

Determining Whether You Should Pay for Avocado Pollination Services

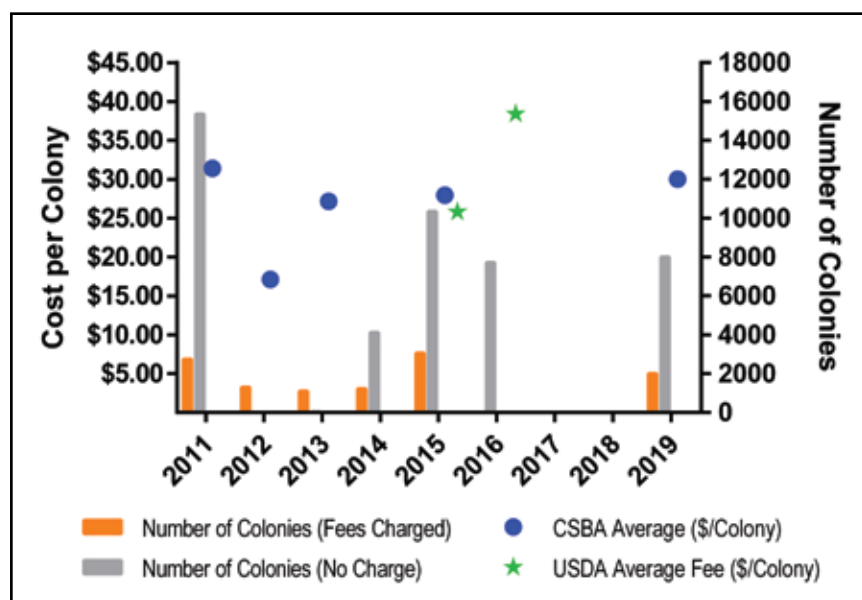
(Editor's Note: This is a summary of an article authored by Brittney Goodrich, Assistant Cooperative Extension Specialist, Agricultural and Resource Economics, University of California, Davis. The original article was published in the Spring 2021 issue of the University of California Cooperative Extension Topics in Subtropics Newsletter. It can be found online at: ceventura.ucanr.edu/newsletters/Topics_in_Subtropics89472.pdf)

In a new article published in the Journal of Applied Entomology, “The role of insect pollinators in avocado production: A global review,” researchers note that in “19 out of 23 studies, insect pollinators contributed significantly to pollination, fruit set and yield.” Further, they noted an increased density of pollinators can be of benefit to growers.

Dr. Timothy Spann notes one of the challenges California avocado growers face is that bees don't generally show a preference for avocado trees when they are flowering. “If there is something else nearby in bloom (e.g., citrus), the bees will fly right over the avocados and go there.” For many California avocado growers, the question then is whether to place honey bee colonies within the grove and, if so, how much to pay for the avocado pollination services?

Dr. Brittney Goodrich, assistant Cooperative Extension specialist at University of California – Davis, addresses those questions in a new paper entitled, “Should I pay for avocado pollination services?”

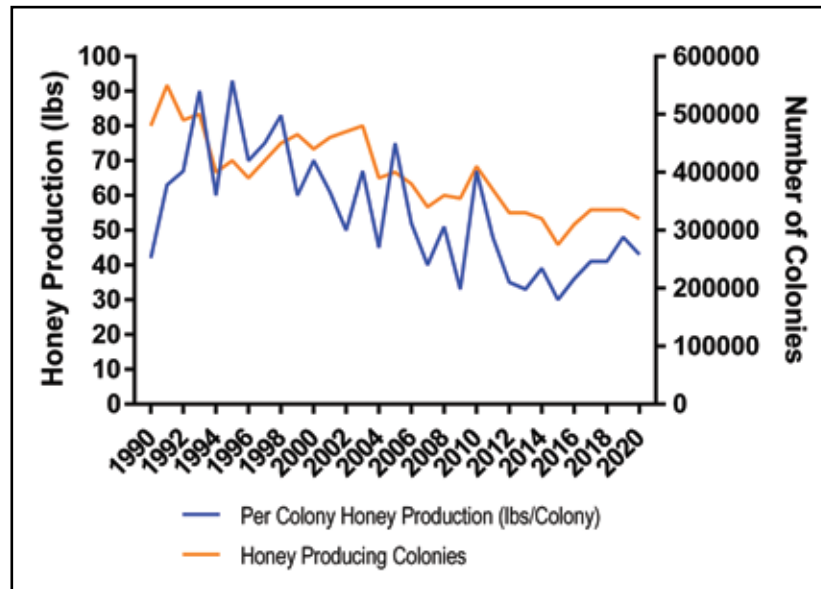
According to Dr. Goodrich, the first thing to consider is whether your grove needs pollination services. Honey bees “typically seek out the least competitive forage sources” thus if your grove is located near an orchard that has honey bee colonies placed within it, your neighbor's bees are most likely also pollinating your grove and you may not need to pay for pollination services. However, if your neighbor is paying for those pollination services, they are essentially subsidizing your costs of production. In addition, if your grove is located near natural pollinator habitat then your grove may be sufficiently pollinated by wild insect pollinators.



