



Tree Planting Guide

1. Preparation of the Planting Hole

The size and depth of the planting hole are critical factors in the success of planting and establishing a new tree.

Holes should be dug with a diameter no less than three times the diameter of the root ball. This is particularly important in compact soils.

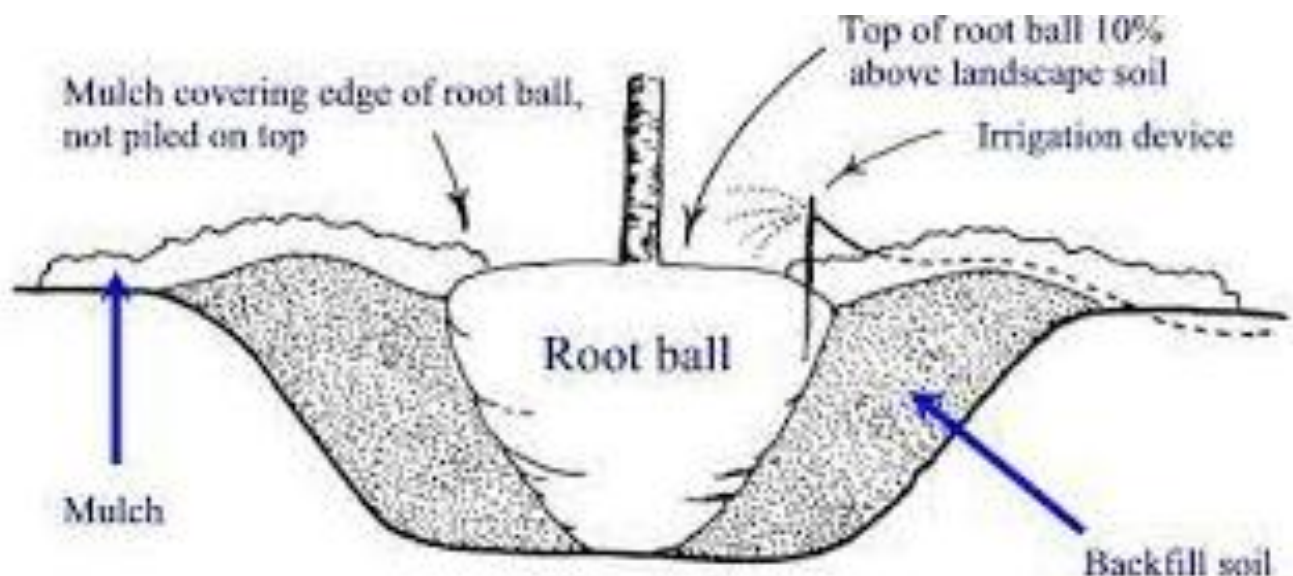
The hole should have sloping sides like a wok. This provides a greater volume of loose cultivated soil in which rapid root initiation can occur. Research has shown that plants benefit from larger planting holes.

A larger hole means a greater volume of loose cultivated soil that is not compacted but aerated which allows good water penetration for rapid healthy growth. (The majority of the roots on the newly planted tree will develop in the top 30-40cm of soil).

The depth of the hole should be equivalent to the depth of the root ball, do not excavate more than the depth of the root ball. If you do, firm down the soil immediately to prevent the root ball from sinking.

Planting too deep is a common mistake that leads to symptoms of poor vigor and slow growth that can often lead to plant death *and* or diseases.

Root ball level with ground.



2. Root Ball Preparation

Before planting a tree, it should be watered in the container 3-4 times to ensure the root ball is well hydrated before planting.

If a mat of root exists on the bottom this should be cut off. The effect on shoot growth after this is minimal. But what it does do is help eliminate root circling and potential root girdling and help regenerate new roots into the surrounding soil. If severe root pruning is required, monitoring water requirements is even more critical after planting.

3. Backfilling

Before starting to backfill, make sure the root ball is the correct depth, the top of the root ball should be level with the soil, and under no circumstances should soil be placed over the top of the root ball.

Back fill in sandy soil is generally loose enough; *in* heavier soils it will need to be worked over and broken up so as not to create air pockets that could inhibit root growth. Backfill around the tree to about 2/3 lightly tamping the soil only, and then water. Back fill the remaining 1/3 and then water again.

What comes out of the hole is what should be used as backfill once it has been well worked over. Unless the soil is so bad you have no other choice, use the existing soil.

Adding organic matter will improve structure (aggregation of soil particles), drainage and fertility in most soils but is not necessary to get a good result when planting a tree.

