

Construction Standard Specification Supply of Tree and Plant Materials





Introduction

This Specification booklet forms Part 7 of the Christchurch City Council Civil Engineering Construction Standard Specification (abbreviated as CSS). All parts of the CSS should be read in conjunction with each other and the Infrastructure Design Standards (abbreviated as IDS).

The full Specification includes the following Parts:

- CSS: Part 1 2014 - General
- CSS: Part 2 2014 - Earthworks
- CSS: Part 3 2014 - Utility Drainage
- CSS: Part 4 2014 - Water Supply
- CSS: Part 5 2014 - Lights
- CSS: Part 6 2014 - Roads
- CSS: Part 7 2014 - Landscapes

Part 7 of the Standard Specification includes those Standard Details (SD) relating to this part only. The Standard Details (SD) are not to scale and all units are in millimetres (mm) unless otherwise shown. All rights reserved on Standard Details.

Approval of materials operators/contractors, laboratories and workmanship

‘Approved’ in this document means approved by the Engineer unless otherwise specified.

Schedules of approved materials and contractors can be found on the Christchurch City Council web page at:

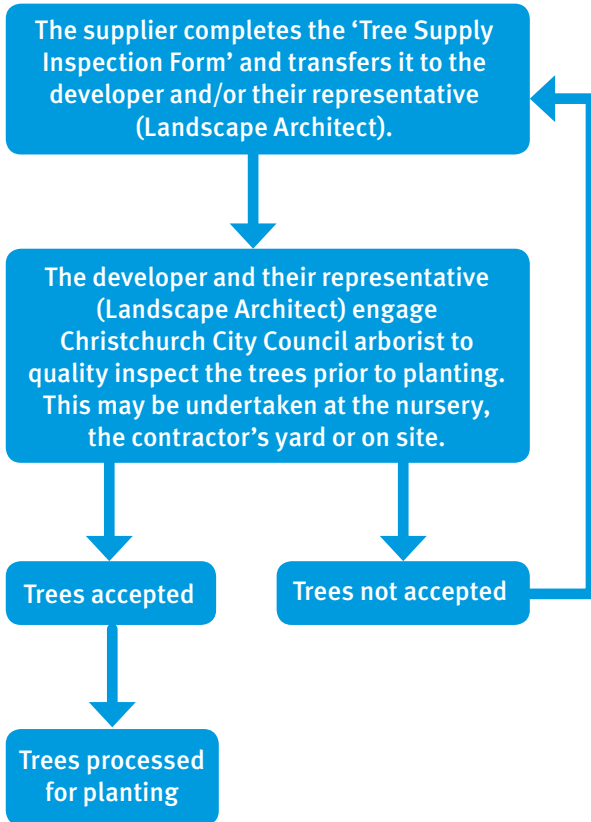
ccc.govt.nz/business/constructiondevelopment/approvedmaterials.aspx

ccc.govt.nz/business/constructiondevelopment/approvedcontractors.aspx

Selected materials are specified in CSS: Part 1 - General.

Tree supply inspection form

The 'Tree Supply Inspection Form' appended (Appendix 3 of the CSS) shall be used to certify that trees meet the requirements of this specification.



Tree supply inspection form

TREE SUPPLY INSPECTION FORM

This form is to be completed prior to shipping, sent by the supplier to the purchaser where it must be signed off by both the purchaser and Council before trees are planted.

This inspection form is to be used in conjunction with the Christchurch City Council Construction Standard Specification (CSS) Part 7 (Landscapes), Section 4 (Supply of Tree and Plant Materials).

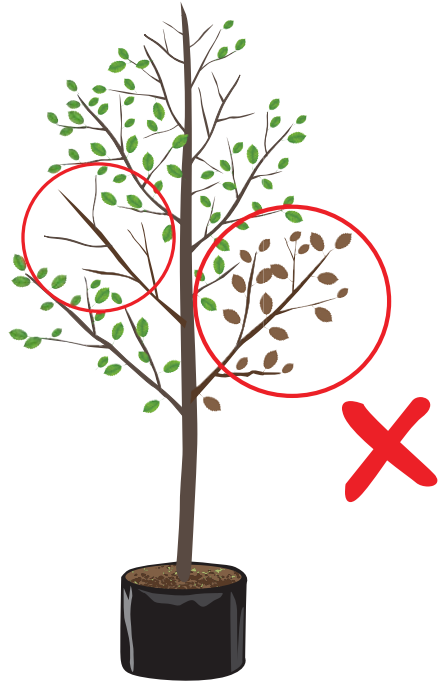
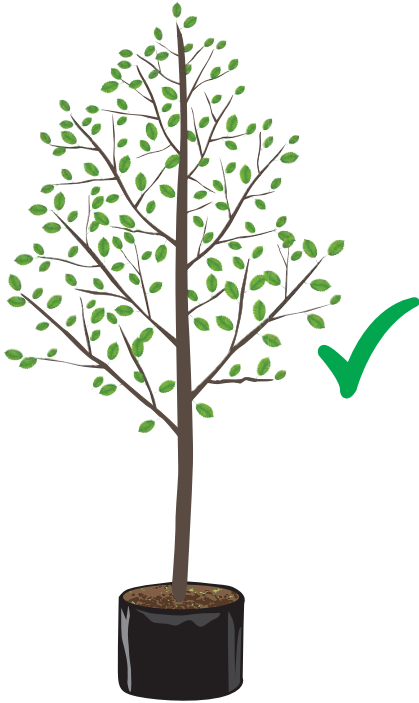
Name and address of nursery supplier:		
Purchaser:	Developer <input type="checkbox"/>	
	Landscape Architect <input type="checkbox"/>	
	Council <input type="checkbox"/>	
	Other/ name <input type="checkbox"/>	
Date of departure from nursery:		
Date of arrival to Christchurch:		
Number of trees/plants sent:	1 – 25 <input type="checkbox"/>	
	26 – 50 <input type="checkbox"/>	
	51 – 75 <input type="checkbox"/>	
	76+ <input type="checkbox"/>	
Tree species:	If 76+, how many:	<input type="checkbox"/>
Container volume of trees/plants (or litres)		
Labelling of trees/plants correct	Yes <input type="checkbox"/>	No <input type="checkbox"/>

