



## ULTRA GRO

### **Finishing this crop and Protecting next year's buds**

We've seen an increase in crop protection products on the market lately. Time and effort has produced different strategies for keeping our crops protected from the sun and the effects of heat. It's easy to react to mother nature while looking at this year's crop and focusing on keeping it at its highest quality. There may also be another key factor to consider in formulating your approach to that protection. We may have just as much effect on next year's crop in trying to finish this one.

Newtons third law of physics: "For every action there is an equal and opposite reaction." Of course, Sir Issac The Great was referring to force but we do the same thing in plant biology and chemistry all the time. The biggest difference is that we may create multiple reactions with a simple action. Since trees don't seem to move much, they have to use what mother nature and we as farmers give them, or don't, to make us a crop. Studies show that a plant begins to reduce transpiration and photosynthesis when the leaf surface temperature rises past 85 degrees. Between 95 and 100 it stops. For every hour it is shut down, it takes approximately 2 hours to recover. Days when leaf temps remain 95 or higher for 8 hours, the entire rest of the evening and dawn is spent in recovery and not production. To get maximum production, we need to, limit the exposure as long as possible and also cool a plant as quickly as possible. In turn, we need to make sure our nutrients are balanced and optimal to stimulate that recovery.

It's easy to spot the walnut orchards, tomato fields, vineyards and stone fruit after a hefty splash of clay has been applied to the leaves. It brings us back to the day mom rubbed zinc all over our noses and cheeks at the beach. She'd at least prevent skin cancer in one spot on our bodies. In agriculture, with clay products we are attempting to do the same thing on a much larger scale. The white pigment of the clay helps to reflect light and avoid the impact of the UV rays. While this is beneficial for some crops and has proved to be effective at reducing the damage, we run the risk of reducing the transpiration for the leaf surface. Clay can clog the stomata for a time. It can also block nutrient absorption and put a blanket the leaves. This may have the effect of keeping the leaf safer from UV rays during the day. However, the thermal layer may keep the leaf from cooling quickly as the temp drops for that crucial nighttime recovery. And if the stomata are clogged, transpiration slows. The good news is, you provide some protection in extreme temps and it weathers off in a few weeks. One has to weigh the benefits of better grades without sunburned skins over lost late season oil production (weight) with reduced photosynthesis and transpiration.

Polymers have entered the scene in the foliar crop protection market as well. The generic term 'polymer' is simply many similar subunits connected together by a common bond. That generality can be a bit deceiving as a polymer can be based on many substances from saccharides to proteins to carbohydrates. Make sure your Crop Nutrition Consultant understands which form you are applying and why. Many are used to assimilate nutrition into the plant while others are simply another form of a protective blanket. On a nano scale, we are attempting to create reflectivity, insulation, and even shade by using different materials. Zinc oxides, silicon and titanium dioxide also have great reflectivity and refraction. But applying any oxide in too high amount runs the risk of producing hydroxide and raising the pH on the leaf surface. All these products can have beneficial effects, but it's important to make sure you are choosing one for the right response.

The biggest benefit may actually come from plant health and making sure next year's crop progresses. As plants shut down in summer heat many times next year's buds suffer and early death. As potassium levels move into fruit and less is available to actually open and close stomata we become deficient. Deficiencies lead to fruit bud losses as a plant moves its resources to finishing this year's crop. It's imperative that we keep our nutrition levels high in addition to applying crop protection products. NPK levels drop off their spring peak while Calcium levels continue to rise throughout the season. We never seem to skimp on Nitrogen levels but often neglect Phosphorus and Potassium. Many times, this leads to that rank vegetative growth that requires more complimentary nutrition to keep it balanced. Failure to address those deficiencies and the buds suffer again. In pistachios for example, deficiencies come on as the outer leaves at the terminal ends of bunch clusters experience that dreaded leaf yellowing. Protein production in the kernels sap Nitrogen, Magnesium, Potassium, and Sulfur. Calcium, which is immobile once it has found a home in the tissue, is used up as cells divide and shells harden. Less for next year's buds. When you can walk a field, touch the new buds and they easily fall off, we're significantly affecting next year's yields. You're cutting into your return on investment.

Make the appropriate applications during summer stress periods. Topical crop protection may be a viable option for your orchard. Feeding proper nutrition is certainly a part of that protection. Give the trees what they need to flourish. Not only will you help get this crop to market with higher yields, you will ensure a better chance for a greater return on investment next year.