Perception of Avocado Bloom (Lauraceae: Persea americana) by the Honey Bee (Hymenoptera: Apidae: Apis mellifera)

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Honey bees (Apis mellifera Linnaeus 1758) are important avocado pollinators, but due to low attractiveness of avocado flowers, pollination is often inadequate. Several bioassays compared the behavior of honey bees in response to rewards of avocado and non-avocado honey/nectar. When both honeys were available, bees preferred the non-avocado honey. When avocado honey alone was presented, it was consumed by the bees, but resulted in a smaller crop load and lower learning performance. The component responsible for the bees’ disinclination to avocado nectar was subsequently explored. The contribution of carbohydrates, volatiles, amino acids, phenolic compounds and minerals to the repellency of bees from avocado nectar was tested. Among the tested components high mineral concentration in avocado nectar and honey, mainly of potassium but also of phosphorus, magnesium and sulfur, was identified as a major cause for the repelling effect of the avocado nectar. The possibility of a genetic predisposition for avocado nectar foraging was also examined. Consistent differences were found between bee races and between colonies. These results were used to establish two genetic lines with high or low tendency to forage on avocado flowers. The approach presented in the review can be generalized for understanding factors that affect the evaluation of plant species by their pollinators.

Key words: Apis mellifera Linnaeus 1758 – carbohydrates – crop load – honey – minerals – nectar – perseitol – phenolics – pollination – proboscis extension