



### September Task List

#### **Robert Beede, U.C. Farm Advisor, Emeritus**

**Harvest:** Growers started shaking Golden Hills and Kalehgucci the week of August 22 **last** year, but I just had lunch with Carl Fanucchi, who said they were not going to get going **this** year until the week of August 28. I know that every orchard is different, and yours might be earlier, but **GENERALLY** speaking, it would appear that harvest this year is 7-10 days later than last year. I just talked to Chris Wylie, Ranch Manager for Agri-World in Madera, and he agreed, stating that if he did not have so much ground to cover, that he would not begin light shaking until the first of September.

It is also generally agreed that there are quite a few pistachios out there. I am not going to venture a guess, because that is a marketing issue best left up to marketers. However, I see good crops on both young and old orchards, with considerable variability between trees within a given orchard. In spite of the insect pressure this year, I see good quality in orchards with sound pest management programs. I also have not yet seen one orchard with substantial *Botryosphaeria* or *Alternaria*, thanks to the efforts of the crop consultants and efficacious fungicides available for control of these two important diseases.

In order to maintain an even flow of product into the processing plants, several large ranches have plans to run day and night. Safety becomes a big concern when people have to press this hard, so keep reminding people to watch out for one another to prevent an accident. It happens in an instant, but the memory lasts forever! Do not assume that the other fellow sees or hears you over the equipment noise.

Many of the orchards I walk have substantial numbers of early splits. Be on the lookout for navel orangeworm damage within them to keep the quality up and collect the premiums. At some point, aerial sprays probably are better than ground because they optimize timing. Ground treatments would have to be completed in three days or less in order to make them worth the additional effort at this time, in my opinion.

It **has** been hot, and it **remains** hot, so be careful not to cut the water back too much until we get some cooler weather. Crop water use has probably been five percent greater this year due to the sustained heat.

**Pest Management:** Navel orangeworm is still the pest to beat, and the almond growers report high pressure after hull split. Trap and visual monitoring is critical at this time, and if your crop consultant tells you to treat, do not argue with them! Although many growers have sufficiently low NOW pressure to require only two sprays, others with high populations apply five or more sprays for both plant bug and NOW. The 2700 DD timing occurred about August 20 in the Madera area, using Dr. Joel Siegel's method of DD accumulation from January 1 and the Parlier CIMIS station. Dr. Siegel, USDA-ARS, says there may be time for a possible fifth generation of NOW in the fall, depending on future temperatures, so be sure to survey what is left in the trees after harvest, and get it on the ground if you can early to reduce your overwintering population.

**Weekly monitoring of split and mature nuts during harvest is a must.** The research data shows pistachio worm damage can increase by one-third to one percent per week, depending upon the

season. Aerial applications have looked good in Joel's research during harvest. Be sure to use a material that kills adults. Remember that prompt harvest is one of the BEST control methods for NOW! Dr. Siegel's NOW infestation rate curve for Kings County suggests growers have about 21 days from the very beginning of harvest before NOW damage rises like a Saturn rocket. Review of the payment penalty now assessed by most processors for offgrade, including insect, shows how costly wormy nuts become. The buyers are also looking for a way to beat back the pricing structure on pistachios, so do all you can to deliver a clean crop!

**Cultural:** 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. **Waiting for increased split percentages at harvest after much of the crop has creamy hulls can backfire from higher stain (especially on the east side of the Valley where *Alternaria* is a bigger problem) and insect percentages.** So, do NOT wait! 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. Growers can save 50% of Etc between April 1 and June 1, and in northern California, irrigation may not be necessary at all during this period. Split percentages can also be affected by the uniformity of water application. 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. Deciding when to stop irrigating before harvest is dependent upon weather, disease pressure, soil texture, split development and orchard access. If *Alternaria* pressure is not a factor, water right up to within three or four days of shaking. Unlike almond, pistachio does NOT require an extended "dry down" period to avoid trunk damage by the shaker. In pistachio, it is common to still be irrigating blocks awaiting harvest while shaking. A little post harvest water (25-50% of ETc) is advisable for relieving shaker stress and improving nutrient uptake in the fall. I have visited several orchards with sparse canopy development. This is very characteristic of insufficient water during leafout in our irrigation research. Nut size is also affected. Augering these orchards showed moisture to only 18-24 inches!

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 nut size and expansion reflects this. Consequently, some nuts pollinate late and experience different developmental weather than those setting earlier. These subtle differences may affect the AMOUNT of cell division and the RATE of cell expansion during shell development. The result is that some nuts have thinner or smaller shells, which are more prone to premature splitting. We really need to research this, so I can quit giving you my coffee shop opinion!

