

Meeting Winter Water Needs

Ben Faber

UC Cooperative Extension farm advisor, Ventura County

"We don't need to irrigate, it's winter."

This is a commonly held idea, and many years it is true. Adequately timed rains will often meet the needs of avocado trees during the winter period, and in times like last year, even satisfy much of the spring requirement.

However, in a low rainfall year, irrigation can be as necessary as at other times of the year. This is because a subtropical evergreen like avocado continues to use water regardless of rainfall patterns.

The driving forces for plant water use are light intensity, wind, relative humidity and temperature. Remember how cold, dry winds can dry your skin or freeze-dry backpack food. Even during the winter, the trees are quite capable of losing large amounts of water with clear skies and cold winds.

Dry Santa Ana conditions are also more common in winter than in the past. During the winter of 1991, a dry year, I went out to see an orchard to evaluate it for thinning. On arrival, my first concern was for the water stress in the trees. The grower, however, was unconcerned. The trees had been dutifully irrigated the previous Friday. Yet over the weekend, a Santa Ana had blown for three days and completely dried the soil in the top 10 inches. Digging around the roots convinced the grower of water stress. Do not take irrigation for granted.

Contributing to the problem is the determination of what amount of rainfall is effective. Effective rainfall is defined as the amount of water that is retained in the root zone after rain. Avocados, especially on shallow soils, do not have much of a root zone. Most soils can be expected to hold about two inches of available water in the top two feet, less the more sandy, more the more heavy.

If rainfall exceeds the holding capacity within the root zone, it is lost to the plant. The extra water may, however, perform the all-necessary function of leaching accumulated salts from the root zone.

When the rain gauge says that three inches fell, it is quite possible that not all that rain will be available to the tree. This also goes for the quarter inch storms we get that do not even make it through the leaf litter. It is not effective rainfall, even though it may wash the persea mite off the leaves.

One of the best ways to assess the effectiveness of rainfall within the root zone is with tensiometers. These trusty instruments are most commonly used to schedule irrigations. A good rainfall should return the 8- and 24-inch depth gauges to close to 0 cbars. This

will tell you whether the rain thoroughly wetted the root zone. It will not tell you how much may have passed through the root zone, however.

If you are using soil sampling to assess the depth of rain infiltration, simply squeezing a handful of soil can help. Regardless of soil texture, soil will form a ball when thoroughly wetted. After a rain, take soil samples deep into the soil to find where the potential to form a ball abruptly ends. This will tell you the depth of effective rain.

How well a soil holds together can also be an indication of when to irrigate. The possibility of forming a ball decreases with water content. When visible cracking of a soil ball is obvious, it is time to irrigate.

Winter irrigation is something we do not commonly perform, but in low rainfall years it is an activity we should consider.