SAMPLE

	YES	NO	If no, is it correctable	Details of corrections
Below ground assessment				
Roots free of damage / decay				
Root direction outwards and downwards				
Height of root collar correct				
Root ball free of circling roots				
Root collar free of girdling roots				
Above ground assessment				
Health and vigour acceptable				
Pest, diseases and injuries free				
Trunk free of damage				
Self-supporting				
Passed stem bending test				
Pruning acceptable				
Apical dominance acceptable (typical of species)				
Crown symmetry acceptable				
Included bark acceptable				
Trunk position in bag/pot acceptable				
Graft unions compatible				
Weeds present				

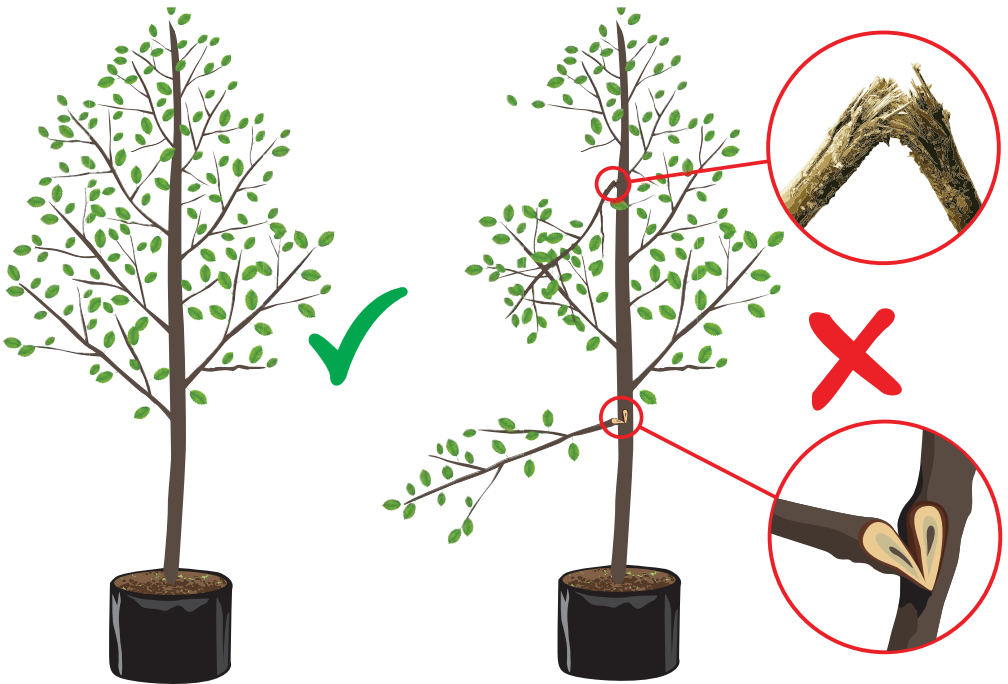
Pest, disease, and injury

Trees should show no signs of pest or disease infestation.



