

November 2019 Task List  
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**Season Wrap Up: Yay!!** Another great season with super low navel orangeworm (NOW) damage! What a blessing to the growers and the industry! It would appear that rainy, cold winters, and relatively cool springs agree with pistachios! As you know, I have always stated that spring temperatures have much greater influence over harvest maturity date than do summer temperatures. Cool spring temperatures do not “drive” growth and development at its maximum potential rate. During the summer, daytime temperatures exceed the degrees required to maximize growth and development in the San Joaquin Valley, so pistachio trees with adequate water and nutrients have no opportunity to “make up” for the growth and development time lost from the cool spring. Thus, harvest maturity was delayed 10 or more days, and early pea split nuts appeared 14 days later than “normal” in July. They were also fewer in number, for reasons I cannot explain. We know very little about what influences early pea split development. We do know that they are the link between old mummy nuts and new crop for NOW. I’m hoping one of the NOW researchers can tell us if the gap between the beginning of the second flight and appearance of early pea splits suppressed the NOW population at harvest due to lower egg survival. As we saw last year, the pistachio hulls remained green into early September, which made them less attractive to NOW oviposition (read last month’s Task List). Once growers removed the mature, susceptible nuts during the first shake, the less mature nuts left in the trees still had green hulls, and continued to not be infested.

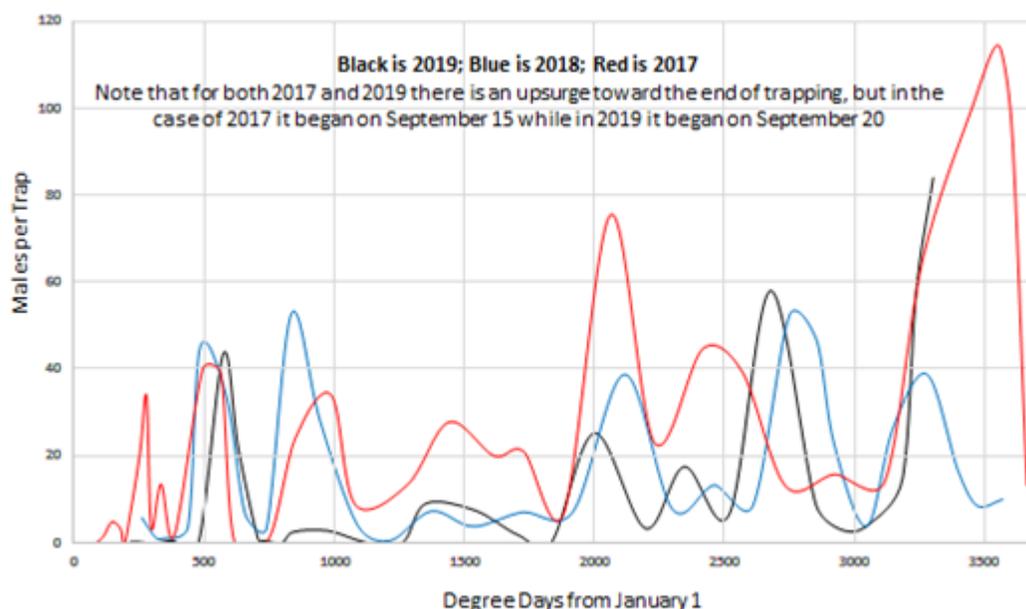
So, while I petted Freckles, our orange tabby cat, in the backyard this morning, I asked him, “Do you think the pistachio growers now believe they have NOW whipped?” Freckles just looked up at me, grinned, and closed his eyes. NOW is the least of **his** worries, BUT I’m telling you, it should remain high on **your** orchard management priority list! Don’t think for a nanosecond that NOW has left the building! We have had TWO very blessed years with low insect damage. THIS is the time to keep your foot on its throat, and not let NOW rebuild its resident population. So, give your ranch manager the green light to march “all the way to Bagdad” and control NOW with good winter sanitation and possibly the addition of a pyrethroid in your upcoming zinc spray. Research has proven that suppression of the overwintering population pays! So does Mating Disruption!! I’ll pay for the head exam if you think MD isn’t needed anymore! YOU have to STAY THE COURSE!! Keep the pressure on! Back off on NOW control, and you’ll be back fighting a new war! As an educator and former researcher, it saddens me to think that the processors’ decision to offer valuable premiums for clean pistachios had greater influence on NOW management than all the studies and articles. At least you knew WHAT to do, once you decided it was in your best economic interest to minimize NOW damage!

The extended bloom period this spring may be another factor contributing to this season’s high quality second shake nuts. I know of no data to suggest that late set nuts differ in the degree days required for development compared to those set early. Thus, the 10-14 day delay in the late fruit set MAY express itself at harvest as late maturing crop. I believe (my OPINION) late set crop may also mature a little slower than the early set fruit, because they experience a shorter period in the spring for optimizing carbon fixation. Hopefully, Dr. Z, or another physiologist, will provide data in the future to describe the impact of late fruit set on the rate of nut maturation.

