

## **Root Pruning on Bonsai**

By Mike Apostolos 05/2013

### **What Does Root Pruning Do:**

- Critical part of Bonsai - trees cannot remain in pots indefinitely without pruning roots
- Roots grow with access to water & nutrients below the soil, which feed & develop new branch & foliage growth above soil; easy in the ground – needs assistance in pots
- Contributes to new root growth, which allows proper absorption of minor & major elements from soil mix
- Improves circulation around roots by removing old compacted soil & unnecessary roots
- Required to balance top pruning; top pruning reduces transpiration & increases water storage in root system - roots DO NOT like to grow in wet conditions – balance is critical
- If root pruning not in balance with top, trees get root bound & can dry out on hot days
- Removes insufficient heavy, woody roots that are too long, taking up valuable pot space
- Cutting back strong roots, leaving, trimming short roots give Bonsai more density, compactness & keep trees dwarf in size & living in smaller pots
- Time to change soil – non-draining soils retain more moisture, especially in summer which heat up roots & damages root system (check tree soil when getting a new tree – bad soils are heavy in organics, peat & dirt)
- When root pruning, have chance to improve, develop Nebari (visible surface roots)

### **When To Root Prune:**

- Frequency of root pruning depends on: 1) species of tree; 2) pot size; 3) microclimate
- Repotting & root pruning every 2 – 5 years, depending on tree species; size of tree & pot; microclimate conditions
- Younger trees grow faster - require more frequency; older trees grow slower – require less frequency; pay visual attention to trees when working on them, also
- Use of metal tags documents tree repotting dates, other info - immediately available
- Symptoms of root bound: 1) general chlorosis; 2) loss of vigor in foliage & branch growth development, even with fertilizing; 3) tree is pushing up, out of pot
- When daytime temperatures above 55 degrees, preferably with no wind, some humidity
- Root prune during foliage dormant times, spring & on some species in fall – look at Leroy's Care Schedule in the PBS Book & Web Site. Remember BALANCE between top foliage growth & root system below the soil

### How To Root Prune:

- Use coarse grade soil to create & maintain airspaces around roots (similar to A/C system for roots)
- General root pruning removes 30% of roots; severe pruning removes no more than 50%
- Remove tree from pot with curved root saw – separate thin section of soil around pot to free up roots (undue pressure on root system can cause irreversible damage); or roll out of a nursery container on its side – DO NOT PULL STRAIGHT UP & OUT
- Once roots exposed, if the root system is not good – transplant immediately into good soil mix & let it rest for 1 year. Do not use too big of a pot – if too much soil volume, roots cannot use as much water as soil holds, which can lead to root rot
- Typically, never remove all of old soil from root ball – bending, exposing the fine feeder roots to air can damage, kill them; try to leave undisturbed
- Some severe soil types mandate removing all old soil – soak in tub of water & SuperThrive mixture, gently agitating to loosen soil
- Age of some trees/species (i.e. old Olive tree) require removal of all old soil to allow for severe cutting of existing root system with hand/power saw, sealing & transplanting
- Trees under 10 years old – most soil will fall away, as fine feeder roots have not developed to form a strong mat, root system
- Much older trees have matted root system – more difficult to remove; trim, comb out roots carefully. When finished with this, remember where big, woody roots are concentrated & cut into mat/root ball from outer edge, inward toward roots to entirely remove thick root (these large roots are drain on tree resources)
- Once thick roots removed, this area will produce many new, smaller roots, increasing trees efficiency, growth & development
- New, course soil should be sieved to remove dust. If using soil gradations, place larger ones in bottom of pot & finer ones in top area (it is not necessary to use large rocks in bottom of pot if using course, good soil mix – it just takes up valuable pot space)
- Root pruning similar to top foliage pruning – ‘COARSE TO FINE’. When working root system – remove large woody roots, tap roots to promote new smaller root development with fine root hairs; it is these fine roots/hairs that are the active water & minor and major absorption means for the trees growth
- Place soil in pot, mound up soil in an inverted cone in middle, below where trunk will sit, so as to fill void underneath roots with soil
- Work soil carefully into roots & pot with chopstick; don’t jab, swirl around to work soil in
- Wire root system into pot, if mat/root ball not enough to hold tree in place; tree moving in pot will breaking off fine root hairs while tree is growing, causing unwanted damage
- Mix small a few small drops of SuperThrive into a 1 gal watering can & pour over repotted tree, soil & foliage; place in indirect sun for 1 month
- DO NO FERTILIZE FOR 1 MONTH AFTER REPOTTING/ROOT PRUNING

### **Other Benefits To Root Pruning:**

- Good time to work on developing Nebari, radial roots - this is a whole separate program, as it can include creating an entire new root system for a tree; grafting onto a tree or existing roots; grafting through the tree & roots. Both Robert Gustafson & Larry Seymour have a good deal of experience and knowledge in this area and would be great resources for more detail information
- Potential to plant tree in the ground to produce faster development of thickening the trunk, growing the tree. Placement in a pot slows down the fast, course growth of a tree; planting in a good soil mix develops the fine roots below & good branching above
- See the attached article by Cat Nelson on Root Development in the Journal of the American Bonsai Society (see note below)

**Note:** The Root Development Article by Cat Nelson is copied and included in this program with written permission from the Editor of the Journal of the American Bonsai Society.