trees SOUTH AFRICA
the mature tree expert

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GENERAL GUIDELINES FOR WATERING OF TREES FOLLOWING

PLANTING / TRANSPLANTING

Note that these watering guidelines are for optimal & maximum growth of trees, but in times of extreme drought and / or water restrictions, these guidelines can be reduced by as much as 50%

The watering of large planted / transplanted trees, especially during the summer months, is critical to the survival of trees and speedy establishment of new roots. Lack of, or incorrect / ineffective application of water can lead to the death of trees within a period as short as 10 days during conditions of extreme heat and wind.

These newly planted / transplanted large trees should be regarded as trees that are growing in small containers / pots without side walls positioned in the ground. Water applied at the top of the container, can freely drain away in the surrounding (less dense and more permeable) soil, at the cost of penetration and saturation of the "container" soil (root ball).

Successful watering is only achieved when the **root ball is being saturated with water.** Achieving this is easier said than done. It is also difficult to measure and check effectiveness with the root ball being underground. The main problem in achieving complete root ball water penetration is, in most cases due to the fact that the surrounding backfill soil is less dense and more permeable than the root ball (where all the tree roots occur at the time of planting).

In the case of the tree being planted in a **heavy clay** soil, a serious danger of over watering and the resultant fatal drowning of the tree can occur. In this case the walls of the clay planting hole create an almost water tight container (without drainage holes at the bottom of the "clay pot"). This planting situation makes it very tricky to achieve successful watering whilst avoiding over watering. In these situations, it is most desirable (almost essential) to have a water drainage outlet installed as low down in the planting hole as possible.

HOW TO ACHIEVE EFFECTIVE WATERING OF THE ROOT BALL POST PLANTING:

- Slow low volume watering over long periods of time;
- Apply water as close to the stem (inner half of root ball surface) as possible. Apply on 2 to 3 sides of the stem, simultaneously or by moving the water supply from the one to the next side around the tree.

The above procedure will ensure that the water will first gravitate downwards, and once saturated, water will start to radiate laterally through the root ball to areas of lower water saturation, until excess water finally drains away at a faster rate in the surrounding back fill soil. If you have no other option than to water in a shorter than desired period of time, a dam wall must be constructed **on top** of the outer border of the root ball (**not beyond** the root ball perimeter).

Water can be applied manually, or via dripper pipe controlled either manually or connected to a computerized system. COMPUTER CONTROLLED DRIPPER PIPE APPLICATION IS THE ONLY RELIABLE METHOD OF WATERING! MANUAL WATERING IS NEVER RELIABLE!

1. Manual watering by hose pipe. Zone of application: within 20cm from the stem of the tree on 2 sides (50% of total duration on each side).

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2. Installation of Dripper Pipe: Use brown dripper pipe - Netafim Techline 2.3 litre / hour ratio, drip points spaced 30cm apart (suitable for underground installation). Install dripper lines in the inner 50% of the root ball diameter - see diagram below

VOLUME WATER AND NUMBER OF DRIPPERS REQUIRED PER TREE BAG SIZE / HOUR @ 2.3 LITRE / DRIPPER POINT:

Tree Bag size (Litre)	Litre Water / hour	Number of drip points
250	9 litres	4
500	14 litres	6
1000	28 litres	12
2000	55 litres	24
3000	80 litres	35
4500	120 litres	52

FREQUENCY AND DURATION OF WATERING:

- During periods of high water demand (summer), the tree depletes the relatively small volumes of water available in the root ball or "container" volume in a short period of time (within 3 to 5 days). It is for this reason that the frequency of watering is just as critical to tree survival during the early stages following planting.
- Frequency and duration depends on one or more of the following: season, species (water requirements and whether deciduous or evergreen), soil type, foliage density, and time elapsed since planting (volume of new roots established).
- General guidelines for frequency and duration of watering listed below. These guidelines are based on the use of a computer controlled dripper pipe application system. Should you choose to use a hosepipe instead, the litres of water per hour can be applied and used as per the table below. For example: a 250-litre evergreen tree in soil with poor to normal drainage will require 18 litres of water applied 4 times / week in the November to end March season.

