

Guidance on aftercare of newly planted trees for Tree Officers and other Arboricultural professionals

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December 2022

Specifications for the aftercare of young trees planted in the landscape will vary according to local environmental conditions and the type of methodology used for planting those trees. Tree pit design will also vary according to local site constraints including the need for a load bearing surface, space available and mature size of the species to be planted. For planting success specifications need to be clearly worded, implemented, and enforced but it is also recognised that budgetary constraints will heavily influence these outcomes.

Irrespective of resources and local environmental conditions six elements will need to be addressed in any specification as these can be seen as critical to planting success and longevity in the landscape.

These six elements are:

- Soil moisture management
- Tree Health
- Mulching
- Pruning
- Nutrition
- Tree Support Systems

These six elements will be discussed in more detail below but it has to be remembered that the substrate used for planting is critical and will influence all of the above elements.

Soil Moisture Management:

There is no definitive formulae for irrigation. The amount of irrigation necessary will be influenced by weather conditions, soil structure, the size of tree planting pit and the inherent tolerances of the tree species being planted. It has to be remembered though, that trees with recognized drought tolerance will need an adaptive period in the landscape following nurture on the nursery.

Soil structure, the ratio of silt: clay: sand: organic matter, will influence the soils water holding capacity and its capacity to release water. Soil analysis is useful to match irrigation needs with the structure of the soil present.

Tree pit size will influence the known capacity to hold a given volume of water but does not allow for soil conditions below and around that tree pit with a consequence that water movement laterally and vertically may be influenced either advantageously or detrimentally. This should be considered during tree pit design.

As a general rule, it can be stated that irrigation is recommended if there are ten consecutive days during the growing season at 25° C with no rain and that 40 litres of water per 2.5cm of stem diameter (DBH) is suggested.

The above does not address the frequency of irrigation but again formulaic recipes should be avoided with frequency decided according to the variable outlined above.

Moisture probes/tensiometers are commercially available which will quantify soil moisture content and water availability and provide guidance as to the frequency of irrigation. These can be used by sampling a given percentage of the newly planted population being managed.

It is recommended that trees be irrigated for a minimum of three years following planting, but it has to be recognised that different species and different sizes of planting stock will require irrigation for different durations. The use of tree watering bags may help the tree take up more water due to a slower water release.

Tree Health:

Tree health from the nursery with regard to pest and disease can be assured by specifying supply from a nursery or nurseries with Plant Healthy Certification.

Trees post planting should be inspected regularly, with a minimum of once annually, for an outbreak of pest and or disease. It is recognised that assessing the health of a large population of young trees may be unrealistic and therefore a sampling protocol should be adopted with at least 5% of the population sampled to provide an estimation of overall tree health in the population. Remedial action should be based on the pest/disease identified and the potential for the outbreak affect tree health and longevity. Diagnostic laboratories exist for accurate pest and disease identification on a fee- paying basis.

The assessment for tree health and development should include, foliar appearance, leaf size, canopy density, extension growth and incremental girth development. It should be recognized that a large proportion of all tree related dis-orders are caused by soil related issues.

Instrumentation such as leaf chlorophyll fluorescence, leaf chlorophyll content, shoot/root electrolyte leakage and starch testing if used can provide useful information as to physiological health often before visual symptoms can be seen. These are commercially available. Leaf chlorophyll analysis and leaf chlorophyll content tests can be carried out in the field while shoot/root electrolyte leakage and starch testing need laboratory conditions.

Mulching:

The benefits of mulches to enhance tree health and growth are well documented. Mulches are most effective at 50mm to 100mm in depth and applied up to but not against the main trunk. It is suggested mulches are inspected annually and “topped up” if required to maintain this depth.

As a general rule, the larger the mulch area the better but a minimum of one metre diameter is advisable. It is recognised that mulching may not be appropriate or

practical in all urban areas for a number of reasons, which vary from mulch debris through to the design need for grates, grills or surfacing material.

Pruning:

The crown of young trees coming from the tree nursery is not the finished product and regular formative pruning needs to be factored into management and maintenance until the permanent scaffold branching system of the tree is present. The duration of such pruning will depend on the species planted and how the species develops naturally. For example species such as *Styphnolobium japonicum* (Japanese Pagoda Tree), *Gleditsia triacanthus* (Honey Locust) and *Robinia pseudoacacia* (False Acacia) benefit structurally by only allowing the crown to develop while regularly formed species such as *Liquidambar styraciflua* (Sweet Gum) require less attention.

BS 8545 Trees: From Nursery to Independence in the Landscape suggest that there are two significant problems which can occur if young trees are not placed on a formative pruning programme during their early years development. These are:

- Co-dominant stems can develop and depending on the morphological characteristics of the branch structure, and lead to an increased risk of branch or trunk failure.
- Aggressive branches develop low on the trunk which compete with the leader and require removal when large pruning wounds may be the result.

Formative pruning is part of a young trees development in the landscape and a route to producing a structural branching system which will have capacity to support the eventual canopy without the need for radical future pruning.

Investment in formative pruning can save significant amounts of expenditure in later years when inadequate crown structures fail needing major work.

Nutrition:

The application of fertiliser at the time of planting is not necessary but it should be recognised that the use of fertiliser may be useful as the tree develops and inadequacies in the local soil conditions reveal themselves. The application of fertiliser should be related to specific nutritional deficiencies identified when carrying out routine health checks.

Tree Support Systems:

Several best management guides exist with respect to staking of trees and information between them can be conflicting as to the importance of staking. The majority of best management planting practices recommend a stake no longer than 1/3 the height of the tree. However, this system may provide insufficient protection against vandalism. Double or four stakes and bridge would provide greater protection but at higher labour and consumable costs.

Irrespective of support system used, all stakes and ties should be checked once annually to ensure that the root system remains stable, that ties are not causing any damage to the tree trunk. All stakes and ties should be removed as soon as the

rootsystem is strong enough to support the tree. Two growing seasons are usually sufficient for this to occur. Please note in some instances young trees may not need supporting.