



ULTRA GRO

Soil and Tissue tests, a good read...?

Taking soil, irrigation and tissue tests are crucial to optimizing return on investment and yields in our orchards. Period. If we as farmers don't know how the nutrients we apply are being utilized or more importantly, aren't, we need to make changes in our plans. Soil tests give us the starting point for the medium where our plants are growing. Tissues tell us whether those nutrients are getting into our trees. Taking seasonal water tests will tell us how our water changes throughout the season and what solids in the water may be blocking uptake of nutrients. Of course, irrigation sensors will let us know how the water is moving, helping us keep the applied nutrients in the feeder roots while getting deep moisture into the soil at the proper times. As difficult as it can be keeping track of all these practices, doing so will reward us with a much more lucrative harvest.

As I've mentioned in the past, knowing what nutrients your soil is releasing is the starting block for a good fertility program. The cation exchange capacity (CEC) or total exchange capacity (TEC) of your soil tells you the level of binding sites in our soils. Loams with more clay hold more nutrients than loamy sands. We have to fertigate differently depending on our soil composition. If water is running quickly and more vertically through sandy soils, we have to irrigate more frequently with smaller shots. Lateral expansion in clay soils allows you to go longer on your sets and keep more nutrition in the root zone when applying it through the water. Ask for a soil water extraction test in addition to the usual acetate extraction. This will give you a chance to compare your regular test results against what the roots are actually seeing in the soil solution. Acetate extractions show much higher levels of nutrients than a water rinse of your soil. Using a sample of your specific water that you fertigate with for that test will change it even further and really help you dial in your program.

Tissue tests usually seem easier to decipher. Colorful graphs and text seem to enable picking up trouble spots with just a quick glance. When we dive a little deeper into our adequacy levels on the graphs, there is usually a wide range of sufficiency levels that are deemed okay. Desirable ranges that span percentages from 2%-5% are too far apart for my comfort. When they are then compared to the nutrient that is usually applied in the highest rates, Nitrogen, we may be in the middle of the sufficiency range on the graph and still very far from balanced in the tissue. I like to see Calcium closer to 100% of my nitrogen levels in almonds for example. If nitrogen is 3% and calcium is 2% your calcium levels are not even 70% of nitrogen values. Those deficiencies sound small, but they can be significant for optimum production.

Now, you've done your research. You've consulted with your crop nutritionist and developed a plan. The amounts of nutrients that years of study have proclaimed need to be applied are in

the program. What is the best approach to ensure those nutrients get picked up? Adding soil amendments like bio char, leonardite, compost, humic acids and fulvic acids will help hold more water and nutrition. Supplementing soil with compost will do the same while adding a shot of soil biology as well. Just remember, compost takes times to break down into those same organic acids. It's not a bad idea to add both to your program to get immediate, in season benefits. Many other products have been developed and refined to add biochemical substances to enhance soil health. There are many companies actually brewing active soil biology to inoculate irrigation water with viable, beneficial micro-flora. The nutrient transformation that many elements have to go through to actually become absorbable to the plant is significant. Active, beneficial soil biology will speed up that process and help mine previous applications of fertilizers. Fungicide, insecticide, algicide, fumigation and herbicide applications will all knock back or destroy your soil's beneficial biology as well as the bad. Re-inoculating your soil's biology to reestablish adequate colonization of beneficial biology will facilitate the uptake of the nutrition you are applying.

As a farmer, you have so many distractions that usually take place before the sun comes up. Letting them get in the way of your nutrient decisions can be costly. Plan ahead and adjust your nutrient program as your tests come in. Compare them to previous years nutrient levels and the yields those programs produced. Healthier plants have fewer issues with pests, stress, and disease. Healthier plants grow taller, stronger, and produce more nuts, year after year. Ask your crop nutrition consultant to make sure your nutrition plan will optimize the uptake of your fertilizer inputs. You work hard to optimize your return on investment. Make sure your support staff is working just as hard.