

The Art of Bonsai

By Eugene Howell

Of the four basic requirements for a tree (or any plant) to survive, we have already discussed two of them in previous newsletters. These were temperature and light. Let's now turn our attention to the third one – water.

All bonsai enthusiasts and gardeners intuitively understand that a plant needs water to survive. In fact, the lack of water will kill a plant almost as fast as being exposed to freezing temperatures and far faster than being in the wrong light environment or incorrect type of soil.

The question then, is “how much water is enough and how much is too much or too little?” Some people (and lots of houseplant owners) believe that if a little water is good, then more water is better. Unfortunately this is not the case as evidenced by the fact that most houseplants die from one cause, too much water. The interesting thing is that a plant getting too much water will show identical symptoms to one getting too little. How can this be?

To understand how this happens, one needs to understand how roots function.

A plant's roots are the structure that absorbs water and nutrients into the plant. To do this there are thousands of “root hairs” on the tips of the small roots. Through osmosis, water and dissolved minerals pass through the membrane of the root hair and enter the circulatory system of the plant. The amount of water absorbed depends on the amount of water given off by the leaves of the plant. The more given off by the leaves, the more absorbed by the root hairs. There is a limit to the maximum amount of water that can be given off by the leaves at any particular time. So, if there is more water surrounding the roots than can be absorbed by them, the roots are subjected to a very unhealthy condition. The reason this is unhealthy is because all soils contain millions of fungi and bacteria per teaspoon. That's right – per teaspoon. And the one thing fungi need in order to begin multiplying at a phenomenal rate is constant sogginess. When the roots are subjected to soggy conditions for days at a time, the fungi begin attacking the roots and root rot sets in. This kills the roots, thus the plant gets no more water. So a plant that has too much water in the soil reacts exactly like one with too little water. The edges and tips of the leaves begin to turn brown and the leaves begin to curl. Eventually the leaves will die, as will the entire plant.

No one wants to lose a valuable bonsai, so what do we do to prevent this? Well, the first thing to do is make sure your tree is planted in a good bonsai soil mix. Through hundreds of years of growing bonsai, the Japanese learned (the hard way, I suspect) that bonsai soil needs to be fast-draining yet moisture-retentive. Here in Florida we have adapted their formula to take advantage of the materials reasonably and economically available in Florida. The basic formula for this soil is one part very coarse sand (usually sold as sand-blasting sand), one part ground pine bark and one part Turface. This mixture will allow water to drain almost as fast as the sprinkler puts it on, yet will retain sufficient moisture so the tree can get through our hot summer weather for up to 24 hours following the application of water. If the tree is in very little soil then twice daily watering may be called for during the summer.

The timing of the daily watering is important. Studies at various universities have shown that when the root system of a plant reaches 90 degrees F, activity within the roots comes to a halt and when the temperature rises only a few degrees above 90, the roots actually begin to die. During the hottest part of the year, if your trees are subjected to full sun for the entire day, then watering about mid-day will cool the roots and help protect them from the intense afternoon heat. Although watering at a different time of day will not kill the plant, why not do everything you can to keep your plants from being placed in a stressful condition when it isn't necessary.

During our cooler winter months, when the water in the soil does not evaporate as rapidly and the plant does not use it as quickly, the moisture level in the soil will usually last at least 48 hours, and in some cases up to 72 hours (for a dormant plant).

If you choose to use a soil mix that contains more organic material than described above, then you are running a high risk of root rot. If you insist on using this type, you must check it each day to determine if water is needed. To do this, stick your finger down into the soil to the depth of your first knuckle (approx.

one inch). If the tip of your finger feels cool moist soil, no water is needed at that time. Only when the tip feels dry soil is it time to water.

The safest thing to do is use good bonsai soil, but if in doubt use this simple check to make sure your tree is not being subjected to an unhealthy condition.