Average avocado pollination fees (2019 dollars), total colonies rented, and total colonies placed for no charge, 2010-2019.

Sources: California State Beekeeper's Association Pollination Fee Surveys, USDA NASS Cost of Pollination report.

Notes: Fees are adjusted to 2019 dollars using the Bureau of Economic Analysis GDP Price Deflator. No CSBA respondents reported placing colonies in avocados (either for a fee or no charge) in years 2017 and 2018.



California honey producing colonies and per-colony honey production, 1990-2020.

Source: United States Department of Agriculture, National Agricultural Statistics Service, Honey report.

For growers considering honey bee pollination services, one of the factors that impacts fees is the supply of available colonies. Dr. Goodrich notes that in 2020, approximately 2.4 million colonies were necessary to pollinate California almond orchards and about 2 million colonies from across the U.S. were shipped to the state to meet demand. Once the almond bloom is completed, beekeepers from central and northern states tend to keep their colonies in California until winter recedes and the spring bloom begins in these areas. Dr. Goodrich notes that traditionally beekeepers place their colonies near citrus orchards for honey production after the almond bloom.

“For example,” she states, “a beekeeper might place colonies for no charge in an avocado orchard that needs pollination services simply to gain access to the prime honey-producing location.”

Dr. Spann adds, the almond bloom is “very intensive and the honeybee colony populations increase dramatically during almond bloom, but there isn’t enough natural forage to support the strengthened colonies after the almond bloom. Many beekeepers like to bring their bees out to the coastal avocado groves following the almond bloom to rest their bees and for the great natural forage that exists in the coastal mountains. Avocado growers are rewarded with pollination services.”

However, Dr. Goodrich has noted a downward trend in honey-producing colonies — and a decrease in the average amount of honey produced per colony — in California since 1990. She posits that the influx of bee colonies for the almond bloom may have encroached on forage resources and thereby reduced the potential for honey production. If that is the case, she argues citrus orchards may not be as valuable to

beekeepers as they once were, making beekeepers less likely to place honey bee colonies in avocado orchards at no cost. At the same time, beekeepers do need some place for their bees following almond bloom and beekeepers prefer a natural habitat to simply feeding their colonies sugar syrup. Because such a high volume of bees is shipped to California and many of the bees must remain in the state until their home state has plants in bloom, these factors may place a downward pressure on pollination rental fees.

Dr. Goodrich calculated the annual average fee from 2010 – 2019 (in 2019 dollars) for avocado pollination was \$27 per colony. Using this average rate, if a grower rented two colonies per acre, they would need to generate \$54 per acre in increased value to offset the cost of the pollination fees. Further, she calculated that at an average price of \$1.40/pound, the break-even yield increase would need to be about 39 additional pounds per acre to offset pollination costs. If you were to increase to five colonies per acre, the break-even yield increase would be 96 pounds per acre. Dr. Goodrich does note this simplified analysis does not take into consideration other costs associated with increased yields.

Ultimately, individual growers will need to assess the proximity of their grove to natural forage, citrus orchards, or paid pollination locations that may provide them with access to pollinator populations to determine whether bee colonies are necessary. If you opt to pay for pollination services, Dr. Goodrich notes growers should keep in mind beekeeper costs associated with the service, which include transportation, the risk of pesticide exposure and the competitive rates other growers — say those who grow apples or cherries — may pay for similar pollination services. 🍯