



*November 2013 PNP Task List*

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In case you are reading this from under a rock, pistachios were early this year. The warm weather from bloom to shell hardening advanced maturity 10 days statewide. Kern County was harvesting at the end of August, and double shaking seems to have now become the norm. It has been a few years since we had a cold, wet winter, followed by a glorious warm, dry spring. I wonder what these conditions would do for compressing bloom and evening out maturity. I find a lot of non-splits and blanks left in well managed orchards this fall, so many that it looked as though there was not a second shaking. However, these orchards also produced between 4000-5000 ACP pounds, so one has to ask what the absolute capacity was for these trees. That, of course, is a question we mere earthlings can only speculate upon. Walking the orchard during bloom to observe duration and overlap and having temperature records specific to the orchard certainly help greatly in offering plausible explanations for crop development and potential. Most growers I visit do not have these records, so any comment about the cause is only individual opinion. Perhaps the application of Bob's Maxi-Poop would have solved all the problems!

I wish there was something that simple to apply to the navel orangeworm (NOW) problem! The crop was not nearly as large as many of us predicted, but unfortunately the NOW population met our expectation. Insect damage appeared early in many orchards, and then rose to levels too painful to print for many growers as harvest progressed. The loss in quality was disappointing after a hard farming season, and costly from the standpoint of missed grading premiums. I promise you, if I was a navel orangeworm, I would confess ALL my secrets about my stealthy methods of invading your orchard and surviving the arsenal of protective materials nearly equal that of Napalm in 'Nam. But alas, I am only a human, trying to make the most sense of the science as possible. In that regard, here is my assessment of the season based on discussions with Dr. Joel Siegel and crop consultants:

Dr. Siegel, USDA/ARS NOW researcher, warned us early in the season that the mild, dry winter resulted in much greater NOW survival. Even though it is very difficult and costly to destroy overwintering pistachio nuts, the long-term, large scale (20 acres per replication) trials of Brad Higbee, Paramount Farming Entomologist, show that knocking the mummy nuts out of the trees, blowing the berms, and discing them into the soil DOES reduce in-season NOW pressure. Is the reduction as large as that reported in almonds? No, it is not. So, is that reason to NOT do it in pistachio? NO, IT IS NOT!! I will be the first to admit that I do not get around to EVERY pistachio orchard in the state with NOW problems, and evaluate its management program. Obviously, no one does. However, I do speak with many crop consultants trying to beat back this insect, and they routinely tell me that most growers do not take winter sanitation seriously until they get clobbered with NOW damage. Then, they clean up the orchard with the expectation that their problem is going to vanish immediately. Not true! Remember the old saying, "It's a numbers game"? Initiating winter sanitation is a major step in the right direction, but it may take three seasons, depending upon winter conditions, before you see a benefit from this alone. The lag time is also dependent upon how dirty the orchard is, and the thoroughness of the sanitation. I know... this all sounds so simplistic, and you have heard it before. So, ARE YOU DOING IT?? Dr. Siegel and Brad Higbee spend all their working hours studying NOW, and they will be the first to tell you that there is NO MAGIC BULLET for solving a NOW problem. If there was, we would surely tell you! Reducing the overwintering nut population is your first step!

The warm spring not only advanced pistachio maturity, but NOW development as well. Moths produced from the winter laid eggs on the mummies in the trees, AND those on the ground. We used to think the latter was not true, but Dr. Kent Daane showed NOW would lay eggs on ground mummies. The populations continued to increase until the arrival of the early splits, whose numbers were greater this year than last. The factors affecting early split development is definitely an area deserving of some research. Excessive water stress during stage 1 (bud break to shell hardening) has been shown by Dr. David Goldhamer to reduce nut size and increase early splits. Dormant oil application can also increase the early splits, but the increase was not always statistically significant. I do not know of any research on the relationship between early splits with crop load. We also do not have a phenology model to test the effect of crop load and degree hours on the timing of early split appearance. Regardless, we DO know the early splits serve as the “new crop” connection to increasing NOW at a more rapid rate. Early splits and current crop provide a much better food source for NOW, which results in less time between generations. By July, the NOW generations in growing regions heavily planted to nuts are beginning to overlap, such that there is no longer distinct peaks within a given “flight”. Rather, NOW adults appear more often to have multiple peaks within an orchard, resembling the pattern of ocean waves approaching the beach. Researchers hypothesize this wave pattern is different from the distinct peaks observed in the “old days” because of less severe winters and the HUGE increases in nut crop acreage. Research data shows NOW can fly up to FIVE MILES! That says VOLUMES about NOW management being a community effort! Community sanitation was PROVEN by Charlie Curtis (USDA/ARS ) over TWENTY YEARS AGO with the Ballico Project, in which they winter sanitized an ENTIRE almond community, and significantly reduced damage. In summary, it is NOT the same Valley we grew up in, folks! Conditions have changed, and we have to re-consider the currency of our NOW management practices.

