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Cy Carlberg
387 North Baldwin Av.
Sierra Madre, CA 91024

Re: *Ficus* trees in Santa Monica

Dear Ms. Carlberg,

This report summarizes two visits to Santa Monica, my lab work, internet research and site visits to other localities in Los Angeles County that I made in order to better understand the evolving problem on *Ficus retusa* (*Ficus microcarpa* 'Nitida'). You and I first examined the trees located near Grant and 11th Streets on May 12, 2008. I revisited the site and met with Johnny Aguila from the City of Santa Monica for additional sampling on June 3, 2008. In a later trip to Beverly Hills and Brentwood I examined *Ficus* trees in those communities and verified the same disease. Additional calls from a colleague in Lakewood/Long Beach area have alerted me that the disease may also be working on *Ficus* in those communities.

Our initial impression of the trees at 11th and Grant Streets were that they were affected by root pruning in a narrow parkway (see the trees in Figure 1). The dieback was extensive but not complete. Wherever trees were dying the sidewalks had been replaced and extensive root pruning had been conducted. Upon walking around the corner onto 11th south of Grant we found an entirely different situation. The parkway is wider, the necessity for and practice of root pruning was not observed, yet the disease seems to be spreading down the street.

We sampled trees on 11th Street south of Grant on May 12, 2008 and I obtained a slow growing culture but no without fruiting bodies. Samples of branches retained in a moist chamber eventually started to form the pycnidia typical of the canker fungus *Nattrassia mangiferae*. I returned to the site in Santa Monica and recovered larger samples with the help of Mr. Aguila and actually found fruiting bodies of *Nattrassia* already formed on the samples at the site. *Nattrassia mangiferae* was again confirmed on these samples in the lab by examination and measurement of the spores under 200x magnification.

Damage to other trees in Los Angeles looks similar to that observed in Santa Monica and is probably caused by the same pathogen (Fig. 2). Descriptions of this damage have also been reported in North Hollywood, Lakewood and Long Beach, California.

This raises the questions: 1) why so many trees are affected at this time; and (2) what is the long-term outcome of our *Ficus* populations. Unfortunately, we can do little more than speculate at this time.

Indian Laurel Fig was introduced to Southern California landscapes and mass planted in cities during the last half of the 1900's. The trees have matured into large specimens that have often outgrown their available root space. In many cases, the parkway strips were not at all adequate to sustain the growth potential of these trees. In order to manage this urban forest, municipal arborists have embarked on a program of pruning roots and an aggressive shoot pruning program to maintain size and restrict growth. Occasionally the trees were given adequate space to expand and have matured into very large trees with less frequent root and shoot pruning.

According to Elliot and Edmonds (2003), the pathogen that causes *Nattrassia* and a related disease (Sooty Canker on mulberry in desert regions) attacks stressed, especially drought-stressed trees. They also indicate that the fungus is primarily wound-invading. According to Mirzaee and others, this fungus attacks trees growing in high humidity or high temperature climates. Perhaps this is why we are seeing the disease along the coast of southern California, where temperatures are not as extreme but high humidity is common, and the disease is not as prevalent in Claremont, Whittier and other more inland localities.

It appears that the disease is increasing where the trees are planted in dense numbers along the humid coastline. Like most canker fungi, *Nattrassia* is opportunistic and invades older, stressed trees. We may see regrowth below the cankered limbs as warmer temperatures stimulate the trees to grow.

Actions and Recommendations

Nattrassia is unique because it can also grow in the tree endophytically (not showing any spores fruiting bodies or symptoms at all). It is triggered when trees are stressed by root pruning, drought, or heavy shoot pruning. As a result dieback occurs, and if conditions are right, more spores form on the dead branches. Where standing trees exist like those shown in the photographs, I recommend removal or severe pruning back to good wood to remove inoculum. Where trees are heavily disfigured by this fungus, removal and replacement would be the best option with an eye toward less frequent root pruning.

There is no known chemical control for the disease on *Ficus* in California, and if applied, fungicides may only give short relief from the disease. The disease seems to be slowed by the branch collars (Fig. 3) where they join their major branches (note discolored wood stops at the branch collar). This suggests that correct pruning procedures should be employed to conserve branch collars, should you attempt to prune the disease out of newly infected trees. My concern is that this will only provide temporary relief from the disease as the new wounds may be infection sites for further infestation. I do not think a defoliated tree can be stressed by pruning dead wood, however, so there is no harm in making the attempt and observing what grows back.

I will be working on this problem throughout Southern California and am available for any further consultation you may require.

Respectfully submitted,



References

M. Elliot and R. L. Edmonds. 3003. Systematic Study of *Nattrassia mangiferae* the cause of Madrone Canker. WIFDWC 51: 59-62.

M. R. Mirzaee, M. Mohammadi and H. Rahimian. 2002. *Nattrassia mangiferae*, the cause of die-back and trunk cankers of *Ficus religiosa* and branch wilt of *Psidium guajava* in Iran. J. Phytopathology 150:244-247



Figure 1. Trees on Grant Street near 11th, Santa Monica



Figure 2. Damage seen in Los Angeles

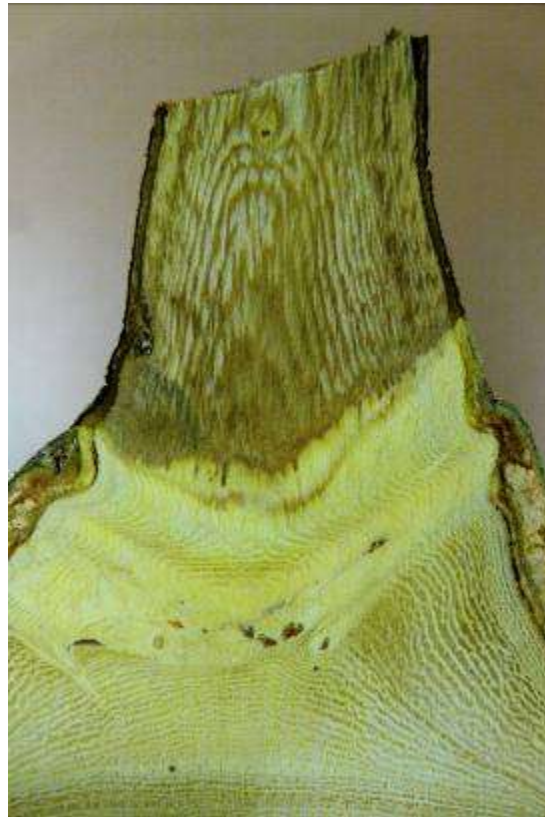


Figure 3. Infected branch at the branch collar