



DETECTIVE DENDRO THE DIAGNOSTIC SLEUTH

By James Komen

The Case of the Avocado Aficionado

The avocado: what a delightful and savory fruit! Codit and I bit into our avocado sandwiches en route to our latest case. A new client, Mike Steinman, had asked for us to solve a problem with his avocado trees.

We pulled up to the subject property at 3:55 pm, a crisp five minutes before our scheduled afternoon consult. The first thing I noticed, upon seeing the property, was the spotless Ferrari convertible parked in the driveway. It seemed as though Mike was someone who cared about his status.

"Nice to meet you, Mike," I said, cheerful. "I'm Detective Dendro, and this is my assis—"

"That's *Mr. Steinman* to you," he replied sharply as he adjusted his Rolex.

His tone caught me off guard, but I kept calm and carried on. "Ah, right. Mr. Steinman. Could you tell me what's been going on with your avocado trees?"

"They're not fruiting! I planted the only avocado trees in my whole neighborhood because I want to grow the quality of avocado that you can't purchase from the store. I intend to make my trees the talk of the town! But so far, none of them have fruited."

"How troubling!" Codit said, scratching his chin. My assistant's excessive empathy notwithstanding, the kid had a point: growing quality fruit trees in urban areas was tough.

Mr. Steinman continued, "Every year for the last three years, the flowers have opened, closed, and then turned brown. Then they fall off a few days later. These dang trees never produce any fruit! I called you out *today* to take a look at the flowers while they're blooming, so you can troubleshoot this issue."

"Don't worry," I responded. "We'll get to the bottom of this mystery. Codit and I are going to take a look around and see what might be causing the problem."

Mr. Steinman produced a cell phone out of thin air and quickly went about whatever business he was tending to prior to our arrival. He barely looked up as he spoke. "You'd better get it done quickly. I have a conference call in 10 minutes."

Admittedly, Mr. Steinman was rubbing me the wrong way. But I kept my cool and stayed professional. Codit didn't seem fazed at all. No matter how much Mr. Steinman's Type A personality seemed to be a polar opposite to Codit's patient and easygoing Type B personality, my assistant was as amicable as ever.

I turned to the trees. The foliage was a normal shade of green. Often, avocado trees show some amount of tip



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An avocado of a certain type? Avocado flowers are tricky little things.

scorching from suboptimal irrigation or from salt accumulation in the leaves, but here these leaves were green all the way to the tips. It appeared the irrigation program was adequate, and there wasn't an excessive amount of salt in the soil.

With Codit's help, I determined that flowers were abundant on each of the trees. It was rather striking how they appeared to glow in the afternoon sunlight. I examined them more closely. On all of the trees' flowers, the stamens (male pollen-producing organs) were upright and organized around the stigma (female pollen receptors); typical morphology of a perfect flower (containing both male and female reproductive parts).

Mr. Steinman, eyes on his phone, cleared his throat impatiently. The guy was intense. Rather than engaging, I enquired, "Which varieties of avocado did you plant?"

He replied, "I planted Hass, Gwen, and Pinkerton to get a good diversity of flavor in my crop. I'm not a fan of the green-skin varieties as much, but I know that I'm supposed to plant some to pollinate the Hass trees."

Aha! That was the piece of information I needed to solve this mystery. Codit must have sensed it, too, because he propped his fists on his hips, equally proud.

I approached the client. "You may have planted different varieties of avocado, but they all have the same personality."

"Excuse me, Detective?"

*What does Detective Dendro mean?
Turn to page 71 to find out!*



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WHAT'S THE SOLUTION? Continued from page 19



"The varieties of avocado tree you planted cannot pollinate each other," I said.

Codit's expression fizzled. "But the avocado trees have perfect flowers!" he said, no doubt thinking the trees had some other sort of problem. "Mr. Steinman's trees have both male (staminate) and female (pistillate) parts in the same flower. Why aren't Mr. Steinman's trees pollinating each other?"

"Avocado trees may have perfect flowers, with both male and female parts, but both parts aren't active on the same tree at the same time," I clarified. "They exhibit a flowering behavior known as *synchronous dichogamy*. There are actually two types of avocado varieties: A-varieties, which open their flowers as female in the morning and as male in the afternoon, and B-varieties, which open their flowers as male in the morning and female in the afternoon."

Mr. Steinman gave me a half-nod. Was he taking notes on his phone or was he not even listening?

I sighed and pressed onward. "During the male phase, the stamen is upright, but during the female phase, the stamen lays flat around the stigma. We're observing the trees in the afternoon, and you can tell the flowers are all in the male phase now because the stamens are all upright. That means your trees are A-type varieties, which matches the published characteristics of the flavors you planted."

"So you're telling me I only planted A-varieties, and I can't have fruit without B-varieties?" Mr. Steinman grumbled, looking up from his phone.

"Y-yes," I replied. "A-varieties are usually more attractive to growers for their higher fruit yields. But B-varieties are necessary to complete the process of pollination. In many residential neighborhoods, like yours, nearby trees of opposite types will pollinate each other. But considering your avocado trees are the only ones around. . ."

Codit looked up from the tablet he'd pulled from the truck. "Meaning that if you want to make your avocado trees productive, you'll have to plant one or more of the B-varieties nearby, like Bacon, Fuerte, or Zutano. I did some quick research, and it looks like a new breeding program from the University of California is evaluating two new B-varieties—'Nobel' and 'Marvel'—that produce a black, Hass-like fruit. Once these become available as retail nursery stock, it might be an opportunity for you to have your cake and eat it, too!"

"Good work, Codit." I patted my assistant on the shoulder.

Mr. Steinman looked understanding but still not entirely pleased. "Thank you for your time, gentlemen. Please send me a bill."

And with that, he spun on his heel, went inside his expensive home, and closed the door.

Back in the truck, I asked Codit if he needed a break from Mr. Steinman's personality as much as I did.

"Well, partner, it's five o'clock. Do you want to grab some margaritas? I'm in the mood for some guacamole."

Additional Reading

Arpaia, M.L., A.E. Fetscher, and R. Hofshi. Avocado Flowering Basics. University of California Agriculture & Natural Resources. Accessed 01 April 2018. <<http://ucavo.ucr.edu/Flowering/FloweringBasics.html>>

James Komen is a consulting arborist specializing in appraisals and tree risk assessment in the greater Los Angeles area.

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Different avocado types have different needs. Pictured here: *Persea americana*.

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