

## Golden Hills and Leaf Scorch

Some instances of significant scorch of the leaf canopy in Golden Hills orchards have come to my attention in the past two weeks. We do not understand the causes of scorch, and the most prominent cultivar demonstrating symptoms over the years has been the male cultivar Peters. Scorch is not a disease but appears to develop, abiotically, later in the season, under hot temperatures. In my breeding work, there appears to be a strong genetic component in whether a given set of progeny will develop leaf scorch and associated early leaf defoliation. I have also observed that with respect to Peters and other breeding selections in our trials that scorch appears more readily in some years than in others. Water stress later in the season appears to be associated with the onset of scorch symptoms.

In evaluating Golden Hills over the years in a number of experimental trials, it is apparent that the Golden Hills cultivar is more susceptible to scorch than is Kerman. However, instances of scorch in these trials has been minor. The male cultivar Randy, also, demonstrates scorch upon occasion. This year, some commercial blocks of Golden Hills have experienced a considerable degree of defoliation late in the season. The reason(s) for these more severely scorched orchards is not clear. The following hypotheses have been proposed for the increased susceptibility of Golden Hills to scorch:

1. A greater genetic susceptibility to scorch. Some scorched leaves can be found in most Golden Hills blocks as harvest approaches.
2. Most pistachio varieties appear to have increased susceptibility to defoliation later in the season, especially, if undergoing stress related to a chemical spray or deficient irrigation. I have mentioned in previous newsletters my "Ides of September" rule where I don't visit commercial orchards with drying leaf symptoms and defoliation after September 15, regardless of cultivar, because pistachio trees can defoliate very easily at this time of year. Since Golden Hills matures up to two weeks earlier than Kerman, stress related defoliation would occur earlier in the calendar year in Golden Hills.
3. Temperatures, also, tend to be hotter, when Golden Hills nuts mature in late August and early September, increasing the risk for late-season scorch.
4. Differences in leaf anatomy or physiology (probably related to Reason 1 above) may make the leaves more susceptible to scorch and early drop. Observations are being made in orchards with and without scorch that suggest that late-season chemical sprays are associated with the instances of severe scorch.

So, with what we know now, are there procedures that would be prudent to follow that would minimize scorch in Golden Hills? The following suggestions are proposed:

1. Ensure that adequate irrigation exists as the nuts of Golden Hills mature, especially, during the last two to three weeks before harvest. Minimize irrigation interruptions for crop pesticide spraying and avoid excessively long periods between shutting the water off and harvesting the orchard.
2. Avoid late season chemical sprays if possible, especially in the last two to three weeks before harvest. If late season sprays are necessary, such as for navel orangeworm (NOW) control, avoid using chemical

adjuvants/spreaders that are known to have a higher risk of phytotoxicity and lower the rates of adjuvants in necessary pesticide applications, especially late in the season. Most pest control advisors are familiar with spreaders that have a lower risk of leaf damage.

Since the Golden Hills harvest is upon us, at least in Kern County, the information in this newsletter is too late to be of much use this season, but may prove useful in future seasons.

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