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Kern Pistachio Notes

April 2022

Hot Time in Kern County during Kerman Bloom: A Heads Up!

As usual, I was out evaluating bloom this spring. Temperatures, on a few days, were abnormally warm during full bloom for Golden Hills, Lost Hills, and Randy. However, Kerman and Peters had it a little tougher with record or near-record high temperatures on April 7 and 8.

In 2017, I published results from a research project in which I correlated a range of weather variables with Kerman yield over a 30 or so year period (https://journals.ashs.org/hortsci/view/journals/hortsci/52/4/article-p598.xml). A large pistachio production company graciously shared the yield data. The orchards, from which these data originated, were on similar rootstocks, optimally or near-optimally irrigated and fertilized, so weather played the dominant role related to yield. One of the significant correlations with yield was the variable "number of hours above 80 °F during the period from March 20 through April 25". The resulting regression equation demonstrated that for every hour above 80 °F during this period, marketable yield was reduced 13.8 lbs/acre. However, I do not recall there being any temperatures as high as 97 °F that occurred on April 7 in Bakersfield (a new record high beating the old record set in 1989) or the 96 °F on April 8 (apparently tying the old record set in 1989) in this data set. So, we may be dealing with temperatures that are outside those normally experienced during bloom in our area.

Initially, I was not overly concerned about the effect of these hot temperatures on yield in Kern County. However, this changed as I continued my bloom evaluation after April 8. I could not help but notice some unusual symptoms related to bloom especially with respect to mid-bloom in Kerman and Peters and late bloom in Randy. The bloom period was very short in Kerman, and many of the inflorescences of Peters and later flowers of Randy appeared frozen in an unopened state. Multiple visits to the orchards during the bloom period demonstrated that each Kerman inflorescence was foreshortened with little branching of the pedicel. The inflorescences, both male and female, had a "dry" baked appearance. Bees, which are normally all over the male flowers gathering pollen, were few and peculiarly inactive, even though many flowers should have been actively dehiscing pollen. I received several calls from growers describing the odd bloom related to many unopened flowers or flowers opening later after temperatures cooled on the 9th and 10th. Since Gumdrop, Golden Hills, and Randy were mostly finished blooming, the hot temperatures appear to have affected them less.

I do not know what these hot temperatures have in store for fruit set and yield this season. The purpose of this newsletter is a sort of "Heads Up" announcement, and I know of nothing that can be done now. It may well be that sufficient pollination occurred during the period before and after the warm temperatures to produce a good crop. The bloom period for Kerman can occur over a 3-week period or so. There was time for some adequate pollination assuming the flowers were not "cooked".

Generally, in the southern San Joaquin Valley, the industry has had two good yield years in a row, so this year's crop was bound to be somewhat reduced anyway. In 1989, another year with very hot temperatures during bloom, it was an off-yielding year, so there is not much of a comparison here. In any case, in the very near future we will know the effect, or lack of effect, of this abnormal heat spike. Normally pollinated florets in the inflorescences will start to swell shortly after pollination, showing the reddish-colored "balloons" of healthy early growth of the nuts. If we see a lot of these on the tree, we can put the hot bloom temperatures of early April 2022 safely behind us.

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