**Diseases and Insects:** There may be some *Botryosphaeria* in the south valley this year, considering the rain we had during the spring. Also, some orchards had quite a bit of stinkbug activity right around the first of July, which can cause isolated BOT strikes in the fruit clusters from their feeding. Be on the lookout for it during harvest, so that a strike-cutting program can be initiated in the fall, if necessary. *Alternaria* has not shown up yet (August 23) in orchards with two sprays, so the new materials appear very effective. As leaf tissue ages, its susceptibility to *Alternaria* infection increases due to decreasing sugar content. Warm temperatures and high humidity increase the *Alternaria* potential. Look for yellowing leaves, **which have black necrotic lesions and spores in the center.** This differs from the common yellowing that occurs on

fruiting spurs, which is the result of nutrient extraction by the developing kernels. Also examine the leaf stem (petiole) and main vein. **Rub the area with your fingers to see if some of the black comes off.** If so, this is *Alternaria*. Assess how much exists in the canopy and look for small black lesions on the hull tissue. Remember that *Alternaria* DOES NOT kill nut clusters and shoots. *Botryosphaeria* does that. BOT also does not rub off on your fingers when you handle the infected tissue. Leaves uniformly brown low in the canopy can be easily mistaken as *Alternaria* infections when in fact they are simply dying from lack of light or water stress. How do you tell? Look for the black spores that rub off on your fingers! If there are no spores and the leaves are UNIFORMLY brown rather than having angular sections of brown with black spores in the center, they are shoots that have simply shaded out. They could also be infested with Pacific mite, which is rare in pistachio, but I have seen lots more of it this year. *Alternaria* can cause economic damage from defoliation and nut staining. Following harvest, you should determine if pruning, irrigation and soil management practices might be modified to reduce the problem. Poor pruning and slow water infiltration are common causes. **Consider applying gypsum in June rather than in the winter to improve the surface soil structure.** My desire to minimize *Alternaria* infection through good cultural practices is based on the limited materials we presently have registered for this disease and the rapid resistance that develops from their frequent use.

Do not confuse citrus flat mite, Pacific mite, or rain damage for *Alternaria*. Several calls typically occur at harvest concerning dried clusters on the tree, which cannot be removed by the shaker. Citrus flat mite causes patches of chocolate brown discoloration on the hull **and** rachis tissue rather than the distinct, round lesions about 1 mm in diameter associated with *Alternaria*. Flat mite discoloration is also only on the surface, so **scratch** the tissue to see if it is green underneath. Citrus flat mite also does **not** attack leaf tissue and cause black necrotic margins. This tiny, orange colored mite can turn entire clusters brown and render them unharvestable. Citrus flat mite damage can be confused with BOT, BUT flat mite does NOT cause gumming or blackening of the cluster like BOT. Wettable sulfur in June or July is the cure for flat mite. Also, if you are near a dairy, do not confuse fly speck for flat mite! Pacific mite defoliates trees in patches of the orchard. Browning begins inside the tree canopy, and works it way out, causing leaf loss with mite levels as low as one or two per leaflet. Pacific mite and Gills mealybug problems are on the rise with multiple pyrethroid sprays against NOW. Reports from the field indicate Gills mealybug has really spread this year. Super clean nuts are coming with added cost! Softer NOW management programs are the key to future cost control.

Do not confuse leaf scorch common on the male "Peters" variety for *Alternaria* or *Botryosphaeria*. Male scorch is thought to be caused by heat and it may predispose the males to *Alternaria*, but this disease did not cause the initial leaf browning.

**Young Trees:** Budding young trees could also still be done, but by the time you read this (early September) I think it may be **too late to push them** by cutting back the rootstock and notching above the bud. 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 is 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 new 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 strongly recommend growers force young trees into dormancy with zinc sulfate 36% at 40 pounds per 100 gallons of water or 10-15 gallons of liquid zinc 12% in 85 to 90 gallons of water. 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 other experienced growers for their thoughts. Also, I have seen more boron deficiency this year than in the past, so be sure to review your August tissue levels so that you could add some boron to your fall herbicide spray if needed. There is also lots of cotton aphid infesting the terminals of newly budded trees this year. Failure to treat moderate populations could stunt shoot growth and prevent it from reaching the top of the stake.

That's all, folks. I wish you a Happy, Safe, and Prosperous Harvest!