

# DETECTIVE DENDRO THE DIAGNOSTIC SLEUTH

By James Komen

## The Case of the Rooftop Restaurant

Our latest assignment led Codit and me to West Los Angeles to investigate the decline of some olive trees (*Olea europaea*) at a restaurant. Our GPS led us to the site of a tall office building on the corner of a dense urban intersection.

Looking around at the landscaping near the street, however, I didn't see any olive trees.

Codit did the same. "I'm not seeing the restaurant, either. Are we at the right place, Detective?"

Before I could answer, the building manager, an energetic fellow, came out from the lobby and greeted us

warmly. "Detective Dendro! My name's Gerry Valdavian, we spoke on the phone. Thank you for coming. Right this way."

Into the building, through the lobby, and into an elevator we went. Gerry pushed the button for the 37th floor. "We will have to take the service entrance and walk up the last four floors. The main entrance to the restaurant is reserved for our VIPs."

"VIPs?" Codit and I chimed in unison.

While walking up from the 39th to the 40th floors, it looked like we were headed through a door to the roof of

The olive trees were clearly an essential attribute to the aesthetics of the restaurant on the 41st floor. But what was causing their slow decline?





the building. Except, behind this door was yet another flight of stairs!

My assistant, huffing and puffing, groaned in dismay. “I didn’t expect to be climbing today. . . .”

Gerry, at a distance, laughed. “This building used to have 40 floors of offices, but the new ownership decided to add a rooftop restaurant. The plans ballooned into creating an entirely new floor of the building. In the end, they just left part of the old roof and built on top of it. And in order to create a garden-like atmosphere, they also included eight mature olive trees in the design. These are the trees that have been giving us trouble.”

Gerry opened the service entrance door, and Codit elbowed me aside, his eyes wide. He could hardly believe that the beautiful garden scene before him was on the 41st floor of a skyscraper.

A pleasant ocean breeze blew through the open-air ceiling scaffold above us. At this, I noticed the roof was retractable in segments. And attached to the scaffold, I also noticed a duct system for climate control in inclement weather.

Looking around, I discerned there were only two entrances to the restaurant: the narrow service entrance we had used, and the main entrance hallway, which wasn’t much wider.

Codit took a few tentative steps toward the olives in question. “How did you get these trees up here? They couldn’t have possibly fit in your elevator.”

Gerry smiled, fists on hips. “About 10 years ago, we had to lift these eight 60-inch (1.52 m) box olive trees into place with a helicopter. It was quite a spectacle! The roof and all the ductwork you see was then constructed over the trees. It was a very expensive construction project, but look at the value these trees create for the restaurant!”

Codit was slightly preoccupied, reading the prices on the restaurant menu, but he nodded his acknowledgment.

Gerry continued, “So over the last few years, these eight trees have been in decline. Every time dead branches appeared, we pruned them off. We never removed any living branches. But now they look like this!”

The building manager gestured to the trees. They didn’t look great. There was clearly evidence of some form of dieback present in the canopy of each of the eight trees. About half the remaining branches had foliage with necrotic tips.

I began to poke around.

Around the base of each of the trees was a layer of coarse bark mulch about one to two inches (2.5–5 cm) deep. Each tree had one drip-irrigation emitter. I pulled back the wood chips from a few of the trees, and without any digging, the soil appeared to have adequate moisture.

Above us, several HVAC vents were situated directly over the canopies. I began to wonder. Perhaps the forced-air heating had dried the foliage? I mulled over that thought, but it didn’t sit well with me. The pattern of dieback was present on some trees where the vents were not

present. Also, the symptoms had appeared within the past four years and the trees had been in the rooftop garden for many years prior to that without any problems. If the forced-air was the cause, wouldn’t the trees have shown symptoms shortly after the HVAC installation?

“The foliar symptoms also looked a bit like those of *Xylella fastidiosa*,” I said to Codit. “It’s a bacterial infection that has been found recently in urban olive trees.”



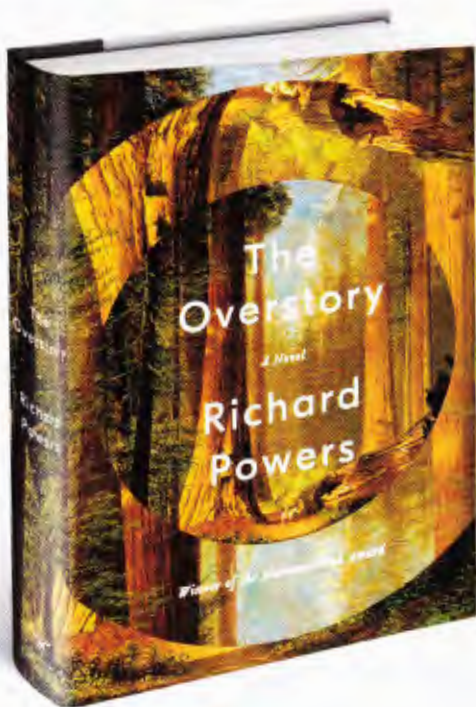
Some of the dieback was near the HVAC vents. Could the vents be the cause of the dieback?



The foliage was showing symptoms of progressive linear dieback with yellow banding. Could it be a *Xylella* infection?