**Sanitation:** Now is the time to begin winter sanitation by removing the nuts that did not come off during harvest. Many of these nuts are blank, but do not assume that all of them are. Research by many good

scientists has proven that winter sanitation is the key to breaking the overwintering NOW population cycle, which looms ever greater when the winter is warm and dry. Beginning the season with a large overwintering population simply reduces the effectiveness of your in-season sprays. Dr. Joel Siegel, USDA/ARS researcher who has studied NOW for 17 years, shared Figure 1 with me recently. It shows at the site Joel monitors in Madera that the fall NOW population is rising to a level much higher than last year at the same location. So, while we are slapping ourselves on the back for having beaten NOW this season, it may be quietly rebuilding its forces to kick some booty in 2020! Be sure to discuss what level of fall NOW activity you have in your orchards with your crop consultant.

Figure 1. Navel orangeworm flight activity for the past three seasons. Note the rise in the black line, showing high NOW activity after harvest this season.



**Weed Control:** It is time to get together with your crop consultant and go over the weeds you have in your orchard, and how best to approach controlling them. The list of weeds resistant to glyphosate is increasing, and weeds make it harder to control gophers, voles and destroy NOW mummies. We have a wide range of very effective pre-emergent herbicides registered for pistachios. Kurt Hembree, Vegetation Management Farm Advisor, Fresno County, has current weed susceptibility and herbicide registration information at: [http://ucanr.edu/sites/Weed\\_Management/files/74887.pdf](http://ucanr.edu/sites/Weed_Management/files/74887.pdf). Kurt has suggested rates of application for each product, along with suggested adjuvants. This is an excellent resource to help in effective material selection.

**Pruning:** The goal of a good pruning program is to manage the canopy over the life of the orchard in such a manner as to achieve the maximum possible yield of clean open split-nuts from an efficient harvest. In our quest for this goal, we must couple our knowledge of how pistachios grow and fruit with the research data developed over the past 30 years. One thing to remember about pruning is that we must think in terms of **TWO** years, rather than just **NEXT** year if we want to better manage alternate bearing. Pruning harder prior to an on-year improves the yield during an off-year, in my opinion. Dr. Ferguson and I have begun a project to test this hypothesis.

Let's first briefly review what we know about the growth and fruiting habit of pistachio. This tree is very apical dominant, meaning that it does not branch readily and grows mostly from the terminal bud and one or two lateral buds behind it. Therefore, branching must be forced by removing the end portion of a limb, known as a heading cut. Heading cuts are performed regularly during the training years to develop the desired branching. Because of pistachio's apically dominant nature, it also does not develop girth (enlargement of trunk and limb diameter) rapidly. Consequently, main structural limbs have to be headed shorter than desired in order to keep them upright.

The fruiting characteristics of pistachio also greatly influence pruning. Flower buds are born on one-year-old wood, typically towards the base of medium to long shoots and adjacent to the terminal vegetative bud on short shoots (spurs). The lack of lateral branching causes the fruit-bearing wood to become increasingly distant from the central axis of the tree. Failure to contain the tree canopy to a diameter of about 17 feet results in crop falling onto the ground at harvest due to the limited size of the harvest equipment.

Eventually, the main structural limbs bend downward during the on-bearing seasons from the weight of the crop. Without corrective pruning, the pistachio tree canopy begins to take on the appearance of an umbrella. This combination of less upright fruiting limbs and their greater distance from the tree's center creates major problems for effective harvest. The high energy imparted to the trunk by the shaker can no longer be sufficiently transmitted to the fruiting zone for its removal. Some growers attempt to solve this by simply shaking the tree harder. The result is more frequent equipment breakage, rapid sling wear (the thick rubber sheets draped around the shaker pads for protection), excessive removal of next year's fruiting wood (spurs) and possibly greater tree stress from disruption of roots at the tree's crown. Harder shaking also flings the crop past the catch frame of the harvester.

The solution to the above problem is to prune the pistachio with the objective of "pushing back" the canopy perimeter (reduce its diameter) and directing growth upward. This is accomplished principally by "thinning cuts", which is the complete removal of a limb at its point of origin. To achieve a more compact and upright tree, thinning cuts are made to flat limbs around the outside of the tree and within the canopy where excessive fruitwood exits. Care should be taken to not perform too many cuts in any given sector of the canopy unless the fruitwood is unusually abundant. In addition to distributing the thinning cuts over the entire tree, avoid removing all of the lateral limbs on a specific structural branch in order to make room for adjacent branches. Rather than creating these so-called "snakes", it is better to leave the best structural branch minimally pruned and remove the competing branch entirely. Also avoid opening the center of pistachios. We do NOT want them to look like peach trees at the completion of pruning. Because of the growth and fruiting habits described, pistachios will naturally open up and allow sufficient light into the canopy center for fruitwood production. Loss of fruitwood in the middle of the tree over time is, in my opinion, more a function of apical dominance than insufficient light penetration. So, remember, prune to keep the pistachio canopy compact and upright for productivity and harvestability.

Above all, remember that we DO NOT want **mature** trees to be pruned to the point that they produce lots of long whips! Although this looks good, it most likely means that the tree has been over pruned. Work by Tim Spann, shows that pistachio has "preformed shoots". These are shoots with 7-9 bud positions set **BEFORE** the season begins. Providing the tree is not excessively vigorous, these

preformed shoots grow into spurs and set lots of crop. If mature trees are over pruned, these preformed shoots are “pushed” into continued growth. I believe the most productive pistachio tree is one that has hundreds of these short, preformed shoots, rather than lots of long whips.

More on pruning next month! Happy Farming!