Is NOW harder to control with the loss of the organophosphate “bombs” like Guthion? In the “old days”, we used to apply this long-residual material 21 days prior to the expected harvest date, and with the exception of a permethrin treatment during harvest, that took care of the NOW problem. Today, we are applying multiple sprays, and sometimes still having unacceptable damage. I personally think the difficulty we face today is linked more to NOW population dynamics, spray coverage, and timing. Yes, Yes, I KNOW....HEARD IT BEFORE!!! But you guys want us all to believe that you used the right material, sprayed at exactly the right time, got perfect coverage, and STILL had serious NOW problems! If that is truly the case, then you do not need me or the NOW researchers...you need a priest and an exorcist! Dr. Siegel worked closely with a 3500 pistachio operation in Madera this season to see whether or not his recommendations on spray timing and materials could actually stand up to the “reality test”. My last conversation with the ranch manager indicated that they did, so it would appear that IT IS POSSIBLE TO STILL CONTROL NOW, given the tremendous pressure we experience in some years, and the large number of materials we have to choose from. I AM NOT SAYING THE NOW MANAGEMENT PROGRAM IS BY ANY MEANS PERFECT! We very much need better methods to predict the seriousness of NOW, and the need for multiple treatments. We are in the learning stages with the new Suterra Biolure for monitoring adults. Hopefully, this long-awaited monitoring tool will allow us greater lead time in NOW treatment decisions. Ultimately, it would be wonderful if mating disruption could be implemented in all orchards with control confidence. Researchers tell me this is still a ways off, and it would not eliminate the need for insecticidal treatment, but it would certainly greatly reduce it. Obviously, NOW management will yet again be another topic of frequent discussion at all the winter meetings.

With all the spraying for NOW, growers must have added fungicides for *Botryosphaeria* and *Alternaria*, because I received very few calls about these two diseases this year. The newly released fungicides for *Alternaria* must be doing their job. However, the routine use of pyrethroids for insect control has resulted in the predicted increase of Gills pistachio mealybug. There were numerous calls during August inquiring about late treatment options when populations became very visible. Now is a good time to survey orchards for Gills mealy bug and *Botryosphaeria* (BOT). If you find much BOT, it would be very wise to get a crew in before leaf drop and cut the strikes out of the trees. These infected branches are the source of overwintering inoculum, and they spread the disease next spring during the rains. Infected wood also continues to produce spores for

**SIX YEARS**, so if you do not stay up with removal in problem orchards, a wet spring will eventually catch up with you, and BOT will be rampant. OK, you were told!

**What's Next?** It is time to think about **preemergent** winter weed management. In order to properly address your weed problem, you first have to identify the weeds! Many of the new materials are very effective, but they are expensive, because they control noxious weeds such as flaxleaf fleabane and mare's tail (horse weed), which have developed resistance to the older, less expensive preemergent herbicides. 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. Great job, Kurt! Kurt also has a great article on his website about the need for changing from XL nozzles to Tubojets for improved coverage and weed control. If you have not already done this, read why you should, and then do it!

