

Understanding Avocado Branch Canker

Avocado branch canker (ABC) is a fungal disease of avocados that occurs on twigs and branches. Previously, this disease was commonly referred to as *Dothiorella* branch canker. However, recent research has revealed that the causal agent is several different species of fungi all from the *Botryosphaeriaceae* family. Thus, the current common name of *Botryosphaeria* branch canker, or simply avocado branch canker.

This group of fungi is ubiquitous in avocado groves and they are generally epiphytic. That is, they live on the plant surface, but do not rely on the plant as a food source. However, these fungi are opportunists and under certain conditions they can enter the plant and cause disease. Typically, this is associated with:

- Pruning wounds (especially from improper pruning cuts)
- Sunburn
- Frost damage
- Broken limbs

Infection is more likely if the tree is drought stressed or suffering from other diseases (e.g., phytophthora root rot) or nutrient deficiencies.

Current Situation

In 2017, many growers started noticing an increase in the occurrence and severity of ABC throughout the industry. Outbreaks were associated with heatwaves, both dry and moist, but not necessarily sunburn. Due to the somewhat variable presentation of the disease, samples were collected at locations from San Juan Capistrano to



An avocado tree with several branches displaying typical symptoms of avocado branch canker.

Morro Bay to see if any new pathogens were present. Initial testing revealed the same cast of characters. However, upon more detailed analysis several other species of fungi were found, including species of *Colletotrichum*, a genus that causes anthracnose diseases.

To help conduct a more in-depth assessment of this situation and determine if we were missing something, the California Avocado Commission assembled a group of experts. The group included avocado pathology experts as well as tree crop fungal experts. This group met in March 2018, toured groves with symptoms and then spent a day reviewing information and brainstorming on the situation.

Based on their initial impressions of the situation, it doesn't appear that we are dealing with a new disease. But it is still unclear why things appeared so different in 2017. One hypothesis is the drought. We know that many of our trees were suffering during the drought that ended with the 2016/17 rainy season, and the drought was followed by a very profuse bloom in spring 2017 in response to the rain. Perhaps these stresses – drought and very heavy bloom – sufficiently weakened our trees to increase their susceptibility to ABC.

The rains that ended the drought also may have helped to increase pathogen inoculum levels in groves. In response to wet conditions, particu-

Current Management Recommendations

A review of the California Department of Pesticide Regulation databases reveals that currently there is only one fungicide registered for use on avocados in California that lists *Botryosphaeria* on the label. That product is K-Phite 7LP (manufactured by Plant Food Systems); however, we cannot locate any independent research data that show efficacy of this product against ABC. There are a number of products registered for use on avocados that include anthracnose (*Colletotrichum* species) on their label if that pathogen should prove to be a key agent in ABC. As a reminder, be sure to carefully read all pesticide labels before use and, when in doubt, the label is the law.

A number of cultural practices are recommended for managing ABC.

These include:

- Avoid pruning during or immediately after rain, dew or heavy fog. The moisture causes the fungi to release spores, which can easily cause infection. Spore counts will be lower during dry conditions.
- Prune out dead limbs and twigs that house the pathogen pycnidia – structures that produce spores.
- Remove dead wood and old fruit from the grove to the extent practical to reduce inoculum levels in the grove.
- Make proper pruning cuts that will heal quickly (for a pruning primer see “Pruning 101: Pruning Dos and Don’ts for Healthy Trees” in the Winter 2017 issue of *From the Grove*).
- Maximize tree health with proper irrigation and fertilization. 🍌



A citrus tree with a branch displaying symptoms of a new *Colletotrichum* disease.

larly warm and wet, these fungi release spores that can be carried in water films or moved around by splashing of raindrops.

Furthermore, researchers at the University of California, including Dr. Akif Eskalen at UC Riverside, recently identified a new disease in citrus caused by two species of *Colletotrichum* — *C. karstii* and *C. gloeosporioides*. Neither of these are species that have been identified in avocado — *C. alienum* — but the similarity of the symptoms observed in citrus and avocado are striking. Akif Eskalen believes that the *Colletotrichum* may serve as a means of weakening shoots making them more susceptible to ABC.

The Commission will continue to evaluate the situation and communicate with the team of experts to determine what research, if any, can be done to better understand ABC and develop practical management tools.



Members of the avocado branch canker review team visit an affected grove. From left are: Akif Eskalen, UC Riverside; Randy Ploetz, University of Florida; David Rizzo, UC Davis; Tim Spann; Leo McGuire, chairman CAC Production Research Committee; and Themis Michailides, UC Kearney Agricultural Research and Extension Center.