

**Search for Excellence in Crop Production:  
California avocado production course for growers improve crop productivity**

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**Educational Objectives:**

- Develop and disseminate a comprehensive research-based education material on avocado best management practices to increase growers, crop consultants, packing houses, and other avocado stakeholders knowledge.
- To better manage current orchards to produce maximum yields and to increase the acreage of avocados in California, thus increasing sustainability for this popular commodity.

**Program Activities:**

- Plan, prepare and deliver lesson plans and instructional materials that facilitate active learning.
- Educate avocado producers, certified crop advisors/consultants and agricultural chemical company personnel on a scientific overview of avocado best management practices.
- Demonstrate preparation and skill in working with participants from diverse cultural, economic and ability backgrounds.
- Guest speakers from the university, industry, and other government agencies.
- Two class field trips: 1) high-density planting field trip to the field (4.5 hours in Valley Venter, CA); 2) large scale avocado grove field trip (5 hours in Pauma Valley, CA. To demonstrate best management practices discussed in class in person.
- Provided students with University of California (UC) Integrated Pest Management (IPM) guidelines book, the International Avocado Quality Pocketbook, UC ANR Avocado propagation guideline manual, and a two-book series (2012) on Avocado Production in California: A cultural Handbook for Grower. Book one: Background Information, <https://ucanr.edu/sites/alternativefruits/files/221200.pdf>. Book two: Avocado Production in California: Cultural Control, <https://ucanr.edu/sites/alternativefruits/files/228975.pdf> .
- All participants were personally invited to attend the bi-monthly grower educational seminar series that is an on-going collaboration between UC ANR, the California Avocado Commission, and the California Avocado Society. Participants were also personally invited by the director of the local Farm Bureau and the class was introduced to helpful government agencies, financial assistance programs, and organizations that can provide a type of support to them such as the Mission Resource Conservation Districts, State Water Efficiency and Enhancement program (SWEEP) grants and the California Avocado Commission.

**Teaching Methods:**

- Classroom instruction for new or beginning avocado growers' producers.

- Presentations (Power Point PPT), this helps those growers that have trouble reading the publications that are offered in class. PowerPoints are also offered to students in PDF format so they can follow along with the presentation and take notes.
- Extension publications
- Hands-on learning during field trips are crucial for the visual and kinesthetic learners in the course.
- Video shorts and clips (UC ANR and other universities, example: <https://youtu.be/UHVlvAO5NDQ>).
- Participants are allowed to record the lecture via recorder or phone.
- Dr. Gary Bender and I would make ourselves readily available to the class participants and arrive about 30 minutes early and stay about 45 minutes to an hour after class to answer questions on a one on one basis. Farm calls were also initiated during this time to see how I can be assistance to them. This interaction created trust between the new clientele member and the UC Cooperative Extension.

### **Results:**

To date, this course has had approximately, over 300 growers' participants from all of California's major avocado regions: central valley, mid-coastal area and southern California. Even though the class is targeted at new avocado growers the class is usually made up of all different growing experience levels in avocado production. The participants were delivered eight once-a week, 120-minute lessons (16 hours total) and intensively covered the topics:

- California avocado history, grove layout and preparation
- Avocado botany and commercial cultivars grown in California
- Avocado flowering and pollination
- Avocado rootstocks, site selection, road engineering and erosion control
- Planting the avocado tree
- Irrigation, dealing with salinity
- Diseases
- Avocado root rot
- Insect and mite control/endemic and invasive
- Integrated pest management
- Vertebrate pest management
- Weed and herbicide Management
- Pruning/canopy management
- Frost/heat management

### **Impact Statement:**

California is the leading producer of domestic avocados and home to about 90 percent of the nation's crop and are grown from Monterey through San Diego County by nearly 3,000 growers. In southern California, the expansion of urban development has increased the cost of land value, especially the cost of water in San Diego County has reached \$2,000 per acre feet in 2020. It is very difficult to improve yields in an avocado grove when basic cultivation practices such as

proper irrigation, fertilizer application and timings are applied incorrectly, a lack of proper pruning techniques and current pest management methods. To help growers maximize yield, the Avocado Production Course has been a success with over 300 growers and will be continuing with its 9<sup>th</sup> cohort this fall. According to the results of a paper survey given to the most recent cohort (2019), 92% gained knowledge as a result of this course (n=30). As it is shown in the most recent survey results, 99% of the participants that took the course agreed the course has improved their knowledge and learning behavior that they can use to improve orchard efficiency, productivity and profitability, improve water and use of land efficiency, and increase ecological sustainability. Also, the participants from the course have shown that they are implementing the best management practices learned in the course because according to CAC's Industry Statistical Data table (please see supplemental material attachment) the last three years suggest that the average dollars per bearing a has doubled within the last three years. In 2019/2020 the average dollars per acreage was \$8,930. This amount has significantly changed since the 2016/2017 season when the average dollars was \$6,801. Due to the nature of permanent crops, it does take an exceptionally longer time frame to see results of any type of cultivation and knowledge change. The last decade, California avocado growers have faced an increase in production costs, extreme heat waves and wildfires. Even though there are many challenges in which we have no control over, growers are coping and evolving by learning new techniques and revisiting basic best management practices. With the increase of replanting throughout the last few years due to new avocado growers, acreage is slowly increasing. Unfortunately, due to COVID-19 guidelines, there was no course in 2020. Due to the on-going success of the Avocado Production Course, I have now started a Citrus Production Course for New Growers which had its first cohort on-line in the fall of 2020. That they are have doubled in three years

## **Evaluation**

- Results from the survey data regarding the course was taken from the latest cohort in 2019 (n=30) (please see supplemental material attachment).
- Results from average dollars per bearing are from CAC's Industry Statistical Data table (please see supplemental material attachment).