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Pistachio Notes

County of Kern

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Insufficient Chilling and Fall Freeze Damage All in the Same Year

Much remains to be learned about the chilling requirements of pistachios. While the number of hours, less than 45EF, accumulated during the winter months this season has been sufficient in other years to induce uniform bud sprout and good flowering in the spring, it was not enough this year. Warm winter daytime temperatures with reduced fog and increased sunshine appears to have reduced the effectiveness of the chilling hours that were accumulated. Trees that are just coming into bearing appear to be more strongly effected by inadequate or borderline chilling hour accumulations. In many orchards, the south sides of trees leafed out a week or more ahead of the north side of trees. Differences in leaf out and bloom often result in nuts being at different levels of maturity at harvest, which normally translates into a reduced split percentage at harvest. Inadequate chilling may also increase the number of blank nuts as a result of uneven pollination in the spring.

Last season, the southern San Joaquin Valley experienced an unusually mild fall. Both day and night temperatures remained high until late November. Pistachio trees continued to grow until the end of November and early December when temperatures, rather suddenly, fell below freezing and into the mid-20EF in some colder locations. Trees, frozen down to or below the bud union, were easy to spot in the spring. The trees died with leaves firmly attached, indicating that they had died the previous fall. Trees as old as six years were frozen, although it was more apparent in trees less than four years old. There appeared to be a genetic component, probably rootstock related, to the pattern of tree susceptibility to the cold. Trees with dead scions or trees with the scion frozen back to near the bud union, in several orchards, were scattered over a wide area with few trees affected trees immediately adjacent to one another. The pattern was similar to that seen in verticillium wilt strikes that occur in orchards on *P. integerrima* rootstock. Because of the known propensity for young Kerman trees on vigorous *P. integerrima* rootstocks to freeze, they are often assisted into dormancy with a spray of 40 lbs/acre of zinc sulfate in October, or through cessation of irrigation in mid-August on heavier soils and later on lighter soils. A defoliating zinc spray and increasing water stress reduce vegetative vigor,

pushing the tree toward earlier dormancy and reducing the chance of damage from a sudden, early freeze

Growers See Red Growing Baby Pistachio Trees

When looking at a new field of young trees this time of year, the top of the orchard should look red, not green. A new flush of tender leaf growth on baby pistachio trees is a reddish color. As this reddish growth hardens off, it will turn green, and produce new red-colored vegetation of its own. Red means vigorous new growth, a good growing environment and healthy trees. One of the most common reasons

for poor growth of young trees is over-irrigation. If rootstocks and/or newly budded trees are not producing plenty of new red-colored leaves and shoots, the irrigation schedule or system requires adjustment. Pistachio trees do not grow well in saturated soils or soils that drain poorly. Similarly, trees that are too dry will not produce new growth flushes either. Usually the grower, by past irrigation practices and current soil-water status, should be able to determine if the problem is under or over irrigation. Aside from not growing, trees that are too wet or too dry, do not bud well.

Irrigating baby trees efficiently may be a challenge. Trees planted in February, at most, will transpire only a few gallons of water a week in June, July, and August. Irrigation requirements, though, will be in excess of this for several reasons. Young trees do not shade much of the ground and the root systems of young trees are not uniformly distributed through the soil. As with any young tree crop, the ratio of the amount of water that evaporates from surrounding soil surfaces divided by the evapotranspiration requirement of the trees will be larger for young trees than for older trees. Irrigation water may be applied in a zone where roots have not yet grown. However, even when reduced water-distribution efficiencies and excess evaporation losses are considered, baby trees require much less water than do mature trees. In July and August, trees planted in February or March may, depending on emitter pattern, tree growth and environmental conditions, evapotranspire 10 to 30 gallons of water per week. This is far short of the 450 gallons/week that mature pistachio trees may use. Clay loam soils at field capacity may provide sufficient water for young trees for a month or more. The efficiency of scheduling irrigation to young trees can be improved by estimating soil-water availability through soil probing or the use of tensiometers or other instruments. Drip emitters probably have the capacity to better target roots of young trees and reduce excessive evaporation losses than do uncapped, full-circle fan jet emitters. Efficient irrigation is not as easy as it looks, but a grower that can get it right should be seeing red long into the summer.

Little Looper Unusually Prevalent This Spring

A small brownish-tan colored looper was found in large numbers damaging pistachio leaves on the west side of Kern County this spring. The pest was identified as the spring cankerworm, *Paleacrita vernata* (Peck) as opposed to the fall cankerworm based on the absence of a third fully-developed pair of prolegs. This looper is slender and may reach a length of about one inch. The females are wingless and after pupating in the soil, crawl up the trunk and lay eggs in bark crevices. The hatching larvae feed on leaves until they mature, fall to the ground and repeat the process. There appears to be only one generation per year. The larvae eat ragged holes in leaves and may reach high populations on the tree. No pest control thresholds have been established for this pest.