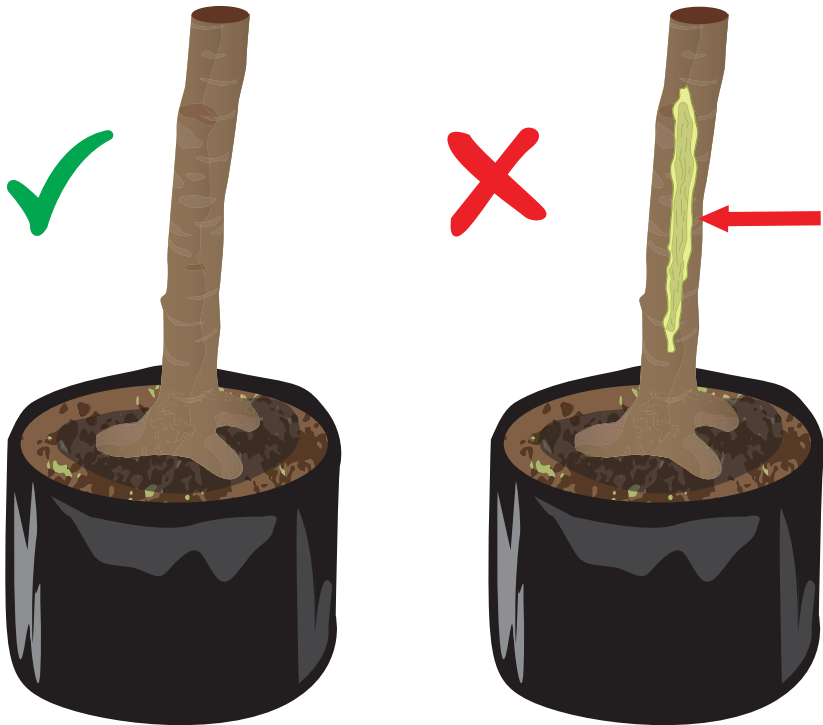
Broken branches

Trees shall show no evidence of damage to foliage, trunk or branches.



Trunk

Trees shall show no evidence of trunk damage.

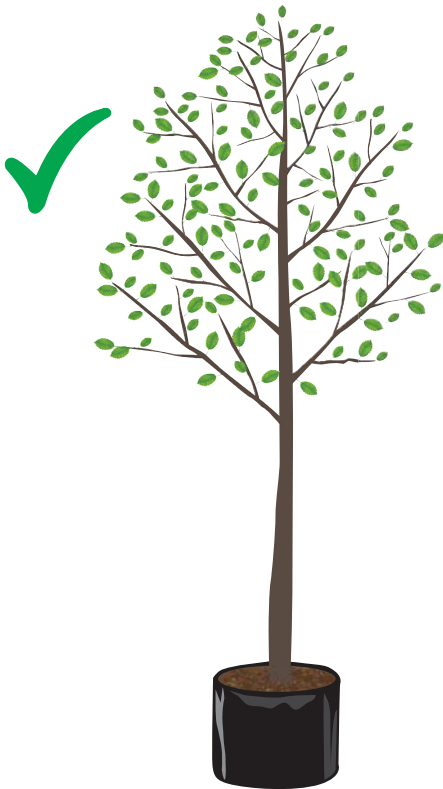


4.3.1 Above ground

- Trees shall substantially be free of pest or disease infestation.
- Injury: trees shall substantially show no evidence of foliage damage (e.g. distortion from herbicides or frost) or trunk or branch damage (e.g. ties too tight, sunburn, rough handling, mechanical, inappropriate care in transit, frost damage, wind damage, snow damage).
- The size, colour and appearance of leaves should be typical for the time of the year and stage of growth of the species/cultivar. Leaves should not be stunted, misshapen, discoloured or otherwise atypical. Foliage shall be hardened off for Christchurch conditions and substantially free from chlorosis and necrosis. Extension growth should be typical for the time of the year and stage of growth of the species/cultivar with no die back.

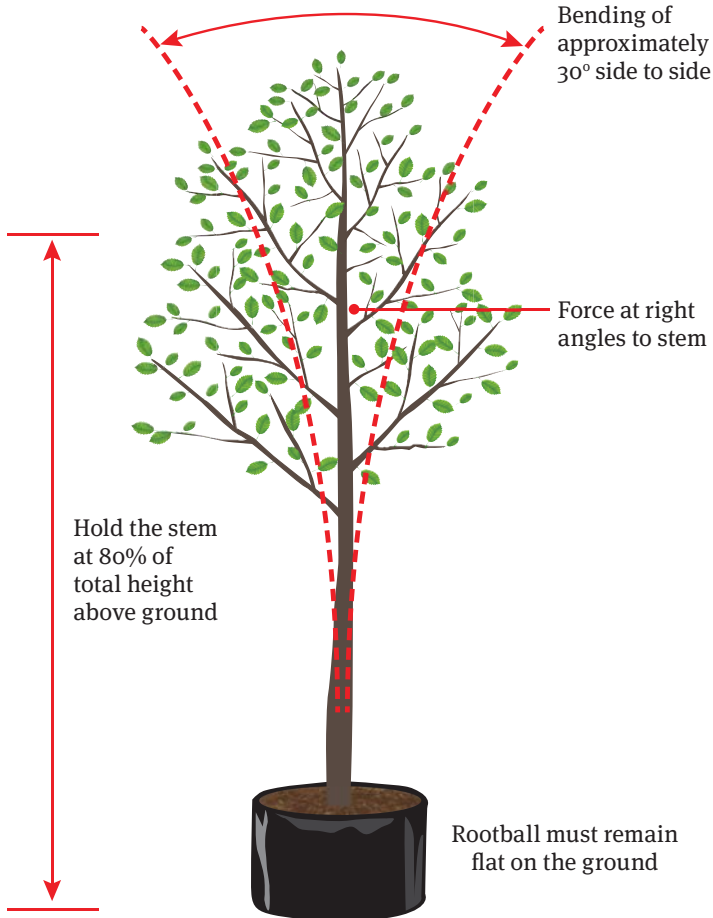
Self supporting

Trees shall be sturdy enough to support themselves with a full head of foliage without the use of canes or stakes.