**Prowl H<sub>2</sub>O**, grass herbicide is very similar to **Surflan AS** (Oryzalin) in its weed spectrum and residual. Prowl remains stable on the soil without rainfall for 21 days. **Apply it at the higher label** rates (4-6 quarts per sprayed acre) for extended weed control. Surflan also controls annual grasses and a select number of broadleaves such as chickweed, lambquarters, purslane and the pigweeds. It is also stable on the soil prior to a rain. One gallon per **treated** acre of these two products in the fall usually runs out before the end of the season, especially under drip irrigation. Hence, many growers elect to treat early season "winter weeds" with a low rate of glyphosate (such as Roundup, Touchdown) and Goal (each at about one quart per sprayed acre) and then wait to apply the Surflan or Prowl later in January or February to achieve season-long grass control. Cost and residual are important factors to consider in herbicide selection. Read the label, and discuss your program with a qualified crop consultant for best results.

**Chateau**, is a relatively new preemergent herbicide (Valent) available for bearing and non-bearing pistachios **that are at least one year old**. Applied at 12 oz. per treated acre, Chateau enhances burndown of existing weeds (similar to Goal) and controls difficult weeds such as fleabane and horseweed (mare's tail). Because of its postemergent characteristics, be careful using it in young trees. Avoid injury with tree wraps and use a shielded sprayer to reduce drift. Apply Chateau only during the dormant period to avoid phytotoxicity to emerging bud tissue in the early spring. Kurt Hembree, UC Farm Advisor, Fresno County, for weeds, also advises split applications in November and January for heavy fleabane control, since this noxious weed germinates early in the fall. A single application in January may result in "escapes" which make one think the product is ineffective. The addition of **Gramoxone** helps in controlling emerged fleabane and mare's tail. **NOTE: Before using Chateau, check with your Valent representative for any use restrictions applicable to your area or soil type.**

**Matrix SG** preemergent herbicide is active on fleabane, malva, yellow nutsedge, and mare's tail. Due to its contact activity on selected grasses and several broadleaves (when newly emerged, not a foot tall!), it appears to have a good fit for fall applications where management of the mentioned noxious weeds is required. Matrix works best when combined with a good grass preemergent herbicide such as Surflan or Prowl. It is now a soluble granular formulation applied at no more than 4 ounces of product per broadcast acre per season. The SG formulation is a significant improvement over the old dry flowable, since this product now creates a true solution and the spray tanks no longer require washing with a three percent ammonium solution to insure they are completely rinsed. A second application or use of another preemergence product would be needed in the spring for extended weed control. Trees must be established for one full year before treatment. Spray solution should not exceed a pH of 8.0.

**Visor** is registered for non-bearing preemergent use and has a grass control spectrum similar to Oryzalin 4AS. In addition, Visor controls several broadleaf weeds common in pistachio orchards. The higher label rates also suppress purple and yellow nutsedge and emerged field bindweed.

**Trellis DF** has the active ingredient, isoxaben. Its mode of action (cellulose biosynthesis inhibitor) makes it a good rotation material for other pre-emergent herbicides with similar control spectrums. Trellis is primarily a broadleaf herbicide, and it is effective on marestalk, fleabane, malva, clover, morningglory, and willowherb. Its weed control spectrum is greatly enhanced with the addition of two quarts of Prowl or Surflan. Trellis does not have contact activity, but it is compatible with any post-emergent material. Trellis can be applied to **newly** planted trees, **PROVIDING** the soil is firmed up and not cracked around the tree at the time of application. It is in the “caution” category, and is registered for both non-bearing and bearing pistachios.

**Pindar GT** is another relatively new Dow herbicide for pistachios and other nut crops. It has both pre- and post-emergent activity. See the label for an impressive list of seedling weeds controlled post-emergent. Be sure to add a crop oil, methylated seed oil or non-ionic surfactant for best post-emergent results. Pistachios must be **established nine months** prior to use. Due to its contact activity, application during full dormancy is advised. Use the higher label rates for extended control of fleabane, malva, and marestalk. Both Trellis and Pindar require about a half-inch of rainfall for optimum performance within 21 days of application.

**Alion SC**, by Bayer CropScience, is a cellulose inhibitor with broad spectrum, including fleabane and marestalk (horseweed). Application is recommended between November and January before seed germination. Rain incorporation of one quarter inch or greater should occur within 21 days after application. The recommended application rate is five ounces per broadcast acre. Residual data shows control for five months. Kurt Hembree says combining Matrix with Alion, along with a burndown material of your choice, provides outstanding weed control.