But if you have

extremes in soils, for example heavy clay or sandy soils, adding some well composted organic matter may be beneficial. If organic matter is added, it should be no more than 30% and only

added to the final 1/3 of backfill. If added it needs to be well mixed through the final 1/3 of back fill before placing into the hole.

4. Drainage

Water logging of newly planted trees is a big killer. This can be caused by poorly draining soils, and or simply by over watering. One of the simplest ways to determine poorly drained soils is to half fill the hole with water, if the water remains *in* the bottom of the hole and has not drained away after an hour or two, drainage may be a problem. If your area has been experiencing dry weather this should be done a couple of times to get a more accurate indication.

Good drainage from the bottom of the hole is very important for root regeneration and root penetration into the surrounding soil. The bottom half of the root ball and the backfill can be waterlogged during wet periods, or by over irrigating, even though this period of saturation may be for a short time only it can still cause the death of tree roots. Water can drain into tree holes from the surrounding landscape and excessive watering of lawns can cause a build up of water, this not only happens in wet periods but even during severe droughts.

Trying to establish lawns and new trees at the same time should be avoided at all costs; you should do one at a time, either establish the lawn first then the tree, or vice versa. When trying to do both at once all you are doing is slowing killing the tree or retarding its reestablishment.

Because of the large amounts of water required to establish a lawn, a large percentage of the water finds its way into a newly dug tree hole, causing saturation of the root ball and surrounding soil.

Solving drainage problems may be expensive, but it is essential for good plant performance and must be corrected before planting, improving drainage can be difficult at times and sometimes may be cheaper to improve the drainage on the whole site rather than drain individual holes. When planting large numbers.

One simple approach is to plant the tree with about 1/3 of the root ball above the ground level and then build a mound from the top of the root ball to the original ground level. A drawback of this method and something you must be mindful of, is the top 1/3 of the root ball and the mound may dry out quickly in hot, dry conditions so a top up of mulch and more frequent watering may be required.

5. Watering

Water must be applied directly to the root ball in the months following planting, as this is where

most of the roots are located. One of the best ways to achieve this is by building a basin or reservoir around the root ball to hold water.

This should be approximately 10cm-20cm high located in a circle at the edge of the root ball. This basin can be filled with water, which allows the water to soak down into the root system. By doing this you can monitor how wet or dry the root ball is and adjust the amount and frequency of watering accordingly.

Do not rely on automatic sprinklers or drip systems to provide the required amount of water for a newly planted tree.

No matter what system you use, regular checks are required to see if the tree is getting the

correct amount of water. Checks can be made by pushing a wooden stake or steel rod into the root ball and the surrounding soil to check how wet the ground is. Another method is to dig down the side of the root plate to the bottom of the planting hole, this allows you to check the moisture content of the root ball and monitor if the water is draining away from the root system of the newly planted tree.

6. Mulching

Mulching is a very important part in the establishment of a newly planted tree. Mulch helps maintain soil moisture, acts as a buffer to soil temperature extremes, controls weeds and replenishes organic matter and nutrients the soil.

The mulched area around a new tree should be a minimum of 1.5m in diameter, but 2m to 2.5 would be ideal. The mulch should be 5-10cm deep after settling, the mulch used should be anything organic that is well composted for example wood chips that contain a blend of leaves, bark, and wood. Pea straw is also very good.

Mulch should be applied so that it is not piled up against the trunk and the root crown is exposed. Under no circumstances use grass clippings or any material that is still composting and giving off heat,

Grass and tree roots do not mix; they can be one of the biggest inhibitors of root development. Westland Nurseries also advises against planting bulbs and shrubs under trees and under establishing trees.

Most of the fine, absorbing roots are located within centimeters of the soil surface. These roots, which are essential for taking up water and minerals, require oxygen to survive. A thin layer of mulch, applied as wide as possible, can improve the soil structure, oxygen levels, temperature, and moisture availability where these roots grow.

7. Staking of trees

Quality trees should not need stakes to keep the trunk upright.

Often there is a requirement to protect trees from vehicles, mowers, animals etc. If staking, make sure they are driven into the ground outside the root ball. If the trees must be connected to stakes for support for example in very windy conditions, the ties must be loose to allow trunk movement, as this is essential to stimulate caliper growth and correct trunk taper.

A tree with a large, dense canopy often requires staking until all roots can grow to sufficient length and density to anchor it. Customers must be aware that even slight movement can break the new fibrous roots and slow the tree establishment. If trees are staked, they must be checked to make sure ties are not too tight or that stakes are not rubbing on the tree. In most instances stakes that are used for anchoring should be removed after approximately one year.