Self supporting

Trees shall be able to support themselves in an upright position with a full head of foliage while standing in the container.

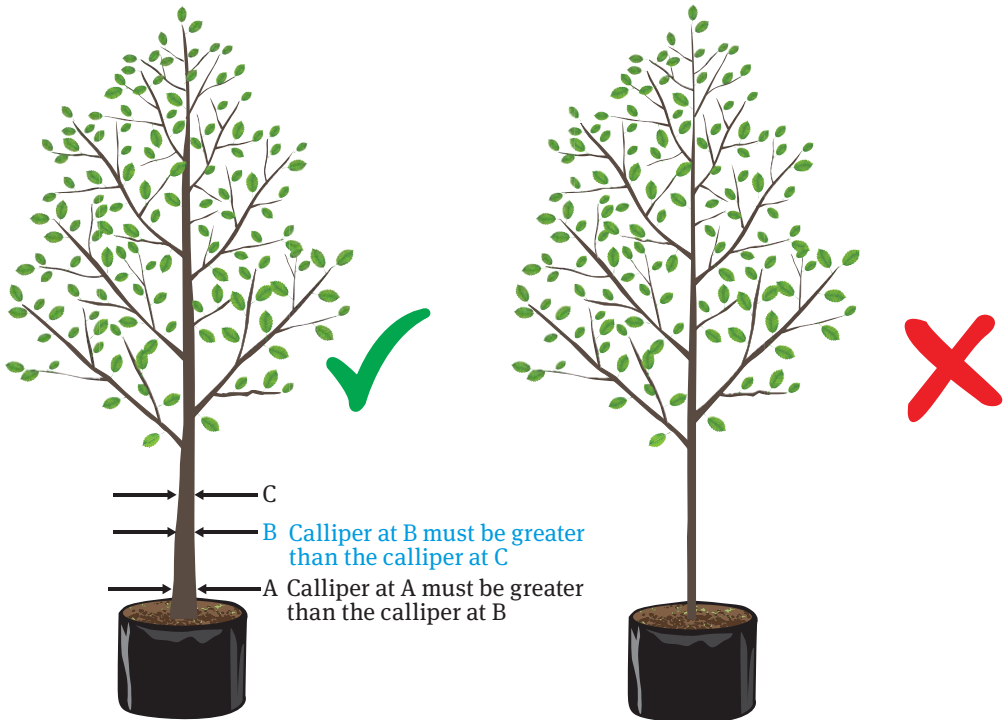


Self supporting

- Trees shall be able to support themselves in an upright position with a full head of foliage while standing in the container and also after planting without the use of canes or stakes.
- The trunk should be rigid for the lower quarter to half of its height, becoming gradually more flexible through the upper half.
- The trunk should be able to bend by approximately 30° side to side without the container lifting off the ground when the tree is bent at 80% of the trees height.
- The tree shall return to an upright position after the test has been completed, this test shall be undertaken after the cane has been removed.

Trunk/Calliper

The calliper at any given point on the trunk must be greater than the calliper at any higher point on the trunk.

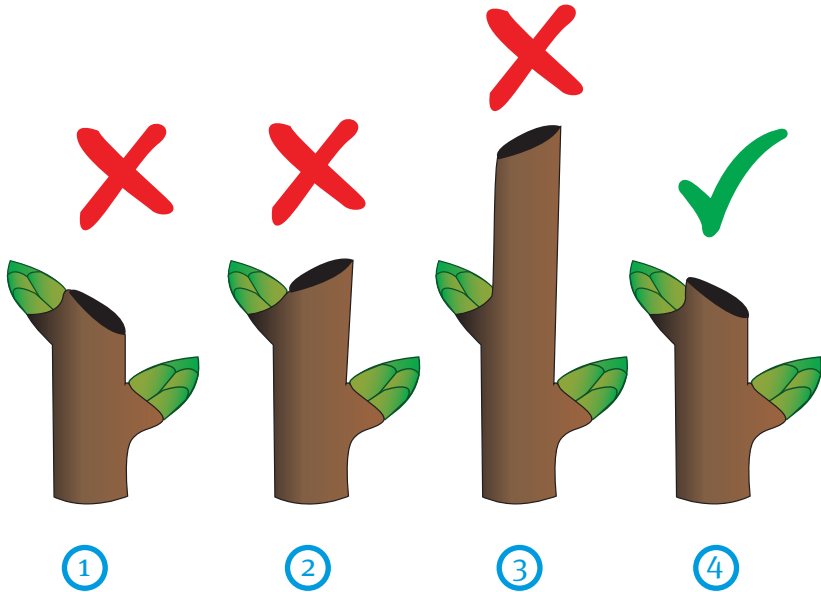


CSS 4.3 Above ground

- The trunk shall be strong, upright and reasonably straight.
- Trunk taper is the increase in calliper size down the stem and is a response to the tree's physical movement and presence of branch attachments while it is growing.
- The calliper at any given point on the trunk must be greater than the calliper at any higher point on the trunk.
- An un-tapered trunk may be accepted by Council where it is a species/cultivar characteristic e.g. standard cherries, *Pseudopanax* spp.
- Straightness of trunk can be species dependant (e.g. *Carpinus betulus*, *Koelreuteria paniculata*, some *Sophora* spp).

