

# Bonsai Root Grafting and Materials

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**Purpose** – Root grafting is normally used to improve the root display (nebari) of the bonsai by adding roots where they are needed. It is considered an advanced technique to improve the appearance of a bonsai, but once the bonsai artist has a solid grasp of re-potting, working on roots is very accessible. I encourage artists to practice the technique on a low value bonsai fairly early in their career so that they are familiar with the method when it comes time to apply it to a more valuable tree.

The term *root grafting* is sometimes used to refer to grafting desirable foliage on to a set of roots just above the roots so that the graft union merges into the nebari. This is a more difficult method and is normally only used by those propagating trees for bonsai.

**Timing** – Root grafting is normally done when the tree is repotted, but can be done between re-pottings if there is a particularly large gap to be filled. For most hardy trees, this means during the spring or, less often, fall re-potting period. However, in temperate climates tropicals are normally re-potted in the heat of summer so root grafting would be done at this time.

**Material for the Grafts** – The ideal material for root grafts are well-rooted cuttings from the same tree. However, since the top of the root graft will be cut off once it has fully bonded to the main tree, it is only necessary to match the species and bark characteristics. A smooth-barked root mixed in with the rough barked roots from the main tree or vice-versa is very obvious. In some cases, the top of the root graft is kept to create a multiple-trunk bonsai so it is also critical to match the foliage in this case.

**Tree Species** – Root grafting can be done with just about any tree species. Species that can be bare-rooted for transplanting and grow fairly rapidly are the easiest. Easy species include Maples (Acer), Elms (Ulmus), and Ficuses (Ficus); while Hornbeams (Carpinus) and Larches (Larix), are moderate; with Junipers (Juniperus) and Pines (Pinus) being more difficult.

**Types of Root Grafts** – *Approach* and *thread grafts* are the most common and easiest types of root grafts. An approach graft is done by removing a section of bark from the main tree where the new roots are to join the nebari and from the seedling/cutting with the new roots just above the roots. The cambial layers of these bare sections aligned and fastened together – pushpins or similar thin, large-headed nails are often used. A thread graft is done by drilling a hole through the trunk or larger root with the bottom of the hole in the location of the new roots. The seedling or cutting is then threaded through the hole and pinned in place with a wedge at the bottom of the hole so it fuses together at this point. The top of the hole is normally sealed with wound putty to keep the hole from filling with water and rotting. The seedling/cutting for thread grafts must be free of side branches and have small buds so it will fit through the hole.

**Sources** – The material for root grafts should be fairly well-rooted and healthy to insure it survives the process. In general, newly purchased bare-root plants are not the best because they were normally held over the winter for shipment – they should be potted up in small pots for a year first.

**Liners, Plugs, and Bare Root** – One of the easiest sources is to order small seedlings or cuttings from commercial nurseries. Liners (2-4” pots) and plugs can be planted into a group immediately while bare root stock is often better if it is grown in a pot for a year or two. A couple of suggestions are:

**Evergreen Garden Works** - <http://www.evergreengardenworks.com> – Large selection of 2” to gallon sized pots. Brent is very knowledgeable and focuses on bonsai.

**Heritage Seedlings** – <http://www.heritageseedlings.com> – Wholesale seedling supplier that has waived their \$500 minimum for the IEBS (still need to order at least \$250 and meet quantity minimums).

**Spokane County Conservation District** – <http://www.sccd.org>. Mostly native bare-root species at good prices, typically in groups of 10.

**Sheffield’s Seed Company**- <http://sheffields.com> - Broad selection and good prices.

**Seeds** – Seeds can be one of the cheapest routes, particularly if you collect your own, but it can take several years to develop stock that is suitable for planting. In addition, many common seed sources are highly variable so you will need to start with far more than you need for the planting.

**Collect your own** – find a tree with desirable traits and ask the owner if you can collect seed.

**Cuttings and Airlayers** – These methods insure that the foliage of all of the plants is identical. They are also the lowest costs since they are from a tree you already have. Cuttings generally take 1-2 years before they can be planted as a group. Several airlayers can be done on the same tree to obtain all of the material needed for the planting.