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### Detective Dendro (continued)

“Oh yeah. Maybe. *Xylella* can cause a systemic bacterial infection that restricts the flow of water through the xylem tissue, resulting in drought stress symptoms in the foliage. On olive tree leaves, *Xylella* also can appear as progressive linear dieback with distinct yellow banding between living and necrotic tissue within each leaf. Do you think these trees have become infected?”

I was cautious. “*Xylella* can be transmitted on pruning tools. Could it have been the maintenance crew? Remind me to sterilize our pruning tools, just to be safe.”

“Samples, then?”

I was already on it, collecting a few samples of foliage and placing them in plastic bags for later analysis.

With access to the crawlspace under the restaurant, I next sent Codit down to take a few photos of the drainage system for the trees. While he was climbing back up, I discussed my thoughts with Gerry.

“I would like to do a few lab tests to see if there are any problems with the soil. I’d like to know if there is adequate nutrition and drainage. I would also like to test for the possible presence of *Xylella* in the foliage.”

As soon as I finished relaying my thoughts to Gerry, Codit scampered back up and handed me his cell phone. I glanced at the photos and paused. “Huh. Good work, Codit! This changes things!”

The building manager cocked an eyebrow. “Wh-what?”

“After seeing these photos, I think I know what’s wrong here. I’ll still perform a lab test for *Xylella*, but I have a feeling it may come out negative.”

*What did Detective Dendro see? Find out on page 61*

### The Haunting Beauty of Korea’s Pine Trees

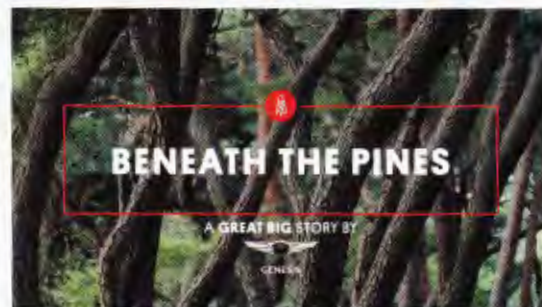
Pine trees contribute deep, cultural symbolism for many Koreans. Pines, according to webcast group *Great Big Story*, are believed to connect the souls of those who have passed with the sky. And so it only makes sense that as amateur photographer Bae Bien-U searched for his next subject, “an iconic image to represent Korea’s identity,” the pine tree came to mind. The photographer spends a lot of time in his country’s old-growth pine forests, concentrating and reflecting on the beauty of the natural world, and humanity’s inevitable connection to its various qualities.

**Media type:** video, three minutes

**Cost:** none / free

**Where to watch:** [www.youtube.com/watch?v=Kpghjs4XVMg](http://www.youtube.com/watch?v=Kpghjs4XVMg)

### MULTIMEDIA SPOTLIGHT



“We are surrounded by pine trees and live in pine houses,” he says. “And when we die, we go into coffins made from pine trees. So, it’s an inevitable tree in Korean lives.”



## WHAT'S THE SOLUTION?

Continued from page 20



Codit's photos showed each of the eight trees growing in a specially constructed steel-lined planter. The planters, it turned out, weren't much larger than the 60-inch boxes the trees were originally transported and planted in.

I showed the photos to Gerry, the building manager. "Trees that are this large and are still growing in 60-inch boxes are likely to be root-bound. Codit," I added, turning to my assistant, "can you check the soil?"

Never afraid to get a little dirty, Codit took out a trowel and started digging his way into the nearest planter. Before long, his head popped up. "Yep! There's a really thick mat of roots here. And look at this! I think I found some adventitious roots, too."

Both Gerry and I hurried over to see what he had uncovered. Sure enough, there were some roots emerging from above natural grade. I provided Gerry with a play-by-play: "Adventitious roots are often produced by trees with problems below the soil line, such as girdling roots or poor soil conditions. Here, it appears that the trees had outgrown their boxes."

As additional support for our hypothesis, Codit calculated the amount of soil volume recommended for the subject trees' crown projections by using an existing formula (three cubic feet of soil per square foot of crown projection). The actual soil volume was far less than the recommended amount. Indeed, these trees should have been planted in a much larger soil volume.

"Ideally," I began, "the floor would have been suspended over a larger soil volume with an overhang that avoided soil compaction. Unfortunately, the way these planters were designed, there was no way to correct the problem without demolishing and rebuilding the entire restaurant and steel casings."

Gerry matched my head-shaking with his own.

I marched on with the bad news. "You can try to continue to salvage these trees as long as they provide adequate aesthetics for the restaurant, but the design of the planters will ultimately limit their life span. You may want to start planning for their inevitable replacement."

Our assessment documented, my assistant and I left the building manager our business cards and returned to the office.

A few weeks later, the lab results came back negative. No *Xylella* was detected in the foliage or stem tissue. I composed a report for Gerry to detail the findings.

Shortly thereafter, I received a letter. Gerry thanked us for our investigation. And although the findings weren't favorable for the building, he was glad to know what the problem was. Behind the letter, I noticed something shiny poking out of the envelope. Two VIP guest passes to the restaurant!

"Hey, Codit," I called. "You want to go grab some dinner?"

"Sounds great, Detective! I'm famished," Codit replied.

"Where were you thinking?"

"I think I know a place. . . ."

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

*Photos are courtesy of the author.*

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Adventitious roots indicate problems below the soil level.



Codit's photo from the crawlspace shows that the steel planter frames weren't much larger than the original 60-inch boxes that the trees were grown in.