Pruning

Pruning practice shall benefit the tree's development.



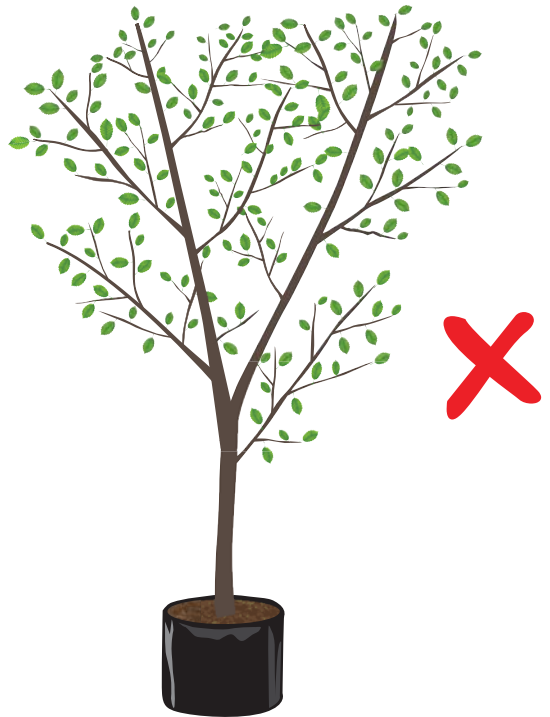
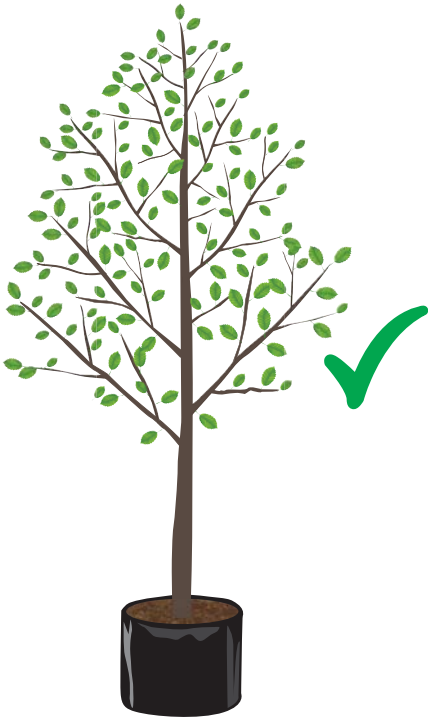
1. Pruning cut to close to lateral bud, causing bud to dry out and potentially die.
2. Pruning cut facing the wrong way, causing decay and potentially loss of bud.
3. Remaining stub will attract diseases, potentially causing loss of bud.
4. Correct pruning cut and angle, leaving a slight heel above the bud promoting growth towards a desired direction.

CSS 4.3 Pruning

- Pruning practice shall benefit the tree's development
- Pruning shall be undertaken to internationally recognised arboricultural standards, practices and procedures.
- Trees shall not be pruned just before shipping.
- With the exception of standard cultivars (e.g. cherries) clean trunk height shall not exceed 40% of the total tree height.
- The diameter of any wound shall not exceed 50% of the diameter of the trunk immediately above the point of pruning.

Apical dominance (Central leader)

Trunks shall be free of co-dominant stems (double leaders).

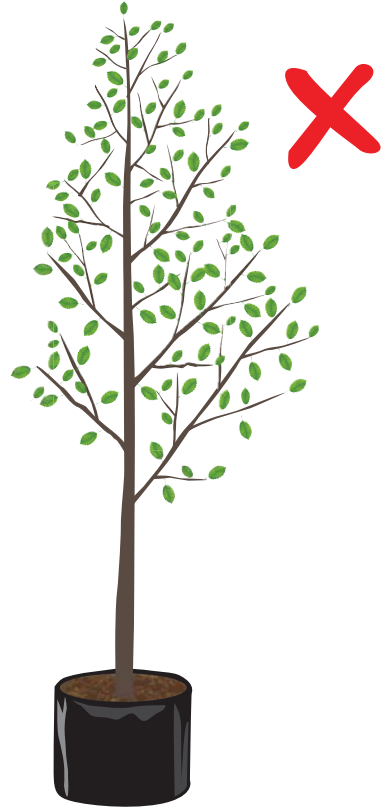
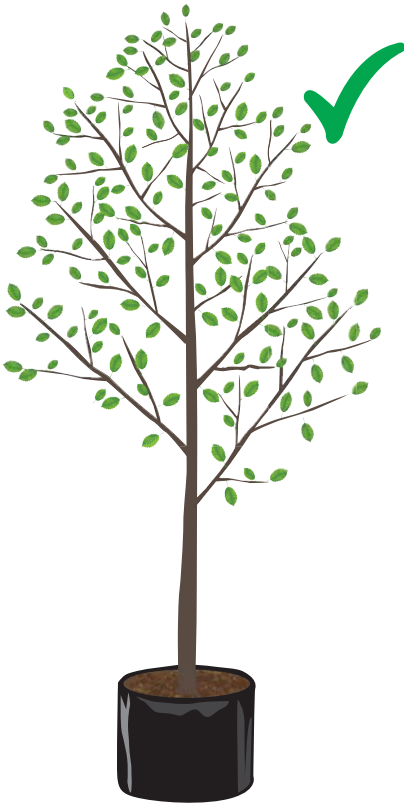


