

## **BACTERIAL CANKER OF AVOCADO**

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Canker symptoms have been observed on trunks and branches of avocado in South Africa and California. In South Africa, the cankers were associated with *Pseudomonas syringae*, but similar symptoms in California are associated with *Xanthomonas campestris* and not *P. syringae*. Our work this year has established the pathogenicity of *X. campestris* on avocado and has further described its distribution in California, its variability, and its taxonomic position.

*X. campestris* has now been isolated from 25 avocado samples with bacterial canker symptoms from 14 groves in San Diego, Orange, Los Angeles, Ventura, and Santa Barbara counties. No *P. syringae* was recovered from any of the diseased samples. We have now used a combination of traditional physiological tests, isozyme analyses, restriction fragment length polymorphism (RFLP) analyses, DNA fingerprinting with rare-cutting enzymes, and the computerized Biolog system to compare the different isolates of the California pathogen. The strains of *X. campestris* from each site are related to each other but are distinct from strains of *X. campestris* from other host plants, indicating that they represent a previously undescribed pathovar of this species.

Inoculations of Hass avocado plants with five of these strains resulted in vascular and pith necrosis that spread above and below the inoculation point over time to a distance of 15 cm or more. Koch's postulates were completed with these bacteria. One strain was selected for a more detailed pathogenicity study that quantified the multiplication of bacterial populations over a four-month period. The bacterium spread at a rate of 0.5 cm per day above and below the inoculation point in the stem of two-year-old plants. Spread below the inoculation point stopped when it reached the graft union, however.

We are now testing our larger collection of strains for pathogenicity on avocado plants. We are looking particularly for variations in aggressiveness between strains. In addition to the internal, spreading necrosis produced by inoculation of nearly all of these strains, some plants have developed cankers that look like young versions of the large cankers seen on naturally-infected trees.