

## Armillaria root rot of avocado caused by *Armillaria* species

Fact Sheet (January 2023)

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### Background

*Armillaria* species are the causal agents of root and trunk rot on a wide range of plant species [1]. Among these species, *A. mellea* is the most prominent fungus associated with Armillaria root rot [2]. Armillaria root rot of avocado was first reported by Smoyer in 1941 in the USA [3]. This pathogen has since spread to multiple countries, and has been reported on *Eucalyptus* spp., *Pinus* spp. and other woody hosts in South Africa [4-6].

### Symptoms

Infection of the large roots and crown of the host (Fig. A) causes aerial symptoms such as decline in vigour and leaf chlorosis (Fig. B) [2]. Death can occur rapidly with leaves still attached, or trees can deteriorate gradually [2,7]. White-cream mycelial growth can be observed along the roots and underneath the bark at the crown, eventually progressing to the cambium and inner bark at the base of the tree [7,8]. Following wet weather, honey-coloured fruiting bodies of *Armillaria* may appear near the base of infected trees (Fig. C) [2].

### Biology

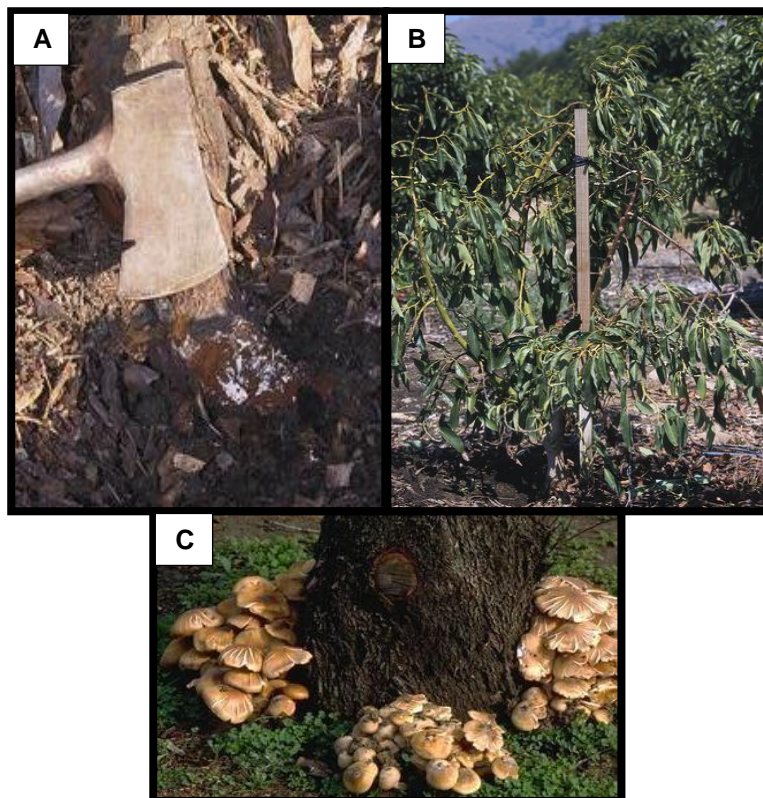
*Armillaria* spp. are basidiomycete fungi that can live as saprophytes in the soil on woody debris [1,2]. *Armillaria* spp. will spread to adjacent trees through root contact and movement of soil [1,2].

### Known Hosts

These fungi have a worldwide distribution and have been reported on a variety of host species [2]. Economically important hosts include avocado, grapevine, pine, eucalyptus, cherimoya, conebushes, citrus, protea and oak [6-9].

### Control

The most effective control measures are based on improving growth conditions and employing proper cultural practice. Environmental and nutritional stresses should be avoided [8]. All dead trees, stumps and root debris should be removed and discarded [8]. Adjacent trees that may also be infected should also be removed. Care should be taken when irrigating orchards as excess irrigation should be avoided [8]. In grapevine, deterrents such as excavation around the root crown have proven effective [10]. Pruning and harvesting equipment should be disinfected between each tree by cleaning or wiping with disinfectant (70% ethanol or bleach solution diluted to 5%) [8]. In peach orchards, addition of fresh organic matter, especially woody high C:N ratio tree wastes aided in the survival in *Armillaria* infested soils [11]. In grapevine and stone fruit trees, sterol demethylation inhibiting fungicides can be effective in disease prevention [11-12].



Photos by David Rosen and Jack Kelly Clark, provided by Dr. Akif Eskalen and University of California, Agriculture & Natural Resources (UCANR).

### What to do?

1. Monitor your trees for wilt and decline, as well as the presence of cream-white mycelia under the bark, on the roots or in the soil.
2. Fill out a FABI diagnostic clinic form, available at <https://www.fabinet.up.ac.za/index.php/hosted-sites/diagnostic-clinic> and send to [diagnostic.clinic@fabi.up.ac.za](mailto:diagnostic.clinic@fabi.up.ac.za).
3. Collect samples from the trunk (bark) and roots, package separately in brown paper bags with a wet paper towel in each, place in a crate/polystyrene box and send to the FABI diagnostic clinic.

### Contact Address

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### References

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