

## ***Pollinators, Water Help Reduce Fruit Drop***

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During May, the challenge in the avocado grove is to hold onto the fruit that has set. There is nothing more disheartening to a grower than to see a large crop of small fruit drop. Other than wringing our hands or waving a magic wand, is there something that we can do to help the trees hold onto the crop?

The first thing that we might think about is the potential for cross pollination from B type flowers. Earlier work from Israel showed that Hass fruit that were cross pollinated from varieties with B flowers had less drop; Hass-pollinated Hass fruit apparently did not survive well on the tree. Recent work in California by researchers Kobayashi and Clegg has shown a direct correlation between the cross pollination of Hass by Zutano or Bacon to Hass fruit surviving on the tree until harvest. In this small study, the best producing trees were 18 year old Hass trees grown directly next to 3 year old top-worked grafts. These had 204 fruits per tree compared to 18 year old Hass trees without Zutanos nearby, which had 18 fruits per tree. Hass trees with beehives directly next to the trees had 115 fruit per tree. Kobayashi and Clegg were careful not to draw a conclusion yet from this study, however, because they didn't have enough data for a statistical analysis.

You can't do much about the lack of cross pollination this year, but you can make sure that the crop on the trees does not become stressed for lack of water. Coming out of the spring months, the trees have now used up all the soil moisture within the reach of their roots that are beyond the radius of the irrigation patterns. The trees are now totally dependent on irrigation. By now, every grove should have permanent tensiometer stations, with tensiometers set at 8 and 16 inches below the soil surface. In a mini-sprinkler system, the tensiometers should be 3 to 4 feet away from the tree. Ideally, every irrigation block should have its own tensiometer station. The 8 inch tensiometer should never rise above 20 to 25 cb in typical San Diego hillside soil.

What about nitrogen? For years, we believed that avocados would be fertilized in late January with a small amount applied in May or June. This timing was derived from the schedule for citrus, but citrus is very different from avocado. Citrus will grow shoots early and nitrogen is needed to support this early growth. The shoots then slow down in growth and begin to export carbohydrates to the newly-developing blooms. Avocado on the other hand, will grow a massive bloom early, usually from March to May, with shoot growth beginning in April. If we fertilize too heavily early, we may be encouraging rapid growth of leaves, and nutrient reserves needed for bloom and fruitset will be shunted off to the leaves.

This growth pattern of avocado has prompted some avocado researchers, such as Dr.

Tony Whiley from Australia, to call for a halt to the early fertilization of avocado trees. The Australians believe avocado should only be fertilized with nitrogen in the late summer and fall in order to support the late flush and to store nitrogen in the wood for the push of bloom in the following spring.

This theory of fertilization timing has apparently not been supported by research, simply because the experiment has not yet been conducted. The Australian reasoning does make sense, though, and growers may want to try this method. The only drawback might be if the late fertilization causes an excessive amount of frost-tender leaf tissue late in the season.