

Cal Poly Virtual Avocado Field Day Q&A

These are answers to the questions not answered verbally during the webinar.

Pruning and Mission Avocado Orchard

1a. Should water shoots be completely removed or just topped at canopy height?

1b. How do you maintain tree height after topping branches?

It is by far the most labor intensive task I do every year especially when I went to 10x20' high density.

Blake:

1) If by water shoots you are referring to the ~2- year old vertical growth at the top of the tree, we generally top those to our desired canopy height (rather than completely removing them and cutting down much lower into larger diameter older wood). This process sometimes leaves 3" and below diameter limbs on the top of the tree which we generally find to spawn new budwood more readily than the bigger, older stuff.

2) We maintain tree height by topping every other year. So, the year that the trees are due to be topped, they are generally a little bit taller than we like and laden with fruit (hypothetically, that was our goal two years back).

Gabe:

Blake is correct in that a lot of times we will top the water shoot growth on the upper portions of the trees but not completely remove each individual shoot. However, eventually we may circle back down to a lower cut in a few years that falls below the rat nest cluster of old cuts and regrowth.

In a perfect world my opinion is that one should probably remove lower interior water shoots on taller trees that don't receive sufficient sunlight. However, with a tight labor market and high CA wage rates we instead choose to make larger cuts and make bigger windows into the tree in order to minimize the tedious process of making thousands of smaller cuts.

In summary we like to make big cuts annually working around different portions of the tree in order to infiltrate sunlight, reduce tree height and stimulate fresh budwood annually to set future crops on. Example: Top the tree in 2021, center or quadrant 2022, top or different quadrant 2023 depending on how much growth you received from the trees.

A key note that I failed to mention in the recording is that if you prune too much of your tree in any given year you can create too much vegetative growth that will compete with your flowering and fruit set. In my opinion I would not plan on farming a 10x20 density for more than 10 years because I feel you will need to prune too aggressively after about 8 years to keep the trees "in their space". I don't get attached to trees. We farm for light and surface area while letting the trees fill in the gaps as their root mass grows. We have seen 30K+ lbs to the acre on densities of 60 trees to the acre. Here is another opinion that many will disagree with planting Hass at high density gets you to max production a couple years earlier but doesn't necessarily produce more fruit per acre in CA over the long haul when compared to a standard density planting.

2. How old are the trees?

15-18 years old

3. Do you wait to see the flower before you prune? Or is the flower not relevant to your pruning strategy? What would you say your return \$/lb is when you harvest the limb for a prune in Feb.

That really depends on your fruit size and yield per acre. If think you will ultimately have 10K lbs per acre and you are cutting 20% of your canopy you will be cutting about 1,500 per acre off. If you peak on 60's on any given year your return per lb might be \$1 lb on that size. With that said you would be removing about \$1,500 per acre worth of fruit which can pay for the prune.

4. Besides pruning what other management do you attribute for the avg 18k lbs/acre yield.

Aside from irrigation and fert management that we mentioned we are also using a company called Phytech to help us make irrigation decisions. They specialize in plant based monitoring using a dendrometer. They also incorporate soil moisture sensors and climate data into their algorithms

5. Looked like very little skirt pruning. Is this a windy area?

Yes this grove is in a wind very windy area. When it blows out of the east 50-60 mph winds are an annual occurrence

6. Do you inject trees?

Luckily we have been able to keep most of our farms healthy and have not needed to inject phos acid to offset root rot and help stimulate a healthy root system

7. Are you using Girdling ?

We have not been actively girdling our groves here in CA.

8. If you irrigate frequently in small doses, how do you deal with salt accumulation?

They've got a lot of cheap good quality water.

9. If irrigating every other day, do you still check every emitter every day

We start with good filtration and install quality sprinklers and have found that we have minimal issues on a daily basis. Coyotes and pest chews are common but our automation system will notify us if we have significant pressure or flow variances. On average we still run through and physically check each block about once a week. In many cases that is not even necessary with the automated monitoring.

10. What type of soil are you managing? if you're watering that often is there a root rot issue?

Clay loam and they use a lot of phosphonates

11. Can you share inches/tree irrigation - for 'small' irrigation sessions (or other measure)

I am not sure that I understand your question but we typically apply between 40-95% of ET based on the growing stage of the tree and the time of the year. Soil type, water quality, tree health, density and crop load all contribute to how much water we apply each time. We use plant sensors to monitor tree stress along with soil moisture sensors and weather stations to arrive at our daily needs. It obviously varies drastically throughout the year.

12. What sprinklers do you use for new trees and old orchard trees?

Most of the time we use Netafim Supernet mini sprinklers. They come in a variety of flows and pattern throws.