Depending on size, 2 to 3 stakes should be used per tree. Westland Nurseries advises to drive stakes in on a slight angle and well outside the root ball and into the undisturbed ground, this will prevent the stakes working in towards the trunk and causing damage. Avoid using any tie, which is too tight, as this may cause trunk damage and or not allow for trunk expansion,

If you do stake your tree, please remember to stake only until it is able to stand on its own. If it is too dependent on supports, the trunk will not develop adequate strength. The staking material should not be too tight. Leave loose enough so some natural movement occurs. (fig. 1)

8. Fertilizing

It is difficult to make a general recommendation about fertilizing after planting that would apply to all situations. Fertilizing generally provides little benefit in the establishment of trees except in nutrient deficient soils. Until the roots systems of newly planted trees regenerate and depending on conditions this can be weeks or months, this will govern how effective any application of fertilizers would be.

Unless the soil is nutrient deficient, it is best to wait several months up to a year before fertilizing.

The root systems of newly planted trees can be easily burned by fertilizer, leading to poor performance.

Spreading a fertilizer high in nitrogen over the mulched areas can help reduce the loss of nitrogen caused by microorganisms breaking down the organic mulches.

Westland Advanced Tree Nursery advises to fertilize on the surface when soil testing indicates poor soils have nutrient deficiencies once the tree is established and actively growing,

Most trees tolerate a wide range of pH levels, but as far as nutrient supply is concerned for natural soils, a pH range of 5.5-7 should be suitable for most plants. Levels outside this range can affect availability of nutrients held within the soil, toxicities, and the activity of soil microorganisms.

9. Reasons Why You Should Dig a Wide Hole

The width of the hole should be two to three times the size of the root plate of the tree you are planting. The hole should be wok shaped, so the roots can spread horizontally near the surface where optimum growth takes place.

A small planting hole can hinder plant establishment. The regenerated root system will have very little space to grow before encountering compacted and low oxygen soils. which inhibit root growth.

The roots must ultimately spread beyond the planting hole. If the site soil is compacted and difficult to penetrate, the roots may circle inside the hole (*Diagram 1*), just as they can do inside a hard walled pot. If roots are unable to grow into the compacted subsoil, a hole with sloping sides will allow roots to grow back towards the surface and continue to spread.

Optimum root growth requires soil oxygen levels more than 15%, root initiation requires oxygen in excess of 12%, and growth of existing root tips requires in excess of 5-10%

So therefore, by digging a wider hole with sloping sides opens the soil up to the atmosphere to allow diffusion of oxygen this gives the root system a greater volume of loose cultivated soil that is not compacted but aerated which allows good water penetration for rapid healthy root growth.

It's better to plant a \$100 tree in a \$200 hole rather than a \$200 tree in a \$100 hole. Doing things correctly is an investment into your future garden. Take the time to do things right.

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10. Conditions That Can Affect Trees

Many circumstances out of Westland's control may affect the survival of your tree once it has left the nursery, therefore no guarantee can be given. Listed below are some of the things that can influence your tree.

- *Damage in transport*
- *Tree drying out during transport or before planting*
- *Tree drying out after planting*
- *Root damage at time of planting*
- *Root damage after planting due to movement e.g. wind*
- *Too much water, often due to automatic watering system Poor drainage*
- *Pests and disease*
- *Contamination of soil e.g., salinity, buried toxins, limestone etc. Use of weedicides around the tree or drift*
- *Planting in wrong locations or unsuitable climate*
- *Incorrect pruning or at the wrong time of year*
- *Compaction of soil before or after planting*
- *Vandalism*
- *Mechanical damage*
- *Allowing the root ball to dry out and become impermeable to water although surroundings soil is damp*

The only guarantee given is that all plants supplied are of good quality basically because during the growing season any plants, which do not conform to our requirements, are removed and destroyed. Therefore, all trees are true to name, disease, and pest free and have a well-developed root structure to support the plant.

11. Claims

Please inspect all trees upon delivery as no claims will be considered unless received in writing within seven days of receipt of stock. We will accept no liability more than the purchase price paid for the trees. Westland Nurseries accepts no liability whatsoever for any damage caused to fences, buildings, plants, trees, underground or above ground pipes, conduits or cables, equipment, or any structure whatsoever by any trees or shrubs supplied by Westland Nurseries.

All this information is general in nature and each planting and tree selection are different. We're dealing with living things that need love and attention.