CSS 4.3 Above ground

- Species with a juvenile ex-current form shall have a clearly defined central leader for the height of the tree with the apical bud intact.
- Trunks shall be free of co-dominant stems (double leader) and large vigorous upright branches that will compete with the central leader.

Crown symmetry

Crown distribution shall be symmetrical.

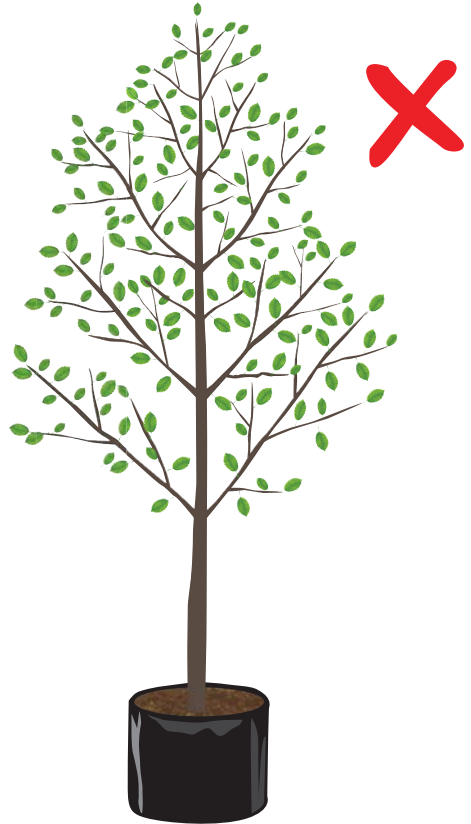
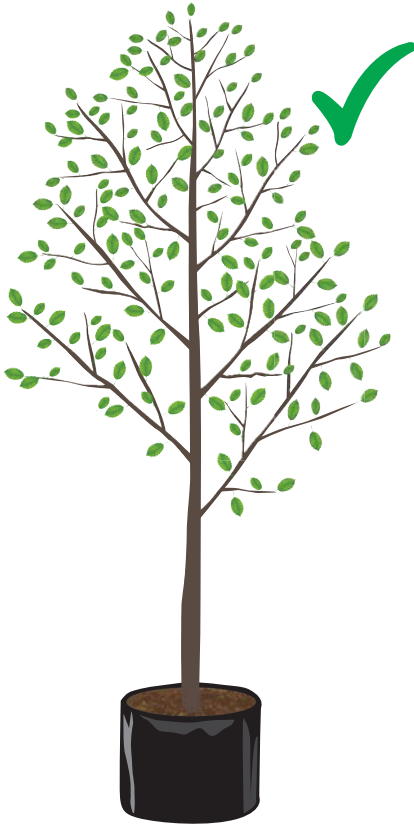


CSS 4.3 Above ground

- The difference in crown distribution on opposite sides in any aspect shall not exceed 20%.
- It is recognised that species vary in their branching habit and some species are sparingly branched as juvenile stage that differs from the adult tree.

Crown symmetry

Branches shall be distributed radially around and vertically along the trunk.