YEAR ONE FOLLOWING PLANTING (applicable to all tree sizes from 250-litre and bigger)

TREE and SOIL types	**SEASON**			
	September and October	*November to end March*	*April and May*	*June to end August*
Evergreen trees in soil with poor to normal drainage **(Loam & Clay soil)**	1 hour 3 times / week	2 hours 4 times / week	2 hours 3 times / week	1 hour 3 times / week, if no rain*
Evergreen trees in soil with excellent drainage (reduced water retention) **(Sandy soil)**	1 hour 30 min 3 times / week	2 hours 30 min 4 times / week	2 hours 4 times / week	1 hour 30 min 3 times / week if no rain*
Deciduous trees in soil with poor to normal drainage **(Loam & Clay soil)**	1 hour 3 times / week	2 hours 4 times / week	2 hours 3 times / week	1 hour 2 times / **month** if no rain*
Deciduous trees in soil with excellent drainage (reduced water retention) **(Sandy soil)**	1 hour 30 min 3 times / week	2 hours 30 min 4 times / week	2 hours 4 times / week	1 hour 2 times / **month** if no rain*

*** Definition of effective rain:** Water should penetrate at least 30 cm deep. Less than that should in terms of the watering table above, be regarded as **NO** rain.

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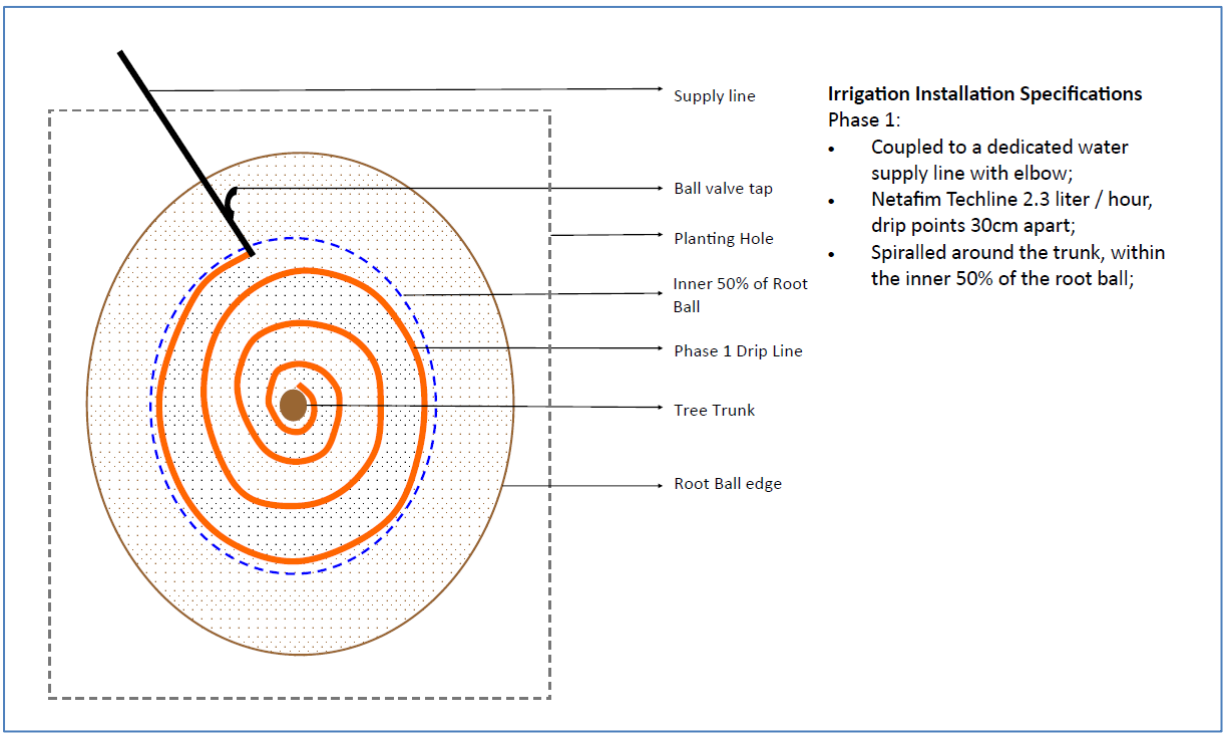

