Invasive Ambrosia Beetle Conference

The Situation in California

August 14, 2012

PUBLIC MEETING

Meeting sponsored by:

The Hofshi Foundation

University of California, Riverside

UC Center for Invasive Pest Research

The Huntington Botanical Gardens

The Los Angeles Arboretum

The Extent of the problem in California

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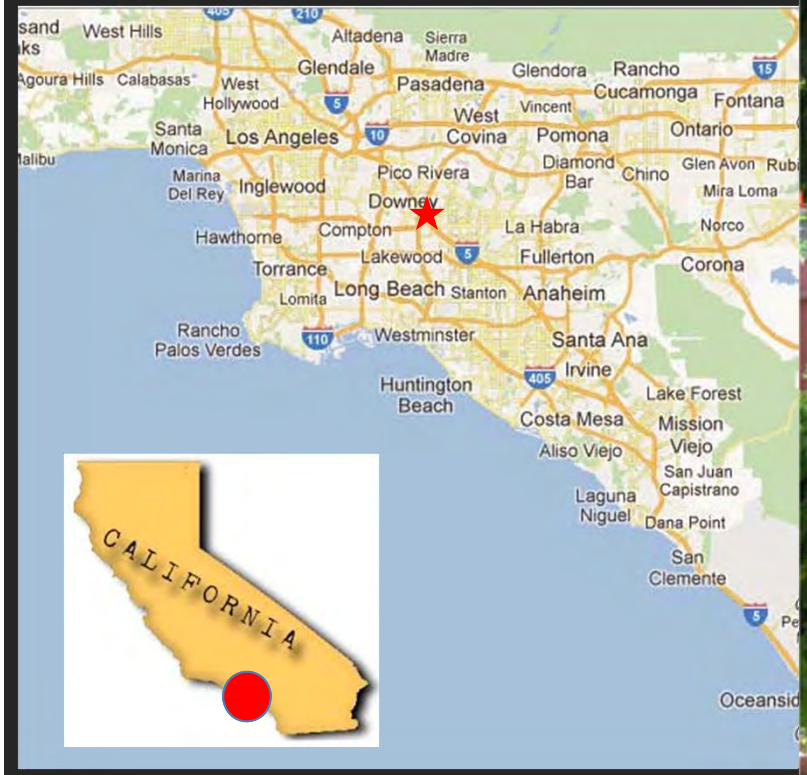
Symptoms on a backyard avocado tree in South Gate, Los Angeles



Symptoms on the bark and wood tissues

Symptoms on the bark and wood tissues

Symptoms on avocado branches (cv. Hass)

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Fusarium sp. isolated from both symptomatic plant tissues, beetle and larvae

Fusarium sp.

Fusarium dieback symptoms on avocado (cv.Hass) in Israel

An Asian ambrosia beetle *Euwallacea fornicatus* and its novel symbiotic fungus *Fusarium* sp. pose a serious threat to the Israeli avocado industry

