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Kern Pistachio Notes

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Dormant Training of 'Golden Hills'

The 'Golden Hills' female pistachio cultivar was released to the industry in 2005. Acceptance of a new cultivar and production of sufficient budwood to plant new orchards takes time. Time has moved on and in the past eight or so years, thousands of acres of 'Golden Hills' have been planted using 'Randy' as the male pollinizer. Tree training requirements for 'Golden Hills' are somewhat different from those than 'Kerman', the standard pistachio cultivar in California.

Training 'Golden Hills' versus 'Kerman' (dormant or spring/summer training first and/or second year)

Cutting 'Golden Hills' secondary branches too early (or too close to the terminal bud on shorter branches) is more likely to result in insufficient or delayed bud push below the training cut (see Figure 1) compared to what happens with 'Kerman'. Wait if the branch is not long enough or too "green", and make sure you can see the developing buds in the axils of leaves below the proposed training cut before making it. 'Golden Hills', particularly, appears to demonstrate poor bud push in the leaf axils below the training cut if cut when the wood is too young and the buds underdeveloped. If you cut too early, you may end up with only one bud pushing. This advice holds whether the cut is being made when the trees are dormant or if the first or second leaf juvenile tree is actively growing in late spring or summer.

Figure 1. Look for actual bud growth in the leaf axil.

The growth habit of ‘Golden Hills’, compared to ‘Kerman’ is:

1. More slender
2. Less vigorous
3. More upright

These differences in growth habit suggest differences in tree training.

Non-bearing trees

‘Golden Hills’ should be pruned harder than ‘Kerman’ to encourage more outward growth. Whereas tertiary branches of Kerman are typically cut at 20 to 22 inches,’ Golden Hills’ tertiaries are often cut at 18 inches. Circle tying ‘Golden Hills’ branches, as is sometimes done with ‘Kerman’ to encourage more upright growth, is unnecessary.

Bearing trees

‘Kerman’ is trained to grow more upright. Many of the training cuts involve removing sagging, horizontal branches. As we prune ‘Kerman’, we leave branches on the outer canopy that we designate as being temporary. These branches will produce yield when the trees are young; to be removed later when they are pulled down by the weight of nuts and leaves. With ‘Golden Hills’, the focus is on encouraging more horizontal growth, since the tree tends to grow so upright naturally. The outer branches of ‘Golden Hills’ can be considered more permanent than is the case with ‘Kerman’ since they resist growing horizontally.

Many of the ‘Golden Hills’ flower buds are on short branches in the upper and outer canopy. Mature ‘Golden Hills’ trees do not produce as much neoformed growth (i.e. growth in June and July) as ‘Kerman’. When winter pruning, ensure that cuts are not being made into the fruit wood. There may be very little wood that needs to be tipped from the tree. Don’t tip just to be tipping.

Dormant season tree training

Do not tip ‘Golden Hills’ late (i.e. after third week in February to be safe). Apical buds begin producing auxins in the spring, which prevents buds lower on the branch from pushing. Tip the apical buds before they come out of dormancy. Everything happens earlier with mature ‘Golden Hills’ than ‘Kerman’ – as much as 2 weeks earlier. If you tip the terminal buds after the terminal buds come out of dormancy, buds a foot or more below that point will be extremely slow to push or won’t push it all. The same thing happens in ‘Kerman’, but the buds remain dormant for an additional 10 days to two weeks, giving you more time to prune a ‘Kerman’ orchard in late winter.

Figure 2. Golden Hills pruned too late in the dormant season in a low-chill year. Following nut maturity in the fall, these leafless tips will die back to the next vegetative bud below the nut clusters.

To summarize

Prune 'Golden Hills' hard during training (i.e. non-bearing) to encourage more branching and greater outward spread of branches. Reduce pruning, compared to 'Kerman', once it comes into bearing. Much of the yield will be at the end of the branches and hidden within the upper canopy.

A Blast From The Past! Say What!?

There has been quite a bit of talk recently related to Dr. Bruce Lampinen's (UC Orchard Management Specialist at U.C. Davis) interest in looking at different methods of training pistachio trees. One method he is looking at is the use of a modified central leader system as opposed to what I call the "upside-down umbrella" protocol currently in use. To some, suggesting a change in how we train pistachio trees is equivalent to "heresy". To me, having a knowledgeable researcher with "fresh" eyes looking at how we train pistachio trees is a welcome event.

Relatedly, as I was undertaking my every 5th year office-file clean out, I came across the Division of Agriculture Sciences, University of California, Leaflet 2279, published in 1975 and authored by Karl Opitz. This publication, apparently, was stashed away by my predecessor in this office, whom some of you may remember and whom I still talk with occasionally, retired emeritus Farm Advisor Joseph Maranto. Out of curiosity, I began reading the publication and it quickly became apparent that our industry has come a long way since 1975. I quote from this publication:

"Probably the more important reasons why a pistachio industry failed to develop (in California) are:

Lack of suitable pollinators.

