

## Drought is a Time to Make Your Plants Stronger

Clearly, West Maui is in a drought, and we have been reminded to cut back on our water use. We know that we must conserve water as our most precious resource, but how do we do that when many of us have working farms, or nurseries, live in agricultural areas, or have valuable plants and trees we can't afford to lose?

I'll address this on a systemic level since overuse of water is a systemic issue. There is much we can do to lower our farm and landscape water use while actually improving the health of our plants. First let's look at some facts:

First, our volcanic soil is quite porous and drains quickly – thus, overwatering washes away the nutrients that our plants desperately need.

Second, any high volume application of water, i.e., high volume sprinklers, wastes much of the water applied through evaporation and runoff. Any water applied faster than the ground can absorb it runs off and is wasted.

Third, frequent watering encourages plants to grow surface roots only, and not to send roots down. This makes the plant weak, not able to use the water that is there and makes them susceptible to high winds and pests. Therefore, when a drought comes, plants do not have the root system to reach the deeper water and tolerate the drought.

Fourth, upwards of 90% of a plant's water and nutrient uptake system comes from the symbiotic fungi in the soil that actually link to the plants roots. Application of chemical fertilizers kills these beneficial bacteria and fungi, effectively killing the soil and disrupting the plant's ability to use water and nutrients. This causes a downward spiral of plant health, and makes the plants increasingly dependent on more and more water and artificial fertilizer. Fertilizer injectors on the irrigation system are among the worst culprits in this scenario.

Rebuilding the soil and returning the soil to health is the main goal. So how can we use far less water, rebuild our soil and make our plants more robust and healthy?

1. Start phasing back irrigation from daily to every other day, to eventually a couple of times a week. Succulents, cacti and other drought tolerant plants should generally only be watered once a week.
2. Transition your plants to less frequent irrigation, but water longer to encourage the roots to go deep. Drip irrigation works much better for this than sprinklers.

3. If you see wet walks, driveways, streets, or concrete, readjust your system to apply water to the plants and not waste it on hardscaping.
4. Discontinue the use of chemical fertilizers entirely. If needed, later, apply organic fertilizers that actually feed and stimulate soil biotica. Manure, compost or an organic fertilizer like Perfect blend are great for this.
5. Mulch your plants with a thick layer of compost, wood chips, or commercial organic mulch (not plastic or weed cloth that heat the soil). Bare hot dry soil kills the plants roots. The mulch will cool the soil, keep the soil moist, and break down slowly, building the soil by feeding earthworms, beneficial fungi and microorganisms.

Following these steps will allow your plants to gradually grow stronger, healthier and far more resilient to drought, winds and pests. It will take a little time, but your plants will thank you!

By: Dr. Dominic Pistillo

Dr. Dominic Pistillo is a lifelong conservationist, and expert in gardening and arid climate landscapes. He owns Mauimist Gardens nursery and botanical garden in Launiupoko in West Maui.

*Dominic says: "If you have visited Mauimist Gardens in Launiupoko, you know that this farm, nursery and botanical garden is one of the lushest on Maui, however, we only water once to three times a week, depending on the type of plant. We are 100% organic and use no chemical fertilizers, or herbicides - and only use organic insecticides, rarely and only when absolutely necessary."*