



Watering newly-planted trees

The challenge

When you invest in new trees, you don't just want them to survive – you want them to thrive. Of course, new trees need water and most short-term problems are linked to inadequate, excessive, or inefficient watering. (See *'The Critical Importance of Moisture'*).

So, how much water should be applied, how often, and for how long?

The background

There is lots of information available outlining various authors' takes on how newly-planted trees should be watered (the reference material for this article is listed at the end and identified by numbering (e.g.³) throughout where appropriate).

Common points of agreement include:

- Trees need to be watered immediately upon arrival on site;
- Trees need to be soaked immediately after planting;
- Trees need to be watered very frequently (especially in the weeks and months immediately after planting);
- Trees need more water in summer, less in spring / autumn, and less again in winter;
- The bigger the trees are when planted, the longer watering needs to continue; and
- Ideally, supervised watering of newly-planted trees needs to continue until the trees have 'established' – that is, until they have generated sufficient new root material into the surrounding landscape to be able to survive without ongoing irrigation⁸.

So, how much water?

In Australia, we generally buy / sell trees based on their container size. So, a simple watering schedule based on container volume of the planted tree would seem logical and user-friendly.

Working with evapotranspiration rates in Melbourne, Geoff Connellan suggests tree water usage can be estimated and related to crown projection⁴. If we graph Geoff's water usage figures alongside suggested water usage for trees in production, we find weekly summer water usage figures generated in this way are typically 60-70% of nominal container volume for 'Balanced'^{3,1} trees.

Armed with this information, we can begin to create a water rates table, based on container size at planting, which should address the water needs of newly-planted trees in eastern Australia.

How often?

The general consensus is that newly-planted trees need to be watered extremely often immediately after planting. Most authors suggest daily for the first weeks after planting, three to four times per week for the next several months and then, eventually, dropping back to weekly until established.



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However, watering trees every day is only practical if an automated irrigation system can be installed – which is strongly recommended, especially for more advanced plants. The suggested rates shown below are therefore a compromise; one that meets the basic needs of the tree while still being achievable.

These rates also reflect the varying water requirements in different seasons.

How long?

There is overwhelming agreement that trees need to be watered until they are 'established'. The programs set out below vary according to climate and the size of the tree at planting.

Perhaps the best guide to how long we need to water our trees can be gained by using the estimated rates of root extension (estimated at approx. 450 - 500mm per year^{11,13}) and, given that estimated rate, how long it will take for the tree to extend roots out into the site soils so as to treble the initial rootball diameter. Note: trebling rootball diameter is suggested as a requirement for establishment by Roberts, Jackson and Smith¹¹ which correlates well with various soil volume estimates for trees, based on either crown projection or Size Index.

For more information, '[Estimating Soil Volume Needs of Trees...](#)'

Resources available for ongoing watering are often limited.¹⁰ However, experience with east coast plantings, under very good establishment programs, suggests that trees watered for 12 - 24 months can be considered to be established.² Hence the recommendation below for watering periods of 12 - 24 months for bigger trees.

Recommendations

Note:

- All recommendations assume that the trees conform with the Balance criterion found in the NATSPEC specification for trees or the normative Balance section found in AS 2303^{3,1}. Without some logical relationship between the above-ground parts of the tree and rootball volumes, recommendations for watering will be meaningless.
- All recommendations assume that the water is applied slowly, directly, and effectively to the rootball (see '[Make Sure Your New Trees Thrive](#)').
- Recommendations below are less than ideal. They have been pared down to be achievable while, hopefully, still effective. Please use them as a base to build on rather than something to strive for.
- Rates suggested are 'general'. Less water may be required for drought tolerant species, more for species with high water demands. Similarly, rainfall, drainage etc may result in lesser or higher water demands.²
- Monitor the irrigation regularly – especially in heavy clay soils where poor drainage can pose a major problem.
- ***We have prepared a one-page summary of the following recommendations (see '[Field guide for Watering Newly Planted Trees](#)'). At the foot of that post you can share it, or download it in PDF format, as a handy 'Field Guide'.***



Watering newly-planted trees

The following tables give suggested water application rates, frequency, and duration based on the best information available. It's important to remember that these and actual water needs will vary according to a range of site conditions and species.

Please also remember these suggested rates are broad estimates only. Always carefully monitor the trees in your project(s), paying particular attention to drainage and leaf droop, and vary as needed.

The process

1. Water trees on arrival

Water trees immediately after unloading at the rate of 50% of the rootball volume, e.g. 100L for 200L trees, 250L for 500L trees. If trees are not planted straight away, water – very slowly, to ensure it penetrates - at the rate of 25% of rootball volume daily until planted.

2. Water trees immediately after planting

As soon as trees have been planted, water in at the rate of 50% of rootball volume to ensure the rootball is fully 'wetted-up'.

3. Suggested application rates

After planting, water trees, per application, at the rate shown in the table below.

<i>Planted container Size</i>	<i>Free draining soils</i>	<i>Heavy/clay soils</i> <i>(Check drainage regularly)</i>
100L	20L	15L
150L	30L	20L
200L	40L	30L
250L	50L	35L
300L	60L	45L
400L	80L	60L
500L	100L	75L
600L	120L	90L
700L	140L	105L
800L	160L	120L
1000L	200L	150L
1200L	240L	180L
1500L	300L	225L

4. Duration of watering

Continue watering as indicated in the table below or until the end of February the following year – whichever is longer. Always irrigate for Period 1 and add Period 2 if at all possible.



Watering newly-planted trees

Container size at planting	Period 1 -	Period 2
	Basic Irrigation (Minimum)	Extended Period (Preferred)
100L-150L	0-6 months	7-12 months
200L-300L	0-6 months	7-12 months
400L-500L	0-12 months	13-24 months
600L-800L	0-12 months	13-24 months
1000L-1500L	0-12 months	13-24 months

5. Watering frequency

Irrigate at the frequency shown in the table below.

Time of year	Watering Frequency		
	1st month	2nd and 3rd month	Balance of Period 1 and Period 2
Sep- Feb	4 x per week* (e.g. Mon/Wed/Fri/Sat)	3 x per week* (e.g. Mon/Wed/Fri)	2 x per week (e.g. Mon/Thu)
Mar-May	3 x per week* (e.g. Mon/Wed/Fri)	2 x per week* (e.g. Mon/Thu)	1 x per week*
Jun-Aug	2 x per week* (e.g. Mon/Thu)	1 x per week*	1 x per fortnight*

*Delete a watering if rainfall in the 48 hours prior to the scheduled watering exceeds 50mm

Follow the above process at a minimum, water properly (once again, please refer to '[Make Sure Your New Trees Thrive](#)') and your newly-planted trees should thrive!



Watering newly-planted trees

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