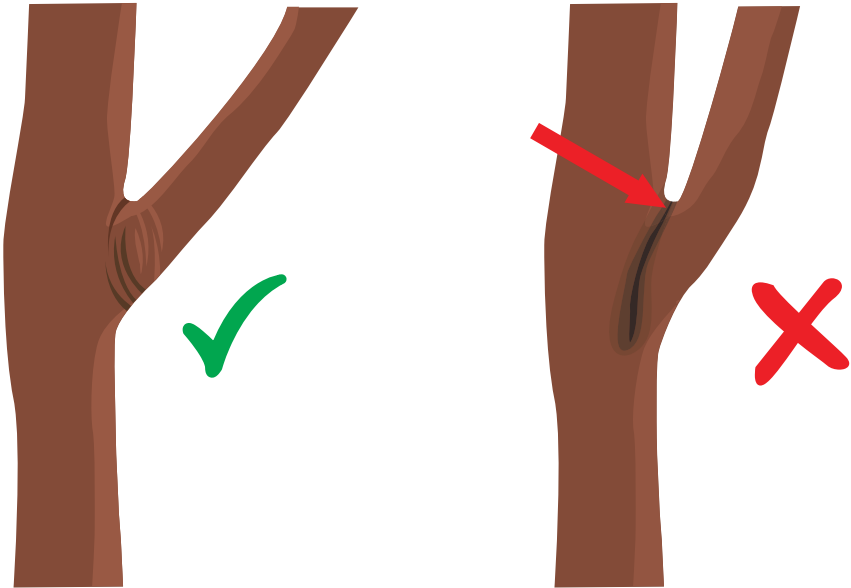


CSS 4.3 Above ground

- Branches shall be distributed radially around (species dependent) and vertically along the trunk, and shall be no greater than 50% of the diameter of the trunk, measured 20mm above the branch bark ridge (branch junction).
- It is recognised that species vary in their branching habit and some species are sparingly branched as juvenile stage that differs from the adult tree.

Included bark

Trees shall be free of weak branch connections (included bark).



CSS 4.3 Above ground

- Included bark is where the branch bark ridge fails to expand outwards and, as the trunk and branch continue growing, it becomes more and more enclosed.
- Branch bark ridges that are included (concave) are considerably weaker than those with a prominent ridge line (convex).
- Some included bark will be tolerated in species where it naturally occurs e.g. Kowhai, Tilia, Plagianthus, Ulmus.

Trunk position

Trees shall be positioned in the centre of the container.

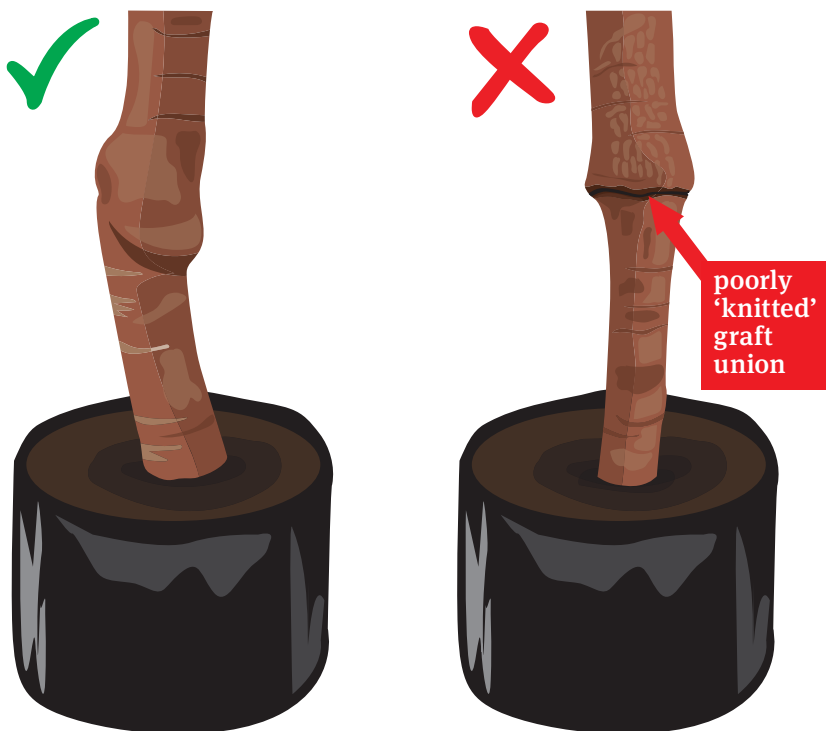


CSS 4.3.1 Above ground

- The distance from the centre of the trunk to the edge of the container shall not vary by more than 10% of the radius of the container.
- This allows roots to have an even 360° spread.
- The trunk shall be firm and upright in the container.

Graft unions

Graft unions shall be sound and the scion and root stock compatible.



CSS 4.3.1 Above ground

- Graft unions shall be sound and the scion and root stock compatible.
- The union of the scion and root stock shall be well knitted and show no obvious signs of incompatibility for the entire circumference of the graft.
- Graft unions are often different diameter, this does not indicate incompatibility.

Weeds and moisture

Containers and root balls shall be free of weeds and moist.

