MONTHLY TIPS

The Art of Watering

(Ed.'s Note: The following article was taken was taken from "Bonsai News" *the newsletter of the Greater Louisville Bonsai Society.)*

Warm weather, longer days, flowers and bright new leaves are sure signs that your bonsai's need for water is rapidly increasing. Be diligent. Spring is no time for neglect. The Three basic rules of watering are:

1. Never allow the soil to become bone dry. Never. Absolutely never.

2. Completely saturate the soil when you water.

3. Wait until the soil is only slightly damp before you water again.

Basically, that is all there is to it. If you are interested in how and when water is absorbed by plants, read on. The roots of plants are able to absorb water and oxygen only when the moisture content of the soil is between 30% and 20%. Therefore, the best soils are those which allow for rapid drainage of excess moisture. This rapid drainage achieves the optimal 20% and 30% moisture content as quickly as possible. Once the excess water drains out the remaining water should be retained for as long as possible.

The right soil mix is very important. The mix that we use is: 40% coarse sand, 40% fired clay particles (Terra Green) and 20% aged organic compost. The sand provides for much of the drainage of excess water. The fired clay allows excess water to drain while holding and slowly releasing a small amount of water which has collected on the surface of each particle. The remaining water is retained by the organic compost. This water becomes enriched with nutrients from the compost and is absorbed by the tree's feeder roots.

What happens if the moisture content is never allowed to drop to the optimal 30% to 20% range? When the moisture content is always above the optimal range, the roots are unable to take in oxygen and the plant eventually drowns.

What happens when the moisture content of the soil drops below 20%. Nothing, providing the soil is not allowed to dry out completely.

What happens if the soil completely dries out? If the soil is allowed to become bone dry, then the moisture is drawn out of the feeder roots. These roots then collapse and the tree goes into stress and may die. It is very important to avoid this situation, by watering very regularly. That's it. Enjoy the spring, enjoy your bonsai and…Don't forget to water!

Insecticide & fungicide shelf life *(By Don Brown)*

I have often wondered how long you can keep a bottle on the shelf & expect it to do the job. Why would I wonder about such a mundane thing??---because I have a lot of inventory I have had for a lot of years—how many?—I have no idea, but lots. Last winter I started calling the customer service departments of several manufacturers & was transferred to some other departments who were telling me that, once opened, the product was effective for only 6 to 12 months. This was difficult to swallow. On further inquiry, I found I was being transferred to sales departments who are only motivated by SALES & generally have no technical background. Last week I was somehow motivated to start over. I called Ortho, Hi-Yield & Fertiloam & asked to speak to the technical staff in their R&D departments. Each company told me substantially the same thing. The period of time you can keep most insecticides & fungicides on the shelf, opened or unopened, & still expect them to do the job, is 3 to 4 years. Most felt more comfortable with 3 over 4. Beyond the 3 to 4 years, their listed effectiveness is going to be progressively diminished. I won't go into why this is important to know—the reason is obvious. It therefore seems important to record on the bottle the date of purchase, which I have started doing this spring. I suggest a permanent marker on the label or on some masking tape. I decided to pitch at the end of 3 years to allow additional time for on the retailer's shelf.

MONTHLY TIPS (CONT'D)

From Boron to Zinc: What Your Plants Need and Why

Because plants need nitrogen, phosphorus, and potassium in large amounts, these elements are known as primary macronutrients. Plants require smaller amounts of the secondary macronutrients—sulfur, calcium, and magnesium. Iron, manganese, zinc, copper, chlorine, boron, and molybdenum are still essential for growth but are required in even smaller amounts. They are often referred to as micronutrients or trace elements. Each of these macro- and micronutrients serves specific purposes for our plants, and, for plants grown indoors, it's entirely up to us to make sure we supply them.

Nitrogen (N)

Nitrogen is always listed first in the fertilizer grade (or N-P-K ratio) on nutrient product bags, boxes, and bottles because it is one of the biggies. (For example, if the ratio on your nutrient package reads "11-13-3", that means it contains 11 percent nitrogen.) Plants use nitrogen to produce new, green growth.

Phosphorus (P)

Phosphorus is listed second in the N-P-K ratio. (That nutrient package with the "11-13-3" ratio contains 13 percent phosphorus.) Phosphorus is essential to plant fruiting and flowering because it promotes root growth. When you supplement the amount of phosphorus your flowering plants get, you'll likely notice more blooms and more vigorous growth overall.

Potassium (K)

Potassium takes up the last spot in the N-P-K ratio. (So an "11-13-3" nutrient ratio contains 3 percent potassium.) Because plants use potassium to build cells and tissue, supplementing this nutrient contributes to overall plant hardiness. Stronger, more durable plants are usually more tolerant of temperature extremes and are more pest- and disease-resistant.

Sulfur (S)

One of the secondary macronutrients, sulfur helps plants maintain their dark green color. Mainly, plants use sulfur to create essential proteins.

Calcium (Ca)

As with sulfur, plants also need calcium to make proteins. Calcium promotes new root growth and facilitates overall plant vigor.

Magnesium (Mg)

Even though it's classified as a secondary macronutrient, magnesium is still critical for growth. Without magnesium, plants can't use light to make food! Plants also need magnesium to be able to take in their other essential nutrients and to make seeds.

Iron (Fe)

Iron makes for healthy, dark green growth. As with magnesium, iron is essential for photosynthesis. Plants must have iron in order to produce chlorophyll.

Manganese (Mn)

In short, manganese makes things happen. Manganese is necessary for chlorophyll formation, and without it, plants wouldn't be able to carry out essential cellular functions.

Copper (Cu)

Copper contributes to many natural processes including plant metabolism and reproduction.

Zinc (Zn)

Plants use zinc in conjunction with other elements to carry out many natural processes including forming chlorophyll.

Boron (B)

Plants don't need much of it, but boron does facilitate nutrient uptake and it helps plants to grow new tissue.

Molybdenum (Mo)

Plants need molybdenum to produce essential proteins.

Finally, to help your plants make the best use of the nutrients you offer them, make sure the nutrient solution is well aerated and not too hot or too cold. A good temperature range for most solutions is 60 to 65 degrees F. Even though they will absorb the nutrients at different rates according to what they need, you can avoid imbalances by offering your plants fresh nutrient