

# The National Plant Specification – Rootballed Trees

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## Scope

This document gives recommendations for techniques for transplanting trees which are to be moved with a ball of earth around their root, be that in the form of a conventional field grown root-ball or of a large container.

The standard describes the penetration of the planting site, planting and aftercare. Root balling is recommended on small sizes of some species of tree as nature dictates. All other genus and species will be balled or container grown if the required girth at one metre from ground level is 18 cm or greater. The techniques described here also apply to large shrubs.

## Planning

Choice between large specimen trees and other nursery stock Factors that will influence the choice between root-balled and other nursery stock include:

- Whether or not an immediate impact on the landscape is considered essential.
- The species, varieties and sizes of the plants available. There is usually a greater choice of small nursery stock than for larger root-balled trees. Small nursery stock is likely to prove the most adaptable to change, provided that the species is suitable for the new soil conditions.

## Supply and Handling

### Sources of root-balled trees

Trees to be moved with a ball of growing medium around their roots will be in one of the following categories:

- Grown in open-ground nurseries at wider than normal spacing to allow for vigorous, balanced crown growth and space for root pruning.
- Grown in containers of appropriate size without disturbance; containers will be within or above the ground at suitable spacings to allow for crown development and maintenance.

### Preparation of root ball

#### Importance of transplanting field-grown stock

Transplanting trees throughout the growing period on the nursery will ensure a good rootball and is essential to good establishment. Trees will have been transplanted an appropriate number of times for the species and girth specified.

#### Trees grown in open-ground nurseries

Trees will be lifted without disturbance to the rootball. The rootball will be of a size appropriate to the species, girth size and nursery soil-type in which it is grown but will not be less than 300 mm in diameter.

## Container grown trees

Container-grown trees will be moved with their root balls intact within the container. The grower's instructions will be observed when handling and planting the tree. Container-grown trees will be established within their containers, showing substantial new root growth within the container.

## Season for transplanting

Transplanting will be carried out in weather conditions suitable for the operation. Transplanting will usually be carried out during the dormant season for the particular species. This is usually between mid-October and the end of March for deciduous trees and during late winter and spring for evergreens. When root-balled or container-grown trees, both deciduous and evergreen, are to be planted during the spring and summer it is essential that aftercare (see 3.3) is thorough.

## Pre-lifting operations

Pruning will only be carried out if it is necessary to reduce the canopy area to compensate for root loss. Care must be taken to ensure that the special quality for which a specimen may have been selected is not lost through pruning. Anti-desiccant sprays, if used, should be mixed and applied following the manufacturer's recommendations.

**NOTE: if a deciduous tree is to be moved in full leaf, or if a tree is to be transported some distance, then pruning can be carried out to reduce the risk of excessive transpirational loss that might otherwise lead to root and shoot death.**

## Lifting and handling of root-balled trees

### Preparation of the rootball

Protective wrappings, such as hessian, will be placed around the root ball of field grown trees and support will be provided with wire netting, by lacing with straps, or by boxing the root ball to ensure that it does not disintegrate between lifting and planting. When a field-grown tree has been lifted the root ball will be wrapped in heavy gauge polythene to help protect the ball from desiccation during transport.

### Handling

Trees will be handled and lifted without causing damage. Appropriate mechanical means will be required and trees will be lifted either by supporting the root ball or by using a sling at the fulcrum point of the stem. It is essential that self-tightening slings around the bole or branches are NOT used as, when tensioned, they bruise or rupture the bark and can cause tree death.

### Integrated systems for lifting and moving trees

When lifting and handling a tree by an integrated system it is important that the root ball should not be released from the protection and support afforded by the blades. When a root ball has to be released from the machine for transport, care will be taken to ensure that no damage occurs. The root ball will not be wrapped and constrained with webbing or ungalvanised chain link netting for transport on a separate vehicle to the planting site.

## Container-grown trees

Container-grown trees will be moved with their root balls intact within their containers. The grower's instruction should be observed whilst handling and planting trees.

## Temporary storage

When a tree cannot be planted as soon as it is delivered, it should be stored upright, in a position where it will be protected from damage and unnecessary movement. Throughout the period of storage, the root ball should be protected from freezing and drying out, using materials and techniques that will not damage the tree.

**NOTE: each time a tree is moved there is an increased risk of breaking the root ball and of damaging the trunk and branches.**

## PLANTING AND AFTERCARE

### Preparation of planting site

#### General

A survey of the soil conditions will be made at the planning stage and thorough preparation of the soil will be essential. Trees will not tolerate highly compacted soil, which must be broken up over as large an area of the site as practical and to a minimum of 300 mm below the base of the tree pit.

Planting pits will be provided with adequate drainage capable of removing excess water.

As with all ground preparation, false economies on drainage provision may prejudice the success of a planting operation. Soil killed by compaction damage will take years to recover enough to sustain healthy plant growth.