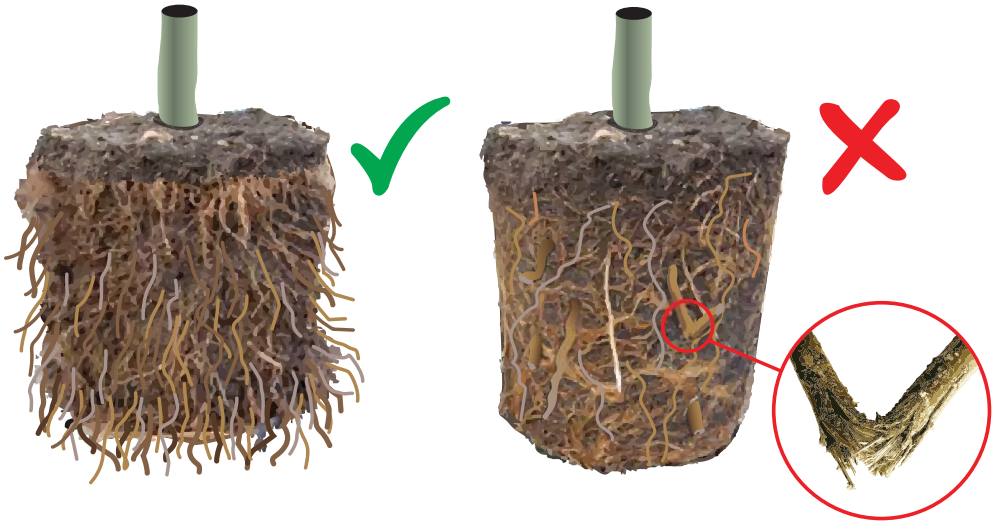


CSS 4.3.2 Above ground

- Containers and or root balls shall be weed free and moist.

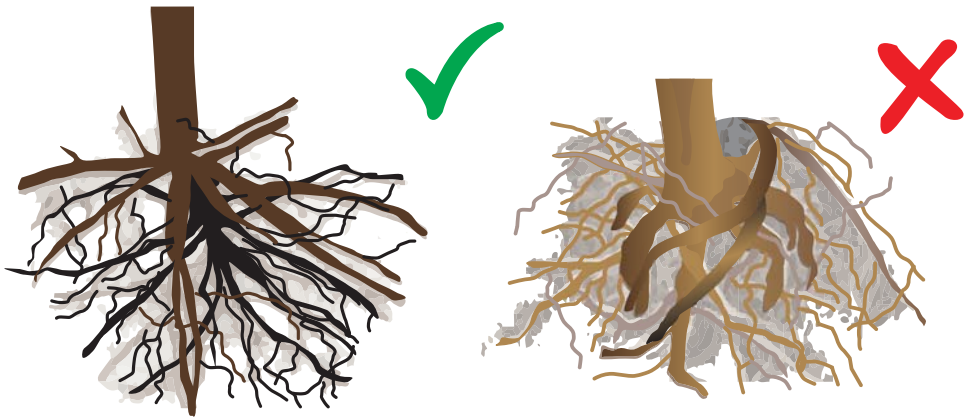
Roots

Roots shall be free of decay and damage.



Roots

Roots shall grow in a generally outwards and downwards direction.



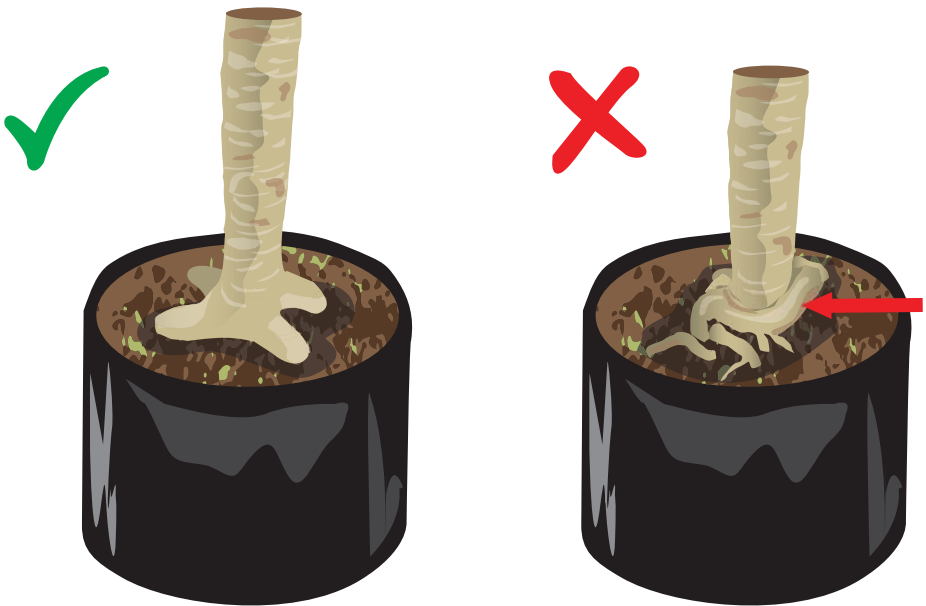
Roots

The outer edge of the root ball shall be free of woody circling roots, and the base free of matted roots.



Root collar

The root collar shall be free of girdling roots.



CSS 4.3.2 Below ground

- Roots that are distorted as a result of inappropriate growing practices shall not be accepted.
- Root pruning shall be undertaken to internationally recognised horticultural standards, practices and procedures.
- The root system shall fully occupy, and be well established in the container.
- Once the container is removed, 90% of the soil volume shall remain intact.
- When lifted by the trunk, the trunk and root ball shall move as one unit.
- The trunk shall not be loose in the container.

Height of root collar

The root collar shall be at or just below the surface of the root ball.



CSS 4.3.2 Below ground

- The root collar shall be at or just below (i.e. < 3 cm) the surface of the root ball.

Notes

Notes

Notes

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