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October Pistachio Task List

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Harvest: On the date this was written (September18), we have about 35-40% of the crop harvested. Golden Hills nut quality is reportedly very high, with 85% or more clean open split nuts, and only 5% closed shell. Early harvested Kerman grade sheets have 70% or more clean open split nuts, and about 10% closed shell. Field reports and processor representatives say this is some of the best quality ever! Nut size is also very large, even on heavily cropped trees. Large nut size was initiated during Stage 1 (bloom to shell hardening). The soil moisture and heat units must have been optimal for shell expansion, and kernel filling in Stage 3 had to not be limited as well to get the larger nuts to split. A system for collecting accurate weather data at various locations throughout the state for comparing possible phenological differences in heat units would greatly assist us in understanding this year's crop development. Too bad the pistachio industry has neglected to accomplish this integrated weather data network. The cooler weather predicted will help maintain hull integrity, and slow navel orangeworm (NOW) development. Thus far, NOW damage has been zero or very low on most grade sheets. This is looking like a THIRD year of low insect damage, which would be historical. However, a large amount of almond acreage is now harvested, and NOW is migrating to their next ovipositional site. Thus, pistachio growers need to harvest as soon as maturity allows them to. The cooler weather and smoke-filled skies have reduced tree water use substantially. The reduce photosynthesis may also slow maturation of the crop remaining after the first shake. It may be three weeks before it is ready. Keep a close eye on it for maturity and hull integrity, since NOW is looking for a new home to complete its life cycle.

As I mentioned earlier in the season, 2020 harvest maturity was estimated at possibly 7-10 days later than "average" due to the False Spring. I still think we are 7 days behind last year. Normally, we are in full swing about September 10. The delayed maturity would make me sweat if it was a bad NOW year, but lots of factors we can all guess about seem to have worked in our favor to make this another low insect, high quality nut year. I did detailed nut phenology work back in 1983 and 1984 to show when freshly mated NOW females found pistachios most attractive to egg laying. Brad Higbee, Trece Field Research Director, repeated this work about three years ago. We both found that early pea split nuts were attractive, but egg laying on the sound nuts did not increase dramatically until the hull tissue began tearing and breaking down. The significance of this in your orchard depends upon what your resident and migrating NOW population is. Although we do not have the much-desired ability to assess the actual NOW population for individual fields, growers and crop advisors develop a "gut estimate" over the season from weekly scouting. My "gut estimate" this spring was that 2020 might be another low NOW year, because the delayed maturity might keep the hulls intact longer, and the fourth generation of NOW occurring during harvest might not overlap prime nut susceptibility. The optimist within me wonders if we have actually REDUCED the overall NOW population with MATING DISRUPTION? **Note**: this is THE OPTIMIST wondering out loud, NOT a scientific

statement, so please don't go blabbering about that I said MD has kicked NOW's arse, and our insect problem is solved! NOT!!

I cannot quantify how many growers performed winter sanitation or employed mating disruption, but DECADES of research by some of the world's best entomologists shows these two important tools as being VERY effective in reducing codling moth and NOW populations. The problem lies in getting everyone to USE them! Many growers may think that if 2020 proves to be yet another **very** low insect year that we have this nasty pest beat! **I do not think that for one nanosecond!** I say it's time to build an even stronger arsenal to improve our odds of beating the beast back in bad NOW years, which will be back! **So, the more we winter sanitize and employee mating disruption over ALL nut crops, the more capable we are of achieving NOW management success!**

The occurrence of early pea split nuts was also much later and fewer than normal in the fields I was visiting. Rather than beginning around July 7, I did not see many until July 24, and they were hard to find. It is generally agreed that the early pea splits are an important link between the overwintering NOW population emerging from poor food quality mummy nuts, and the new crop, which can reduce development time from 1200 degree days to as low as 600. Did the delay between the beginning of the second flight of NOW in early July and the occurrence of pea split nuts significantly reduce NOW survival? Perhaps the research entomologists can tell us, but I do not know. **Research on the botany of early pea split development and factors affecting their occurrence is a high priority, in my opinion.**

Several crop consultants report a marked rise in NOW trap catches over the past week. One could say it's the fourth flight, but at this point in the season, there is a lot of overlap between the current and previous generations, so the occurrence of the fourth flight just adds to the number of NOW that can lay eggs on maturing hull tissue. Thus, it is important to continue scouting the fields you have not yet harvested, or plan to second shake to avoid damage that effects your premium payments. Drive the quad around, and then get out and visually scout the open split nuts and nuts with torn hull tissue. Look for eggs in the cracks, and any small amount of frass. Open the nuts suspected of having insect feeding and look for the worm. Record whether it is tiny or large, so you can report your observations to your crop consultant. More often than not, pistachio growers are applying insecticides between harvests and on late blocks to suppress the fall NOW population. Discuss this with your crop adviser to determine if the NOW pressure in your orchard justifies it.

Navel orangeworm management is very complex, so if you are consistently having problems, sit down with your crop consultant, and go over every aspect of your program. Encourage your adviser to be as candid with you as necessary, so weaknesses in the program can be corrected. Also ask your processor for assistance and listen carefully to the researchers when they present their findings. Readers wishing to re-visit this subject can review last month's task list, and every one prior to it. Managing NOW is a PROCESS, NOT AN EVENT!