**NOTE: It is recommended that professional advice be sought on techniques for overcoming drainage problems. General guidance can also be obtained from BS4428.**

#### Tree pits in soft areas

Tree pits will have a diameter at least 500 mm greater than that of the root ball and, after allowing for the drainage layer, will be the same depth as the root ball. During digging operations topsoil will be stripped and put to one side for reuse and as much of the indigenous soil as possible will be retained to avoid a distinct interface between the planting pit and the surrounding soil.

**NOTE: Shaping the floor of the tree pit to give a domed centre will assist in the final positioning and orientation of the tree.**

#### Tree pits in hard areas

When planting in hard areas requires the use of an imported growing medium in a confined pit, this will be of a minimum of 5 m<sup>3</sup>.

## Planting

#### General

Unnecessary movement of a tree must be avoided to prevent disturbance to the root ball. Before unloading or moving a tree from temporary storage, the depth and diameter of the root ball will be measured so that, if necessary, adjustments to the size of the tree pit can be made.

Irrigation rings will be installed around all root balls to enable effective watering.

Crown wrappings and fastenings used to tie in the branches for transport will be removed (see BS 3998).

However, stem wrappings, will be retained.

The tree will be set in the tree pit and positioned with the minimum of delay. When finally set, the top of the root ball will not be below the level of the surrounding soil.

**NOTE: Each time a tree is moved there is an increased risk of breaking the root ball and of damaging the trunk and branches.**

## Temporary storage

When a tree cannot be planted immediately it is delivered, it must be stored upright, in a position where it will be protected from damage and unnecessary movement. Throughout the period of storage, the root ball will be protected from freezing and drying out, using materials and techniques that will not damage the tree.

## Backfilling

Before the tree pit is backfilled all non-biodegradable wrapping, insulation and padding materials will be removed from around the root ball and from the pit. Any restriction around the base of the trunk will be loosened.

The pit will be backfilled using site soil, planting compost and controlled release fertiliser. If conditions demand improved root growth away from the root ball then a non-bulky organic fertiliser will be mixed with the backfill medium.

Backfilling of tree pits will be carried out in layers, using the backfilling medium specified. As backfilling proceeds the tree pit walls will be broken down to a distance of 500 mm beyond the edge of the rootball in all directions, thoroughly watered to expel air pockets and with due allowance being made for subsequent settlement. The outer surface of container grown plants will be slightly disturbed to promote healthy growth. The newly planted tree will be watered slowly to moisten the root ball thoroughly.

## Anchoring of root ball

The root ball will be supported to prevent disturbance while new roots develop to secure the tree in its new location.

## Mulching

A mulch extending 150 mm beyond the perimeter of the tree pit will be used to conserve moisture and minimise weed growth. Mulches will only be applied when the soil is moist. Granular and loose organic mulches will be applied to a depth not less than 50 mm.

**NOTE: Weed-free areas around the tree may obviate the need for machinery to be used near the stem base. Physical damage to trees in grassed areas can be avoided by maintaining a mulched grass free area around the base of the tree.**

## Aftercare

### Maintenance

Transplanted trees may take two years to establish, and therefore will be maintained by the contractor for a minimum of two years.

The Contractor will take all reasonable precautions to prevent damage to trees during planting. Any minor damage to branches will be cut back to sound wood. Where the tree has suffered major damage reducing its chances of survival or materially effecting its appearance it will be replaced.

### Settlement of the soil

The addition of organic mulch will prevent the exposed part of the root ball from drying out and further volumes of mulch will be added to bring the level to that of the surrounding soil. Sheet mulches will be removed to allow soil to be added to restore the level and the sheet will then be replaced.

**NOTE: During the post-planting period (2 years) the backfill around the root ball may settle or contract.**

### Weed control

Any weed growth that develops in the mulched area will be removed by cultivation, herbicides, or the addition of more mulch.

Weed growth will be suppressed for at least 2 years, in an area at least 150 mm beyond the perimeter of the tree pit.

### Tree nutrition

When nutrient deficiency is suspected, foliar analysis will be carried out to establish which, if any, nutrients are lacking or are present in an imbalance. The deficiency will be corrected with a suitable regime of fertiliser so long as the soil and the tree are healthy in all other respects.

**NOTE: Techniques for applying nutrients and improving soil physical conditions are given in BS 3998.**

### Damage to branches and bark

Damaged or diseased branches will be pruned and wounds will be treated in accordance with BS 3998.

### Watering

Under no circumstances will a plant be allowed to wilt.

During the maintenance period the soil around the roots must never be allowed to dry out completely allowance must, therefore, be made to apply water as required to ensure effective establishment. Irrigation rings provide a means of effectively distributing water to the root zone.

### Anchors above and below ground and their maintenance

Any movement of the root ball or the tree base will be investigated. Anchoring systems will be inspected regularly and defects will be made good.

Guys, stakes and ties will be removed, replaced or adjusted as necessary to ensure their effectiveness and to prevent constriction or abrasion to the tree.

As soon as the tree is free standing and able to support itself any above ground support systems will be removed.

Stem wraps will be removed after two years.

**NOTE: Underground securing systems are normally left permanently in position.**