Figure 1 - Diagram of phase 1 irrigation pipe layout

Figure 2 - Photo of Phase 1 irrigation layout of 1000-litre tree

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YEAR TWO AND THREE FOLLOWING PLANTING:

Increase the radius of the watering zone to cover the full surface area of the root ball. You will now be watering a larger volume of soil to encourage root expansion.

For optimal tree recovery, growth rate and health continue to water as recommended for the first year following planting (as per table above). If water supply is not a restriction, you may **increase watering duration by 20%** in order to achieve optimal root expansion and tree growth. See table below.

Should water supply be limited (e.g. a drought), your trees will, in terms of tree survival, become less sensitive to skipping of watering sessions but are still **very dependent on regular artificial watering** during the summer months in the winter rainfall areas.

YEAR TWO AND THREE FOLLOWING PLANTING (applicable to all tree sizes from 250-litre and bigger)

TREE and SOIL types	**SEASON**			
	September and October	*November to end March*	*April and May*	*June to end August*
Evergreen trees in soil with poor to normal drainage **(Loam & Clay soil)**	1 hour 10 min 3 times / week	2 hours 20 min 4 times / week	2 hours 20 min 3 times / week	1 hour 10 min 3 times / week, if no rain*
Evergreen trees in soil with excellent drainage (reduced water retention) **(Sandy soil)**	1 hour 45 min 3 times / week	3 hours 4 times / week	2 hours 20 min 4 times / week	1 hour 45 min 3 times / week if no rain*
Deciduous trees in soil with poor to normal drainage **(Loam & Clay soil)**	1 hour 10 min 3 times / week	2 hours 20 min 4 times / week	2 hours 20 min 3 times / week	1 hour 10 min 2 times / **month** if no rain*
Deciduous trees in soil with excellent drainage (reduced water retention) **(Sandy soil)**	1 hour 45 min 3 times / week	3 hours 4 times / week	2 hours 20 min 4 times / week	1 hour 10 min 2 times / **month** if no rain*