Z. Mendel · A. Protasov · M. Sharon · A. Zveibil · S. Ben Yehuda · K. O'Donnell · R. Rabaglia · M. Wysoki · S. Freeman

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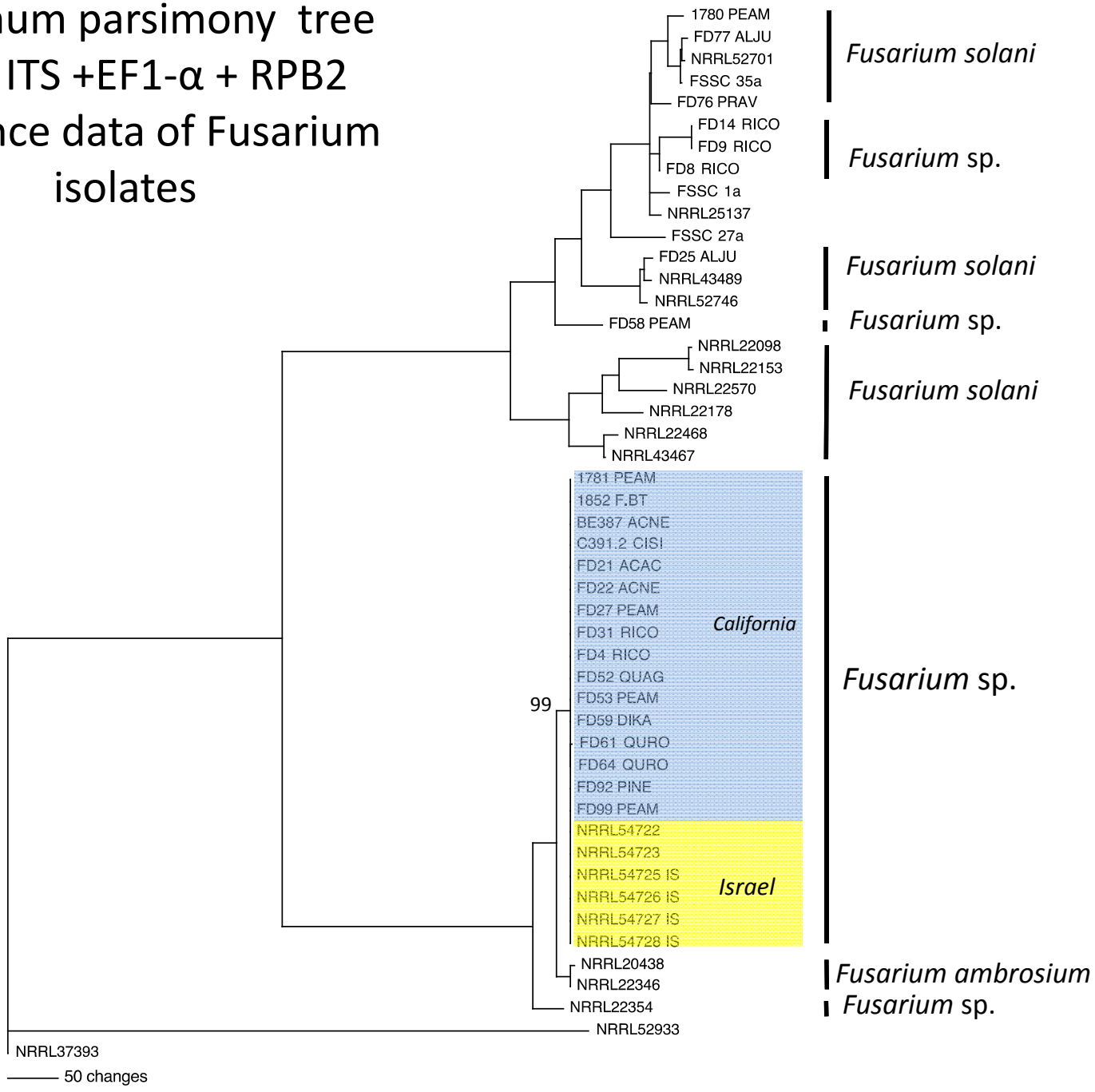
Photo by Dr. Zvi Mendel, Dept. of Entomology, Bet Dagan, Israel

Maximum parsimony tree from ITS +EF1-α + RPB2 sequence data of Fusarium isolates



Pathogenicity test on Avocado (cv.Hass)

Fusarium sp.

