



WATERING YOUR TREE

Here in the Front Range, we frequently have next-to-no precipitation for whole months at a time. If the soil around a tree is allowed to dry out completely, even in winter, it can cause the tree to die back or die. Conversely, over-watered trees can die from an insufficient amount of oxygen in the soil – many well-intentioned people kill trees with kindness by watering them too much. (This problem is more likely to occur when trees are sited in areas, like lawns and flower gardens, that receive frequent irrigation. In such cases, it may be important to aim sprinklers away from trees, so that you can control the volume and frequency of irrigation yourself).

There are two primary considerations to bear in mind when watering trees: **Frequency of irrigation, and volume of irrigation.** The best way to control frequency and volume is to water manually. Even if you have an in-ground tree irrigation system, **TREES' IRRIGATION NEEDS ARE TOO IMPORTANT – AND VARIABLE – TO ENTRUST TO A CLOCK OR CALENDAR.** It doesn't take much energy for a human to check the soil, then flip a switch, or uncoil a hose and turn on a valve.

Frequency of irrigation

When our company plants a tree, we will adequately water it. For the next two weeks, you'll need to water it twice a week (to get the soil to consolidate). After that, you'll want to water again only **when the soil begins to dry out.** Tree roots need both water and oxygen – at different times – to fill the pore spaces between soil grains. When you irrigate, you should apply enough water to saturate (fill the pore spaces of) the soil, at depth. **But:** when the soil is saturated, there is no room for oxygen in those pore spaces. Absorption by roots, along with downward flow due to gravity, causes oxygen to be drawn from the surface into the spaces– if you refrain from watering more. So, once you've watered, you should not do so again until the pore spaces have filled up some with air. An easy way to think of this is: You should allow the soil to *almost* dry out before watering again.

To ascertain when it is time to water a tree, you must check soil moisture: Dig down about 4 or 5 inches with a trowel and see if the soil looks wet or dry. If it glistens, it is too wet, and you should not irrigate. If it is dark but doesn't glisten, grab some in your palm and squeeze. If it sticks together when compressed it is still too wet. If, on the other hand, it is very pale, then it has been allowed to dry too much – you have waited too long before watering. When the soil is still somewhat dark but wants to crumble after compression – like coffee grounds – it is ready to be watered again.

Volume of irrigation

Some species may need a little bit more, or less, but generally: **Slowly deliver 10 gallons of water per inch** of tree diameter. For instance, a two-inch tree needs about 20 gallons of water per watering; a three-inch tree needs about 30. Deliver this water to the backfill area of the planting hole of a newly planted tree. The backfill is the circle of loose soil with which we have filled the hole around the outside of the root ball; it is just inside of the rim of soil that we build to hold the water in. (The backfill area is typically about 6 to 12 inches wide.) Again, water slowly. An easy way to calibrate volume of water is to time how long it takes for a moderate flow (from a hose) to fill a gallon jug with water, then multiply by the number of gallons needed for the tree caliper you have. So, a 2-inch tree needs 20 gallons; if the hose is running at a gallon a minute, let it run for twenty minutes. Move the hose around to different parts of the backfill during this time. An easier way to deliver precise amounts of water to the backfill soil is to fill five-gallon buckets, each of which

has a few small ($1/8^{\text{th}}$ inch) holes drilled into the bottom. A two-inch tree needs 4 buckets, a three-inch tree needs 6, etc; place them on the backfill around the tree, fill them up, and then go do something else until they have drained.

As your tree grows, you'll want to encourage root growth by widening the radius of irrigation beyond the backfill.

To sum up

Proper irrigation of trees involves:

- 1) Monitoring Soil Moisture; and
- 2) Slow delivery of 10 gallons of water per inch of tree diameter to the backfill, whenever the soil begins to dry out, but before it is dry.