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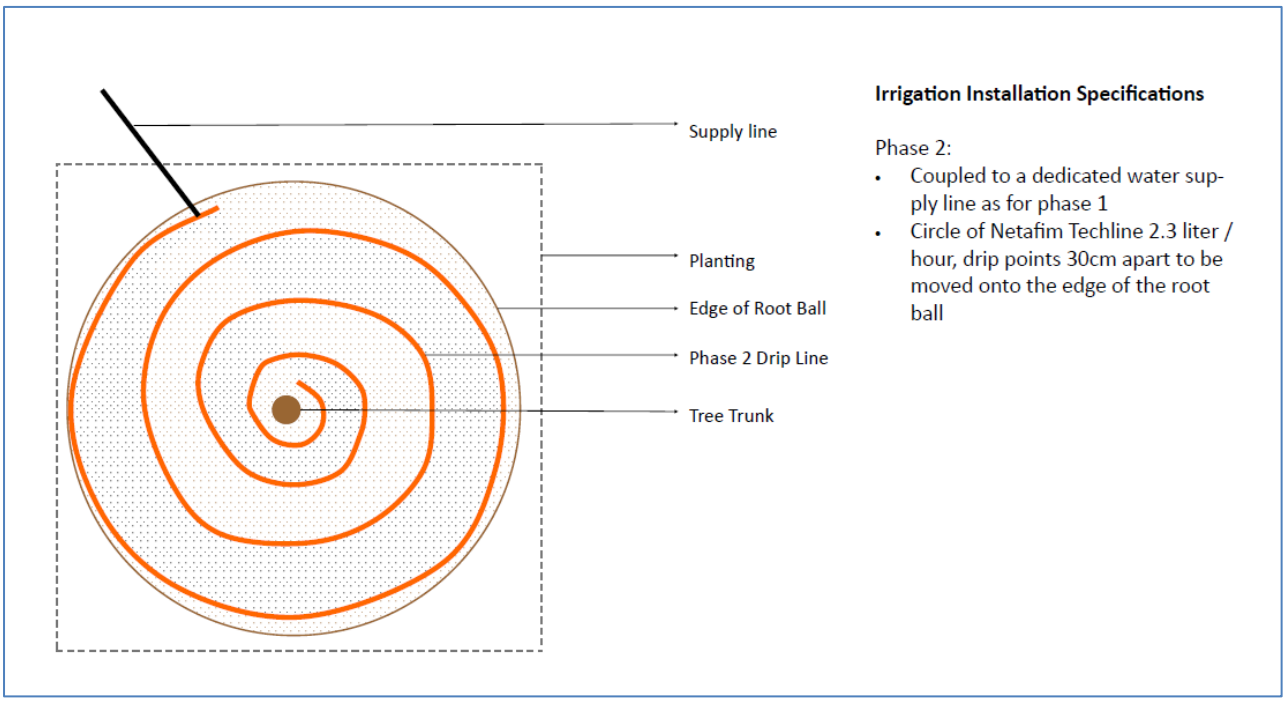

Figure 3 - Diagram of phase 2 irrigation pipe layout

Figure 4 - Photo of phase 2 irrigation layout of 1000-litre tree

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YEAR FOUR AND FIVE FOLLOWING PLANTING:
(applicable to 3000 & 4500 litre trees)

In times of extreme drought, the trees should survive without any artificial watering

Increase the radius of the watering zone to extend 30cm beyond the original root ball.

For optimal tree growth rate and health, continue to water for approximately 30% (one out of every 5 watering sessions) of the **frequency** that was recommended for the first year following planting. The purpose of the reduction in watering is to systematically and **gradually wean** the trees from artificial watering. Duration of watering should allow for penetration to a depth of at least 60 cm deep.

YEAR FOUR AND FIVE FOLLOWING PLANTING (applicable to 3000 and 4500 litre trees)

TREE and SOIL types	**SEASON**			
	September and October	*November to end March*	*April and May*	*June to end August*
Evergreen trees in soil with poor to normal drainage **(Loam & Clay soil)**	1 hour 1 times / week	2 hours 1 times / week	2 hours 1 times / week	1 hour 1 times / week, if no rain*
Evergreen trees in soil with excellent drainage (reduced water retention) **(Sandy soil)**	1 hour 30 min 1 times / week	2 hours 30 min 1 times / week	2 hours 1 times / week	1 hour 30 min 1 times / week if no rain*
Deciduous trees in soil with poor to normal drainage **(Loam & Clay soil)**	1 hour 1 times / week	2 hours 1 times / week	2 hours 1 times / week	1 hour 1 times / **month** if no rain*
Deciduous trees in soil with excellent drainage (reduced water retention) **(Sandy soil)**	1 hour 30 min 1 times / week	2 hours 30 min 1 times / week	2 hours 1 times / week	1 hour 1 times / **month** if no rain*

*** Definition of effective rain:** Water should penetrate at least 30 cm deep. Less than that should in terms of the watering table above, be regarded as **NO** rain.

Please note the above information should be used as a guideline only. During periods of extreme heat conditions water frequency can be increased with 1-2 extra watering sessions per week as needed.

Trees SA does not take ANY responsibility for trees not planted by ourselves. Once trees have been collected/ delivered & received in good condition from our nursery or on site, Trees SA take no further responsibility for the condition of any such trees.