

CITRUS DISEASE SPOTLIGHT

Ganoderma root rot

By Megan Dewdney

Ganoderma root rot is an occasional problem in groves, especially when young trees are replanted next to stumps of large, old trees that have been clipped for removal. The stumps serve as large inoculum sources. The inoculum can either be airborne spores or come from root grafting of infected to healthy roots. The fungi generally need wounds to be able to infect trees, but the fungus can infect when a young tree is close to a large inoculum source.

Pathogen scientific name: *Ganoderma lucidum* or *G. applanatum*

Leaf symptoms: The leaves tend to be weak and do not remain a healthy green color. They will eventually turn yellow and start to drop.

Tree symptoms: The trees have an overall poor appearance. Varying degrees of dieback occur in the canopy, leading to an eventual collapse and death. Under the bark of main or lateral roots, a whitish mat of mycelium can form, eventually turning brown. As the fungi move up the tree from the roots to the crown and trunk, ribbons or strands called rhizomorphs grow. From the rhizomorphs, fan-shaped bracket mushrooms form at or near the base of the tree (Figs. 1 and 2). Eventually, infected wood becomes spongy, decomposes and disintegrates.

Fruit symptoms: No specific fruit symptoms.

Once symptoms are visible, it is generally too late for control measures. If on an older tree just the heartwood is affected, then usually only structural integrity is compromised and the tree can continue to produce for many years. However, the disease does lead to greater limb breakage. When young trees are infected, they generally decline and die within two years. While in most cases there have not been problems with the pathogen being transferred from stumps to young trees, it can happen occasionally. If this does occur, it is recommended to plant young trees farther from stumps or wait until the stumps are well decayed.

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Fig. 1 (left). *Ganoderma* spp. bracket mushroom from an infection on a young reset

Fig. 2 (below). Fruiting bodies of *Ganoderma applanatum* on an old tree stump

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