October is a good month to sample the nuts left in the tree to see how infested they are. These nuts are the beginning of the overwintering population. Shaking them onto the ground early to enhance their degradation will reduce NOW survival. Shake again?? YEAH, if you have a NOW problem! It is not going away without a full blown assault! October foliar treatments have also reduced their survival. October is also a good time to look for Gills mealybug, which is typically treated in mid-June.

Low split percentages are always a hot topic after harvest. Although I reviewed factors affecting split percentages last month, I will repeat them this month, since inquiring minds wish to know. Research by Vito Polito, U.C. Davis Plant Sciences Department, indicates shell splitting is caused by the physical expansion of the kernel rather than development of an abscission zone. Split nut percentages are affected by **all** of the following: low boron and zinc, insufficient water from July 1 to harvest, excessive cool weather during the growing season, time of bloom, and heavy big bug damage during kernel filling when nuts show no symptoms. Growers with poor split percentages need to examine their irrigation program during stages 1 (shell development) and 3 (kernel filling). Research by Dr. David Goldhamer shows that split percentages can be improved by inducing regulated plant stress during Stage 1. If you typically have good split percentages, the gain from Stage 1 stress is primarily water savings. There is no question water stress during Stage 3 reduces split percentages. Compare your applied water to the following **average** water use: July is 9.8 inches; August is 8.3 and the first two weeks in September is 2.8 inches. With consecutive days in July over 100 degrees, I bet ETc for this month was closer to 10.8 inches.

It is also highly possible, especially on high saline soils, that you are applying the correct amount of water, BUT it is not infiltrating! I found lots of orchards dry at 24 inches in July due to this. So, remember there are TWO periods in which to apply gypsum, and EACH ONE is for a **different** reason! **Apply gypsum in the fall and early winter if you need to leach sodium from your root zone**. Adequate low-salt water must also be applied to displace and leach the sodium. **Apply gypsum in June when the soil begins to "tighten up" and the addition of free calcium increases pore size and water intake**.

In addition to inadequate nutrition (zinc and boron), it is my professional **opinion** that the time of bloom and pollination affect split percentages at harvest. In high chill years, pistachio trees have the potential of pushing and blooming early, PROVIDING the weather is favorable. When spring temperatures are warm, bloom occurs early and sharply. This, in my opinion, allows for more uniform nut development and size since they all begin at about the same time. But when spring temperatures are cool and erratic, I believe fruit set, nut size and expansion reflects this. Consequently, some nuts pollinate late and experience different developmental weather than those setting earlier. They also have LESS time to develop, and thus may contribute to higher closed shell nut percentages because you cannot delay harvest to allow them the same maturation time as the early set nuts. This is why I have pounded on you to monitor the bloom period closely, and take some notes, so you can refer back to them at harvest to see if they offer insight into what you see in the tree and on the grade sheet. We also still do not have good data on the effect of crop load on split percentage. I asked Andy Anzaldo, Wonderful Farms, to run this possible correlation a few years ago, and he indicated there was none. It would be great if we could get ALL of the processors to provide this data over multiple years and save us some research money! Other factors other than crop load should also be tested.

Young Trees: Budding young trees usually stops by about September 10. Forcing fall buds greatly increases the risk of frost damage by depleting stored food spent on new growth. This potentially deadly practice is becoming more common with Golden and Lost Hills buds, because they require a slightly bigger rootstock diameter to accept the larger bud shield than Kerman. Hence, trees are being budded later, and the temptation is to "beat the odds" and push them late into the fall. Instead, after the buds take, begin slowing vegetative growth by cutting back on the water. How you decide to handle your newly budded trees is your call, but **young orchards suffering from fall cold damage has increased markedly in recent years because the trees**

are being pushed too late. Most growers observe an early to mid-September irrigation cut-off on first- and second-year trees to harden them off. Timing the irrigation cut-off requires knowledge of soil water content, plant vigor, and estimated remaining growing time. **It is better to stop them too early than force them too late! September and October are not the time to try and make up for growth lost during the season**! It is much safer and smarter to get them to bed alive and then start off with good vigor next spring. Dr. "Z", our crop physiology professor at UCD now has data to SHOW that cutting off the water to young pistachios DOES precondition the trees and make them more cold tolerant. Carl Fanucchi has been telling you this for years, but only wise men listen! I still suggest that growers assist young trees into dormancy with 20-40 pounds of zinc sulfate 36% or 5-10 gallons of liquid zinc 12%. Liquid 12% is manufactured from zinc sulfate dissolved in sulfuric acid. Consequently, it has an acidic pH, which I think does a better job than 36% powder. But alas, no data, just opinion! **Check with your crop consultant or an experienced grower for their guidance**. Also, I routinely see boron and copper deficiency in second and third-year trees, so be sure to review your August tissue and soil levels so that you could add some boron to your fall herbicide spray if needed. Copper is best applied in the spring after sufficient growth has occurred.

That's all, folks. Happy Harvest!

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