13. How do you deal with limb breakage on heavily laden limbs? Do you trim those primary leaders or do you prop?

This is good problem to have. Often times we will select pick sections that are heavily laden with fruit early on in the year to reduce limb breakage. We have propped branches before in the past but it is very costly and labor intensive. When a 60 mph east wind comes along and blows your stake out we noticed that we had even more breakage because the tree wasn't bending and gradually getting used to the weight. We no longer prop branches.

14. Has there been a financial or Avocado return assessment to the cost of using Phytech's irrigation program?

Not to my knowledge. For us personally it did not change our overall irrigation timing very much it just helped us fine tune and adjust the duration. It is really helpful to show the stress events and log them in easy-to-read graphs. It is also beneficial in trying to determine when you need to resume irrigating after a rain event. For many growers installing the technology will quickly show that management techniques need to be adjusted dramatically. Irrigating one time per week is not ideal and graphs will show exactly when your tree begins shrinking or going in the wrong direction. Up north in our cooler climate it confirms that our trees need water about every other day. When it gets warm we irrigate daily. In extreme heat we often go twice per day in small shots. This would not be possible without automation.

Scouting and biological pest control

15. From where can one get those yellow sticky cards?

Those sticky cards are available from places like Farm Supply, and online from GEMPLER'S

16. What treatments do you use to get rid of mites and how do you apply?

Agri-mek, Envidor, are good ones. An old school one is Danitol. Application methods differ and the topography of the orchard has an impact. Some hilly places require helicopter

17. Any tips for brown mite control ? How effective is local dust control in hilly country?

Brown mite rarely needs treatment, but oils are acceptable. Dust control is crucial if you want to give your natural enemies a better chance at keeping them under control

18. How many thrips do you need to find in an avocado tree to start thinking about treatment for that tree?

For avo thrips its about 5 per leaf (an average of counting 100 leaves off of 10 trees). With greenhouse thrips it's different

19. Are the mites bad for the bees?

They are different mites, so these avocado mites don't affect bees

Berms and Cal Poly Experimental Orchard

20. How high and how wide are each berm for your tree spacing?

Berms are roughly 7-8 ft wide and 2-2.5 ft tall

21. Did the 4500/ac include the removal of the old trees? Were you worried about using the root rot trees mulch ?

This did not include the cost of removing the trees. Tree removal and grinding cost around \$2500-3000/ acre

22. How do you monitor soil moisture (tensiometers or other)

We have Hortau tensiometers at the Cal Poly campus to inform irrigation management.

23. How high and wide are the berms and what is the tree spacing

Berming dimensions see questions 20. Tree spacing is 20 X 15 (trees are planted every 15 ft)

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25. Why not double staking??

It would be double the cost and labor. We drove the stake in on the upward side of the prevailing wind. It seems to be working.

Cover cropping

26. When you have a dry winter how do you get cover crops to germinate?

We have used various strategies to get the cover crop going in the lemon trials. In one of our trials, the cover crop has been seeded prior to the first rain after disking the field and drill seeding in dry soil. In the other orchard, we have waited until after the first rain to be able to seed in a moist soil. In that situation, we have had good germination by direct seeding in the mulch or drill seeding after disking. The orchards are on a clay soils and a silty clay loam, respectively.

We have had 2 dry winters and haven't had issues with germination. The cereal cover crops have been doing well. We have a legume cover crop mix in the trial that has not been germinating as well, but it might have to do with factors other than rain.

(The critters seem to like to eat those big seeds.)

27. Any advice regarding cover crops or mulching or frequency of irrigation or fertilizing, etc, fairly young (3 to 6 years old) avocado groves in a very sandy situation. I'm in Arroyo Grande, south of SLO.

In a sandy soil, your cover crop should help with building organic matter and building the capacity of the soil to hold on to water and nutrients.

(Adding compost may also help for a sandy situation. Cal Poly Compost is sold in bulk here in San Luis Obispo.)

28. Drilling seed is not an option when adding new cover crop seed to an established avocado orchard. Have you done any work with different cover crop seed that is just broadcast on the surface?

(From Fred at L.A. Hearne Seed Co):

A good rule of thumb is the smaller the seed the less depth you need to get these in the soil. You can broadcast them and lightly harrow or cultipact the seed in.

Miscellaneous

29. Did you apply gypsum?

Gypsum is applied when there is a sodium dominated soil. if its just salts like calcium sulfate - gypsum - it won't have any effect. There are very few sodium soils along the coast Need to go to San Joaquin or Imperial to find those.

30. Any tips for the backyard grower on how to tell when fruit is ready to be harvested?

When you are hungry! We are fortunate that avos are very resilient and you can harvest or eat them in January or in many regions hang them into November. Most avos in CA are at their prime eating quality around June.