

Repotting Bonsai

Trees rely for survival on being able to produce new feeding roots annually, just as they must produce new shoots. As a bonsai, the tree can not live happily in the same pot forever. Eventually, it will become root bound, the roots will find it impossible to grow any further, and the plant will die. Therefore, we must periodically provide space within the pot for the new feeding roots to grow. This is achieved by pruning back the roots. We could increase space by providing a larger pot for each repotting, but then the aesthetic balance between the pot and tree would get lost. A totally different reason for repotting would be to change the pot style for a different aesthetic look.

Bonsai must be repotted when the tree becomes root-bound because the roots have filled the pot to the point where it is difficult for water to penetrate the soil, and the tree can no longer take up nourishment. Signs that a tree needs repotting include slow passage of water through the soil, a slowing of growth, or roots that appear like a fiber mat when the tree is eased from the pot. Bonsai generally need repotting every one to three years for deciduous trees, every three to five years for conifers, about every two years for fruit trees, and most indoor tropical bonsai every two to three years. Young or small trees require repotting more frequently than older or larger specimens. How often any given bonsai must be repotted will depend on the type of tree, its age, the size of container, and the state of training it is in.

Repotting bonsai and trimming the roots is not a hazardous operation if it is done at the right time of the year and if one is careful not to take away too much soil from the root ball. The ideal time to repot (and prune roots) is when the roots begin to grow in the spring. The exact timing depends on the advancement of the season and the species. The first sign of root activity is a swelling of the buds on last year's shoots. With this in mind, bud development is used as an indicator for the timing of the repotting. One can safely remove one third of the total volume of soil and roots from the root ball providing it is done just before the new growth starts in the spring. Generally, broad-leafed trees will be repotted before the conifers. Indoor tropical's, which have no dormant season as such, respond best in heat, and so can be repotted in early to midsummer. Some literature suggests that repotting can be done in autumn, but if you do repot in autumn, the pruned roots will have to endure the rigors of winter before they can heal and regenerate.

Every bonsai artist has his or her favorite soil mix. However, most will agree that it should provide for good air and water movement since bonsai are generally potted in shallow containers. As a result, most garden and potting soil is too fine. A mixture of aggregate like crushed lava rock, pumice, and Akadama (Japanese fired clay) works very well. Particles smaller than 1/16" and those larger than 1/2" are nearly always discarded. The particle size is generally scaled to the tree and pot so that the smaller pots will retain more water and the larger ones will drain better.

MATERIAL & TOOL CHECKLIST:

- **A Pot or Training Box**—The pot's width should be equal to about 3/4 the height of the tree and the depth should roughly equal the width of the tree trunk at its base. Some species require more depth. If reusing a pot, it should be washed. Remove calcified scale with vinegar. Lightly bleach the container to remove scum and possible disease residues and rinse thoroughly. Plants in the developing stage can be placed in a wooden training box. Wood breathes well and is not as affected by temperature as is clay.
- **Screen** for drain holes.
- **Soil Mix.** (See *There Is No Soil In Bonsai Soil* article on our website.)
- **Aluminum or Copper Wire** to secure the drain-hole screens and to secure the plant in the pot.
- **Root Hook, Chopstick or Knitting Needle** for cleaning out the root ball.
- **Scissors** for trimming the roots (and maybe a concave cutter for larger roots).
- **Pliers** to tighten the wires that secure the tree in the pot.
- **Chopstick** for tamping the soil.

THE PROCESS:

1. **Allow the bonsai to dry out** somewhat to facilitate the removal of soil from the root ball. Have the soil mix prepared in advance. If using a new pot, have the drain-hole screens in place in advance. Also, the wires to secure the tree should be in place.
2. **Work in the shade.** Ease the tree from its existing container. If the container is a bonsai pot, make sure any wires securing the tree are cut or removed. Handle the tree gently so as not to knock off any beautiful old bark or do other damage.
3. **Clean out the root ball.** The ultimate object is to get rid of 100% of the compacted field soil in the root ball. Use your root hook or chopstick to comb out the roots and rake away the old soil. A root wash using a hose or faucet is sometimes used to finish extracting old soil. Deciduous trees seem to tolerate the root wash somewhat more than conifers, as they tolerate repotting better in general. It is sometimes recommended that a collected conifer (or even a deciduous) has only half of the root-ball cleaned out during the first repotting; the other half will be cleaned out at the second repotting. An established bonsai tree can either be completely bare rooted or some soil can be left in place during the repotting process, depending on the situation and need of the tree.
4. **Prune back the roots.** A good start is to cut back all the thick roots that have grown to the edge of the pot, cutting back the thickest roots that are the furthest from the trunk. When pruning thick roots, the cut area should always point downwards. Remove all dead or decaying roots, cutting them back to healthy ones. Shorten the rest of the roots until the root ball will fit the pot with a clear margin all around. It's important to trim the underside of the root ball as well. Ideally, there should be slightly more rootage than foliage.
5. **Keep the bare roots moist** with a spray bottle of water or other means if you're going to reuse the same bonsai pot and plan to clean it at this time. You don't want the cut root ends to completely dry out.
6. **Repot the tree.** Cover the base of the pot with a layer of fresh soil. (a mixture of 60% lava rock, 20% pumice, and 20% Akadama is an acceptable basic mixture.) Then make a mound where the trunk will sit. Position the tree in the pot and bed the trunk into the mound of soil by gently

twisting it back and forth while applying gentle downward pressure. The root mass is usually positioned just below the rim of the pot; exposed rootage should be visible above the rim. Once you are satisfied with the position of the tree in the pot, secure the tree to the pot with the pre-threaded wire, twisting the ends from opposite ends of the pot so they hold the trunk in place. Try to locate the wire around the trunk so it will not be visible when the rest of the soil mixture is added.

7. **Tighten the securing wires** over the roots and twist them together until the tree is held firm.
8. **Add more soil**, working it between the roots with a chopstick. Be gentle and don't stab at the soil. Guide the chopstick between the roots and move it in a circular motion so that the soil is worked into all the spaces between and under the roots. When finished, the surface of the soil should be just below the rim of the pot.
9. **Water thoroughly**. After repotting, the bonsai should be placed in a sheltered location and protected from direct sun and strong breezes for two to three weeks. Make sure the soil does not dry out during this period; mist the foliage from time to time. After the recovery period, the tree may be placed in its normal location.
10. **Don't feed** until new growth is well under way.

Tools

Although many bonsai artists have an impressive collection of tools, only a few beyond your mind, eye, and hands are necessary. Only one of the tools listed below is a specialized tool for bonsai – the others are often used for other purposes around the home and garden.

1. A good pair of **bypass cutters** will work for most branch pruning. Smaller ones are best for most bonsai but, just as in gardening, matching the cutter to the branch is good practice.
2. **Concave cutters** are a specialized tool used in bonsai to cut branches very close to the trunk or a larger branch. They leave a slightly concave cut that will heal with little or no swelling. The 8" (200 mm) size is good for beginners.
3. A sharp pair of **narrow scissors** are used to trim small twigs and branches as well as to cut off individual leaves.
4. **Chopsticks** are great for untangling roots, settling soil during repotting, and any other chore where your fingers are too big.
5. **Wire cutters** are used to cut wire. Standard diagonal cutters will work, but the ones designed for bonsai provide more leverage when cutting wire off a branch.
6. **Sieves** are used to prepare soil for repotting. They can be made from window screen and hardware cloth. Their purpose is to remove the very fine particles from your mixture so they don't cling to and clog the roots.