




MT WILLIAM
ADVANCED TREE NURSERY

Planting Guide

A faint, light-colored graphic of a tree's root system is visible in the background of the banner.

**QUALITY
TREES FROM
THE ROOTS UP**





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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 compacted soils.

The hole should have sloping sides similar to a wok. This provides a greater volume of loose cultivated soil in which rapid root initiation can occur (refer Figure 1).

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 root 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. Planting too deep is a common mistake that leads to symptoms of poor vigour and slow growth that can often lead to plant death and or diseases for example collar rot.



Figure 1. Cross section of wok shaped hole showing sloping sides and top of root ball level with ground.

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.

Mt William Advanced Tree Nursery mainly uses air pruned containers which minimize circling roots. However, you should still inspect all root balls for root circling and as a matter of course, shave all sides using a sharp spade, or a pruning saw (*refer Figure 2*).

If a mat of root exists on the bottom it should be cut off (*refer Figure 3*). The effect on shoot growth after this is minimal.

However, doing this will help to eliminate root circling, potential root girdling and help to regenerate new roots into the surrounding soil.

If severe root pruning is required monitoring water requirements is even more critical after planting.



Figure 2. Shaving all sides using a pruning saw.



Figure 3. Trimming bottom of root ball.

Backfilling



Before starting to backfill, make sure the root ball is at the correct depth. The top of the root ball should be level with soil. Under no circumstances should soil be placed over the top of the root ball (refer *Figure 4*).

Backfilling in sandy soils is generally loose enough, in heavier soils it will need to be worked over, and broken up to eliminate air pockets.

Be sure to backfill around the tree to about 2/3, lightly tamping the soil only, then water. Finish off by backfilling 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.

If you have extremes in soil, 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. The added organic matter also should be well mixed through the final 1/3 of backfill before being placed into the hole.



Figure 4. Top of ball root should be level with soil.

Drainage



Water logging of newly planted trees is a big killer. This can be caused by poorly draining soils, or simply over watering. One of the simplest ways to determine if the site has poor drainage 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 maybe for a short time only, it can still cause the death of tree roots.

Solving drainage problems may be expensive, but it is essential for good plant performance and must be corrected before planting.

Trying to establish lawns and new trees at the same time should be avoided at all costs; you should do one at a time.

When trying to do both at once all you are doing is slowly killing the tree or retarding its re-establishment.

Improving drainage can be difficult at times, and sometimes maybe cheaper to improve the drainage on the whole site rather than drain individual holes if 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.

Watering

Water must be applied directly to the root ball in the months following planting, as this is where the majority 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 (refer Figure 5).



Figure 5. Basin to hold water, formed outside the diameter of the root ball.

This should be approximately 10cm-20cm high located in a circle at the edge of the root ball, being very careful not to cover any of the root ball. This basin can be filled with water, which allows the water to soak down into the root system (refer Figure 6).

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.



Figure 6. Filling basin with water, allowing soaking of the root system.

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 in the soil.

The mulched area around a new tree should be a minimum of 1.5m in diameter (2m to 2.5m 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 (*refer Figure 7*).

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.

Mulch should be applied so that it is not piled up against the trunk and the root crown is exposed.

We advise against planting bulbs and shrubs under trees and in particular under establishing trees. Most of the fine absorbing roots are located with centimetres 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.



Figure 7. Mulch using good organic mulch.

Staking of trees

Quality trees should not need stakes to keep the trunk upright. If stakes are required to stop the trunk from bending towards the ground, consider not planting that tree. 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 (*refer Figure 8*).



Figure 8. Staking tree using hessian

“A tree with a large, dense canopy often requires staking until roots can grow to sufficient length and density to anchor it.”

Ed Gilman, 1997

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 regularly 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 (*refer Figure 8*).

Depending on size, 2 to 3 stakes should be used per tree. We advise to drive stakes in on an angle (*refer Figure 8*) and be well outside the root ball and into 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.

Fertilising

It is difficult to make general recommendation about fertilising after planting that would apply to all situations.

Fertilising 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 fertilisers would be.

Unless the soil is nutrient deficient, it is best to wait several months before fertilising.

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

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



Figure 9. Fertilising on the surface

We advise to fertilise on the surface when soil testing indicates nutrient deficiencies once the tree is established and actively growing (refer Figure 9).

“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 to 7 should be suitable for most plants. Levels outside this range can affect availability of nutrients to the plant, amounts of nutrients held within the soil, toxicities and the activity of soil microorganisms”.
Handreck and Black, 1994

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