Growers electing to dispense with a preemergent herbicide this winter and apply multiple **postemergent** treatments throughout the season have a good selection of herbicides available, including **Roundup, Touchdown, Sandea, Gramoxone, Shark, Fusilade, Treevix, Goal, and 2,4-D**. Postemergent application frequency, product selection and cost will vary greatly depending upon weed species and pressure. **It is critical to know your weed species and the control spectrum of your selected postemergent to insure satisfactory control.** For example, Treevix, Shark, and Venue are primarily broadleaf materials. Hence, they require the addition of glyphosate or gramoxone to get the grasses. Sandea provides better control of both yellow and purple nutsedge than glyphosate (such as Roundup or Touchdown). Read the Sandea label carefully and consult your crop advisor before applying to sandy soils. Glyphosate is moderately effective on purple nutsedge with repeated applications prior to the six-leaf growth stage.

Those electing not to apply a preemergent herbicide should tune up their application equipment to insure optimal coverage. Low rates of Goal in combination with glyphosate have been documented as more effective in burning down existing weeds than if used alone. Use of a high quality adjuvant is also essential to achieving maximum performance. The addition of ammonium sulfate at about 10 pounds per 100 gallons of spray solution also improves the efficacy of all the postemergent products.

What's better? Repeated postemergent applications or a good preemergent program? I would strongly advise you to use the preemergent program. Weeds have a way of getting away from you. Wet weather makes this even more likely. Cost comparisons between pre and postemergent programs often show that the expense of repeated contact application equals or exceeds the onetime cost of the preemergent treatment. This is especially true if you have noxious weeds like fleabane which are best controlled with the newer preemergent materials. Also, experience has shown glyphosate-based materials to be risky on first year pistachio trees, even with tree wraps. Most PCA's avoid this recommendation, so do not plan to make it your first postemergent material of choice for the first season.

NOTE: Herbicide application equipment should **NEVER** be used for treating tree foliage!! You are begging for big trouble, if you do. This is especially true with Chateau, so please be wise and avoid injury to your trees.

Incidentally, herbicides formulated as wettable powders are best added to the spray tank FIRST to enhance compatibility. Flowables, dissolvable granules, and other non-liquid materials are then added second. Liquids, the least problematic, are then added last.

Manufacturer labels providing essential information about the proper use and application rate for all pesticides can be accessed at <http://www.agrian.com> or <http://www.cdms.net>.

**New Variety News:** There appears to be much confusion over the royalty requirement for Golden Hills, Lost Hills, and Randy, the male pollinator. All three were developed by academic members of the University of California; hence there is a **\$1.00 per tree fee that must be paid to UC at the time of successful budding**. In addition to the per tree fee, there is also a one-time, \$500 licensing fee that must be paid at the time of planting. **For further information and fee payment, go to my website [http://ceking.ucanr.edu/Agriculture/Grapes Tree Fruits Nut Crops/Crop Information 334/Pistachios 620/](http://ceking.ucanr.edu/Agriculture/Grapes_Tree_Fruits_Nut_Crops/Crop_Information_334/Pistachios_620/).**

**First Year Tree Concerns:** As I drive around the valley, I am alarmed by the number of first year tree plantings which are being pushed MUCH later than “us old wise men” would recommend. I completely understand that the budding crews are running late, the use of clonal rootstocks possibly requires more time to reach acceptable budding caliper, and the fact that the newer varieties have a larger bud shield, thus one must wait longer to obtain the needed tree size. HOWEVER, those of us who have been around the block a few more times than many of the newer members, recall several years in which the succulent trunk shoot pushed into late October gets FRIED almost to the bud union, and sometimes into the rootstock, should a sudden freeze occur in early November. I fully realize how tempting it is to push the late bud and go for the required 44 inches of Kerman or Golden Hills main trunk growth. Achieving this the first year allows one to tip the shoot to 42 inches while it is dormant, which increases the number of lateral buds for primary scaffold development. Waiting to push the bud this coming spring requires that it be headed to the desired height in-season, and this typically results in less lateral bud push for primary branches. By the way, there is NO way you could hit these really tender shoots with zinc, in my opinion. The normal 10 gallon rate of zinc 12% liquid would very likely burn the tips and side tissue, and possibly cause them to break later at the burn location. Happy farming!