EVIDENCE FOR WIND-MEDIATED, SELF AND CROSS POLLINATION OF 'HASS' AVOCADO TREES GROWING IN MEDITERRANEAN ENVIRONMENTS

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Self pollination within flowers during stage 2 floral openings has been demonstrated to be the primary mode of pollination in cultivars selected from pure West Indian and West Indian-Guatemalan race hybrids growing in south Florida. Observations in Florida orchards has also revealed that pollen is dispersed in the air and that wind or gravity is the primary mode of pollen transfer within flowers and possibly between complimentary cultivars. Pollination experiments were recently conducted during one season on the Mexican-Guatemalan hybrid, 'Hass', avocado growing at two locations in southern California providing a drier more Mediterranean climate than that of south Florida. Pollen deposition was observed on stigmas at the end of floral stages 1 and 2 in flowers borne on trees that were either enclosed in net cages or were open pollinated in order to determine if self pollination occurs in this cultivar in a comparatively humid coastal area and in a dry, inland area. The orchards were provided with beehives (four hives per acre) to facilitate pollination by bees. Several complimentary, pollinizing cultivars were placed in the orchards but 'Zutano' trees were located closest to the 'Hass' rows. The seran netting used to make the cages were open mesh to facilitate maximum airflow through the cages while preventing bee access to the flowers. The proportion of pollinated stage 1 and 2 flowers were determined and averaged over 8 to 10 days at the two locations. On average, the proportion of flowers being self pollinated within flowers in stage 2 at both the humid and dry locations was 18% regardless of whether the flowers were inside or outside cages. The mean proportion of flowers pollinated in stage 1 in trees at the humid location was about 3.5% both inside and outside the cages. The mean proportion of stage 1 flowers pollinated in trees at the dry location was about 4.5% inside cages and 7.4% outside the cages. The results of this single year of observation demonstrate that self pollination within flowers is a significant event in 'Hass' trees growing in a Mediterranean environment and that wind-borne pollen plays a dominant role in cross pollination of stage 1 flowers despite the large numbers of bees working in the bloom.