Leaffooted Bugs Common on East Side of Kern County

Leaffooted bugs were especially troublesome this season in some orchards. This bug and stinkbugs are the principle culprits responsible for epicarp lesion and kernal necrosis after shell hardening, although they along with the smaller plant bugs can cause significant damage before the shell hardens as well. Epicarp lesion is a blackening and shrinking of the outer hull of the developing pistachio nut. Research has shown that the tree will compensate for moderate nut loss occurring before shell hardening by retention of nuts that normally would have dropped or by increases in nut size. However, leaffooted bug feeding occurring after shell hardening, generally results in yield loss. Epicarp lesion caused early in the season, before shell hardening, by stinkbugs and leaffooted bugs may be distinguished from that caused by the smaller bugs, like lygus and phytocoris, by a white netting produced on the interior of the developing shell by the bigger bugs. Later attacks damage the developing kernal rendering it discolored, spongy, and decayed. Pesticide treatment thresholds for leaffooted bug have not been established, but finding even moderate numbers early in the season can be a concern. The leaffooted bug has multiple generations a year, and is capable of penetrating the toughest nut.

Botryosphaeria Continues to Keep a Low Profile

No infestations of *Botryosphaeria* panicle and shoot blight this year have been brought to the attention of this office, as yet, in Kern County, although the season is still relatively young. This disease has not been an economic problem in Kern County in the past, and the outlook, at least for this season is for a continuation of this happy state of affairs. Vigilance against a disease this serious is always warranted and growers should inspect their orchards periodically, especially if *Alternaria* has been a problem in the past. An identification and control manual for *Botryosphaeria* Blight of pistachio is available to growers from the California Pistachio Commission.

Ground Squirrel Alert

Ground squirrel populations are high and past experience has demonstrated that they can develop a sudden and orchard devastating taste for pistachio bark. Even mature trees can be stripped of large patches of bark and completely girdled in a matter of days, but younger trees are more frequently on the menu.

Removal of preferred habitat like rock piles, stumps, tree prunings, tall weeds and junk piles can reduce problems with ground squirrels and should be the first step in any control program. Grain poisoned with anticoagulants (such as diphacinone) can be effective for control in the period May through July. Squirrels must continue to take bait over a period of several days for adequate control so bait stations should be refilled once baiting has begun. Bait stations are normally situated about 100 to 200 feet apart in infested areas and are designed to keep non-target animals (and children) out, and have the capacity to store and keep dry, several days worth of grain. Hot temperatures and dry conditions will push the squirrels into a summer rest period, called estivation, which will seem to make a flourishing and active population appear to disappear. They will reappear about mid-September when they are again more susceptible to grain poisoned with an anticoagulant or zinc phosphide. Grain treated with zinc phosphide is applied broadcast, only once a season, near burrows. Bait poisoned with this material is not placed in piles.

Regulations pertaining to the use of poison baits and bait stations vary from location to location, even within a county, based on the presence of absence of endangered or otherwise protected species. Read and follow the label directions governing the use of any pesticide. Consult with the appropriate personnel in your county Ag Commissioner's Office before initiating a rodent control program. For more information on endangered species, including how to construct appropriate bait stations, consult the California Department of Pesticide Regulation website at www.cdpr.ca.gov and look into their Endangered Species Project and other appropriate sites.

Pistachio Grower Payment Calculations

The minimum price that many growers will receive for their pistachios this season will probably have been formulated by the time this newsletter is read. While the old advice of not counting chickens before they hatch still holds true, about the time of shell hardening growers generally have at least a rough idea of what kind of crop load is present on their trees. Before the mental calculations related to profit and loss begin, however, growers should understand how they are paid for their crop. A price per pound of in shell splits

includes the weight of the shell; while the price per pound of closed shell and shelling stock do not. Jean Phillimore, of Paramount Farming Company, explains how a load of pistachios from the field is graded and how these grades affect grower returns...

“The load is split into three categories: split inshell, closed shell, and shelling stock. The California Pistachio Commission (CPC) Weight is the total of all three categories including their shell weight. The CPC Grower Assessment is calculated based on this weight.

Each of the three categories is treated separately for payment calculations. The split ‘inshell’ is generally the largest percentage of a grower’s crop and is paid on an inshell basis, meaning that *both* the kernel (meat) weight and the shell weight are included when calculating this portion of the payment.

The closed shell and shelling stock portions of the crop can vary from less than 10% to over 30% of a grower’s crop. Historically, growers have been paid for *only* the edible (good) meat or kernel weight from the closed shell/shelling stock portion of the crop. The weight of an edible kernel is generally considered to be 50% of the total nut weight, the shell portion being the other 50%. Therefore a reported price of \$1.10 per pound paid for closed shell and shelling stock kernels and meats, is equivalent to \$.55 per pound for closed shell and shelling stock nuts that have been weighed but not yet separated from their shells.”

In short, if a grower wants to be paid for the weight of the shell, the nut had better be an inshell split. How pistachio processors arrive at grower returns should not be a mystery. Most processing plants will organize tours through their grading and processing facilities to help ensure that growers can recognize and produce the kind of nut the processor wants to buy and sell.

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