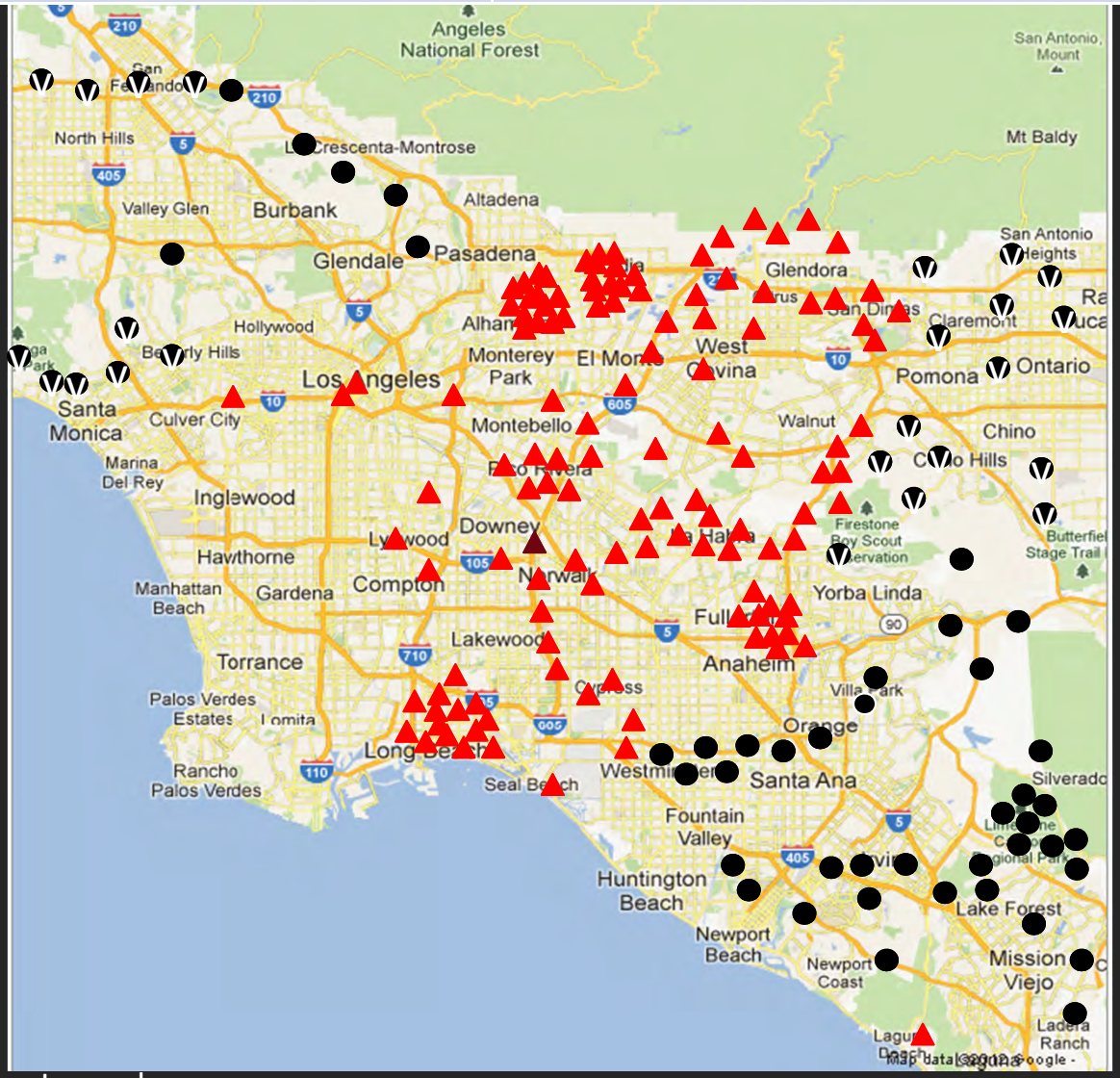
Control

Pathogenicity test on Avocado (cv.Hass)

Fusarium sp.

Control

Species infested with PSHB	Species infected with *Fusarium* sp.
207	108



Legend

▲ Positive finding *Fusarium* sp./Polyphagous Shot Hole Borer

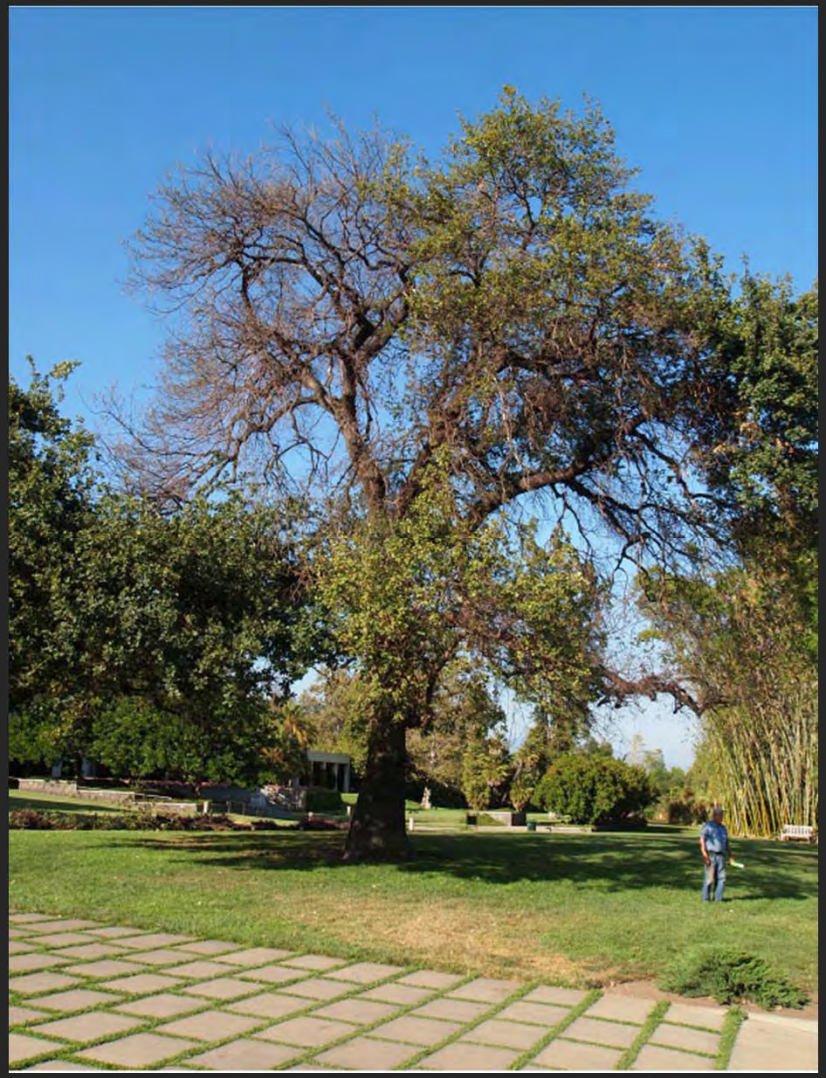
○ Negative-*Fusarium* sp./Polyphagous Shot Hole Borer

