapple from chewing animal injury during winter.

tion. Fill the planting hole with water and check how long it takes to empty.

If water remains overnight, downward or sideways drainage must be provided. Sometimes a clay hardpan exists beneath the planting hole that can be penetrated by digging a small hole. If this does not provide good drainage, a sideways French-drain can carry water away from the planting hole.

Once a tree has been set in the planting hole at the correct depth and backfilled, a water well is then constructed, and two to three inches of mulch is placed in it. Stakes or guys are installed to secure the tree and the trunk is wrapped to minimize chances of bark injury from sunscald. A final irrigation, and the tree or shrub is now properly planted. Or is it?

Follow-up care

If you feel that your work was done after the plant was set in the ground, you are overlooking a major cause of transplant failure: lack of post-planting follow-up. Post-planting problems fall into two general categories:

- continual care needed during transition to independent growth; and

- protection from biotic and abiotic stress.

The stakes, guys and cords around the trunk used to secure and protect the newly-planted tree can now strangle it if not loosened and eventually removed as the tree begins to grow.

Renew mulch if it begins to break down and allows excessive weed

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growth within it. Use only organic mulch or some material for mulch that allows both water and gas exchange between air and soil.

Avoid plastic sheeting which can suffocate roots.

Watering is needed when rainfall is inadequate to minimize moisture stress. Supplementary watering may be needed at any time during the entire period when the ground is not

frozen. Water wells should be leveled in the second growing season after planting to encourage roots to grow into soil outside the planting hole.

A newly-planted tree or shrub is vulnerable to many agents of destruction. Protection against chewing rodents (mice and rabbits are the most common) is often crucial for survival, especially in areas of high rodent populations.

Sometimes, the homeowners in their enthusiasm to "take good care of their plants" with extra tender-loving-care cause injuries. Too much watering or too much fertilizer, for example, can be just as bad or worse than none at all.

Injuries from lawn mowers and, more recently, string trimmers, needlessly kill and disfigure many young trees and shrubs.

Recommendations

A service to troubleshoot and manage health problems both before and after the guarantee period will decrease post-sale losses and provide an additional source of revenue. Many landscape operations already provide this type of maintenance service as part of their business. **LM**



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