

The Art of Bonsai

By Eugene Howell

This is Part-Two of a discussion of roots. In the last newsletter we learned the importance of the health of a plant's root system and how a root hair functions. We also learned why water will move into a root hair and what can cause that process to reverse, causing harm or death to the plant. In this part we will continue discussing how to keep the root system healthy.

Let's talk about the environment in which the roots should be maintained at all times for maximum health. Roots of all but desert and arid area plants like to have their roots in moist, but not wet, soil at all times. This means that the soil must never be permitted to completely dry out. This is the one event that will very quickly cause most bonsai to go "belly up". When this happens the root hairs and small roots die quickly and the complete plant is not far behind. While the other side of the coin (too much water) is not so quick to harm the plant, constant excess moisture will cause root rot to set in and if not corrected fairly quickly (within several days), will also cause the death of the plant.

If you walk outside to take a look at your plants and are shocked to see one that is in terrible condition (wilted, drooping leaves) and know that the previous day it was in perfect health, you probably skipped giving it adequate water yesterday and it has just about died that quickly. When this happens, the probability of reviving the plant without damage is relatively small. This has happened to all of us, so use it as a teaching point and make sure you adequately water according to your proven schedule.

The composition of the soil itself will affect the health of the root system. Here in Florida (at least this part of it) we generally use an almost inorganic, very coarse planting medium. This provides a fast draining environment that retains just enough moisture for the following 24 hours or so. The more dense the soil (too much clay and decomposed organic material), the slower it drains and the higher the probability of retaining too much moisture. Also the more dense the soil, the weaker the root system is. The reasons for this are that the fine roots have too hard a job trying to push through a dense soil and the air pockets are almost nonexistent. A coarse soil provides a multitude of tiny spaces for air and this aids the growth of the roots. These air spaces being constantly filled with water (over watering) is one factor that kills tiny roots, since they are deprived of the air they need.

If your plant has been growing vigorously and suddenly the leaves begin to turn brown and drop off, or the leaves begin to droop and curl (look limp, like celery that has been left in the crisper too long) and you know the plant has not gone dry, it is most likely that your plant has a root problem. So what can the problems be? Generally it is one of two things. The roots are pot-bound or root rot has set in. If you suspect the latter and it is not time to repot, drench the soil with a fungicide and do the same thing again in about 7 to 10 days. Follow this up with a systemic fungicide that will prevent the problem from coming back for several months. In taking these steps, be sure to guard against phytotoxicity. This is the application, to the plant, of too much chemical (either fungicide or insecticide) too often, resulting in its being poisoned. Follow the chemical directions carefully (not too much and not too often).

Don't fall asleep on me at this point; hang in there just a little longer!

Root rot usually provides plenty of warning before the plant gets into real trouble. If the leaves over most of the plant begin to turn brown along their edges, this is probably water stress. If you know that you have been watering it regularly, so the plant has never been allowed to dry-out, then what you likely have is root rot.

Every bonsai hobbyist knows that bonsai need to be repotted every few years. There are two reasons for this. First, the roots have become pot-bound, meaning that they completely fill the pot and have become so thick that the root mass will actually shed water around the inside edge of the pot rather than allowing it to drain through the mass and second, that the organic component of the soil has broken down and the soil needs to be replaced.

This is the one time, in a period of perhaps a few years, that you are able to actually examine the plant's root system, so take advantage of it. While the roots are exposed and spread out, look for roots that are spongy or of an unhealthy color. An unhealthy color is one that is dark brown or black when the root is scraped with your fingernail. If you find any, now is the time to remove them so that only strong healthy roots remain. These unhealthy colored roots may have root rot, so take the time, just before covering the remaining roots with soil, to spray them thoroughly with a fungicide.

While the roots are exposed, keep in mind that the roots must remain moist at all times. This means that you need to spray them with water every few minutes. If you forget, it has the same effect as allowing the plant's soil to dry out.

Remember that "out of sight" should NOT mean "out of mind" when dealing with the root system of your bonsai. To do so is to ask for big trouble. You now know what to look for and how to handle it so never let your tree suffer from root problems.