Symptoms on Castor Bean (*Ricinus communis*)

Hosts in California

Box Alder (*Acer negundo*)

Hosts in California



English Oak (*Quercus robus*)

Hosts in California

Coast live oak (*Quercus agrifolia*)

Symptoms on avocado (cv. Hass)

What to look for?

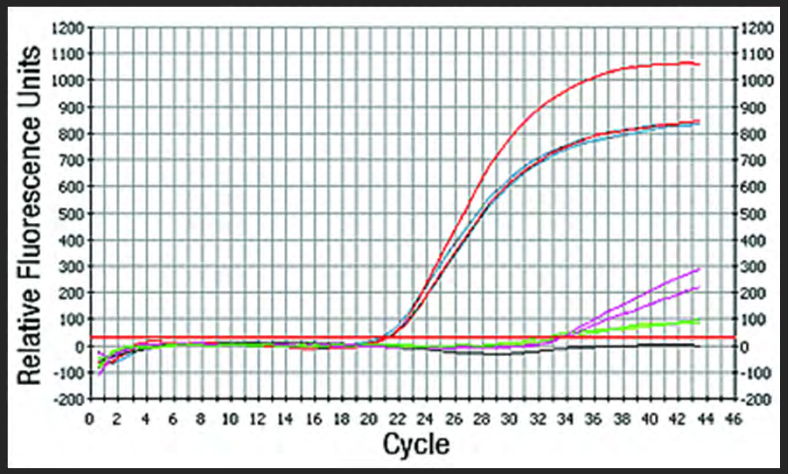







What not to look for

Detection of *Fusarium sp.* directly from plant material using Quantitative Real Time PCR

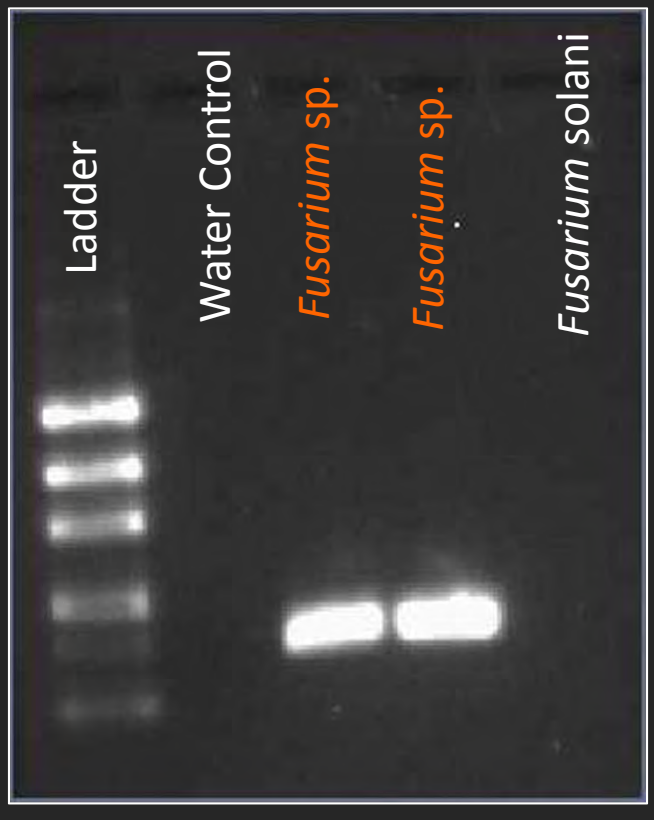


EF-1α

Forward: ACGTGATTGACCACAAAC

Reverse: CAGCGACATACCAATGAC

188 bp



Conclusion

- Fusarium dieback (FD) is a new disease of avocado and landscape trees caused by new *Fusarium* sp. vectored by an ambrosia beetle.

- Los Angeles and Orange counties thus far are infested with FD/PSHB in California

- Symptoms of FD on Box elder, castor bean, avocado and English oak are more severe than on other hosts.

Collaborators

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California Avocado Commission