Flowering, Pollination and Fruit set in Avocado

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Summary

1. **Flowering observations** – We followed and described the flowering behavior of 36 avocado cultivars during the blooming periods of 1970 and 1971. We found that under cool temperatures significant disturbance in the flowering regime relative to the time of day, the length of time the flower was open, and the time interval between the female and male opening.

2. **Pollination observations** – Germination of pollen grains on the stigma and the growth of pollen tube in the style – We improved a method that allows us to follow continuously the germination and growth of pollen tubes in the styles of the avocado. It was found that when the pollen is viable, 2-3 hours pass from the time of the pollination event till the arrival of the pollen tube to the base of the style.

It was found that the stigma of the avocado flower is equally receptive during the entire first opening (female) within a wide temperature range. During the male opening the stigma receptivity continues to decrease, even though we found sometimes germination and normal development of pollen tubes at the beginning of the male opening.

Viability of the pollen of various avocado varieties was tested during the season and was found to be most viable during the peak bloom period. At the end of the flowering season a drop in the viability of the fresh pollen was noted particularly in Nabal.

A rapid drop in viability was found in stored pollen.

In trials of self and cross pollination, there were no clear differences between self and cross pollination in Fuerte and Anaheim.

Stigma sampling throughout the flowering season indicates that the percent of pollinated flowers increases usually towards the end of the flowering season. The percent of germinated pollen grains in the samples was high and the growth of the pollen tube was normal in all the cases.

3. **Fruitlet drop** – The follow-up of fruit set and fruit drop in marked inflorescences in the 1970 season showed that seeded fruit on girdled branches was more than double than their numbers on parts of the tree that were not girdled. The number of seedless fruit on girdled branches was 4 to 6 times greater than the number on un-girdled branches.

Follow-up of marked fruitlets that their diameter during marking was 15mm showed that the main fruit drop occurs until the end of May-early June in Fuerte and until the end of June in Hass. The percent of final drop of marked fruitlets in 1970 in Fuerte ranged between 52%-63% with no difference between girdled and un-girdled branches. In 1971

the percent of drops of seeded fruitlets from girdled Fuerte branches reached 25% while the drop of the seedless ones was about 40%. In the Hass variety the percent drop of the various waves of fruitlets was between 37-55%.