The long time (8 to 15) years often required for an orchard to come into commercial production.

Inadequate nursery stock.

Failure to develop uniform, high producing orchards.

Erratic production.

Specific climatic and soil moisture requirements limiting the number of successful plantings.

High harvesting costs."

Obviously, in the intervening 44 years our industry has made a lot of progress! Another item of interest in the article, and this gets back to tree training, is the "preferred" method of training pistachio trees as described by Karl Opitz as follows and I quote:

"A modified leader system with well-spaced laterals seems to be the ideal tree structure. For good tree structure and to form the young tree, tie it loosely to a stout stake for the first 2 or 3 years. In windy areas bracing the scaffold limbs may also be necessary. Develop 3 to 5 main limbs at about 1-foot intervals with the first limb 3 to 4 feet above the ground. The height of the first limb is determined by the shaking machine used in harvesting. Pinching off undesirable growth the first two or three years encourages good limb placement. Pruning should be light and confined to small clipper cuts to thin out weak shaded branches or to head back excessively vigorous or lank growth."

I have a picture of Karl Opitz in my office. He spent a lot of time in Kern County. After I was through with it, I put his Leaflet 2729 on the shelf right next to the United States Geological Survey Water-Supply Paper 219 publication published in 1908.

Running Out Of Time To Get Help From Mother Nature In Getting Those Pre-Emergent Herbicides Applied

Attempting to control weeds in season in any crop with only post-emergent herbicides requires an unusual level of attention to detail. Forgetting to get after those weeds just once or twice during the season can result in a very weedy orchard and production of millions of weed seeds that all have the potential to germinate and make matters a lot worse in a hurry for the rest of the season. Judicial use of crop-registered pre-emergent herbicides can offer a little forgiveness in missing an in-season post-emergent weed application. An additional benefit of pre-emergent herbicides is that juvenile pistachio trees are very sensitive to some post-emergent herbicides, such as glyphosate.

Two of the of the biggest "tricks" to using pre-emergent herbicides effectively, especially in Kern County – the land of little rainfall – is to time the application before a rainstorm that will deliver sufficient precipitation to "activate" the herbicides before they expire and to apply the materials before the target weeds germinate. You are already too late for some of the worst ones. Since pistachio in Kern County is grown, largely, with low-volume drippers, irrigation can only be counted on to activate the herbicides in the wetted pattern, which may leave 70 or 90% of the orchard available for weed growth, especially if we have a wet spring. Most of our rainfall events of late, occur from November through early March. So if I were a Kern County pistachio grower, and had not yet applied any pre-emergent herbicide, I would be looking at the weather reports closely for the next month for predicted significant rainfall events. We have an added advantage in Kern County in that the rainfall is so low in late spring through October, that most growers only treat the berms with pre-emergent herbicides. There is little need to treat the middles, since rainfall is insufficient to germinate and grow weeds that survive to maturity in areas without

irrigation during the long hot summer. If weeds do appear in spring or the fall, they are disked or mowed, with further control using post-emergent herbicides.

Of course, applying the right herbicide for the principal weeds in your orchard is another important piece of the equation. Kurt Hembree, Farm Advisor in Fresno County, has done a lot of excellent research in looking at these issues. Please see the results of some of his research work at the following website:

https://www2.ipm.ucanr.edu/agriculture/pistachio/Susceptibility-of-Weeds-to-Herbicide-Control/

As always, read and follow all chemical label directions carefully. Recommendations are subject to change. Obviously, consulting with the chemical manufacturer reps is always worth doing as these are their chemicals, which are often used on multiple crops, and they should know what controls what. We are lucky in the pistachio industry, that we now have a fairly wide assortment of herbicides to choose from. This situation was not always the case.

Insufficient Spring Irrigation Increases Abnormal Splitting Of Pistachio Nuts

Irrigation research conducted by U.C. researchers showed that insufficient irrigation in April and May resulted in substantial increases in the formation of early-split nuts in late summer [(Doster, Michailides, Goldhamer and Morgan. 2001. California Agriculture 55 (3) 28 – 30)]. Their research supports my observations made during a number of farm calls over the years which have shown that deficient irrigation in April and May can not only result in more early-split nuts, but where the trees were severely under-irrigated, also greatly increase very early nutlet drop, and the percentage of small and malformed nuts. The bottom line is to make sure that if you postpone irrigation in the spring that there is sufficient water stored in the soil profile to meet the ET requirements of the tree until you turn on the irrigation water in the spring. Pistachio are extremely drought hardy, but if you want an economic crop, they will have to have access to sufficient water in April and May. Irrigating a pistachio crop on saline soils can be a little tricky. Osmotic effects due to the salt, can decrease the ability of the tree to absorb water from the soil, even when the soil appears to have sufficient stored water to meet tree ET needs.

Craig Kallsen, Pistachios/Subtropical Horticulture Advisor
cekallsen@ucdavis.edu or 661-868-6221