

Phytophthium root rot of avocado caused by *Phytophthium vexans*

Fact Sheet (February 2025)

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Background

The genus *Phytophthium* was established in 2015 after molecular evidence confirmed its distinction from *Pythium*¹. Currently, it comprises 18 officially recognized species, including *Phytophthium vexans*. Morphologically, it exhibits traits that are an intermediate between *Pythium* and *Phytophthora*, making accurate identification of these genera more challenging¹. Studies conducted internationally indicate that the impact of *Pp. vexans* on root rot varies widely depending on the specific strain². Some isolates cause minimal disease, while others can be as aggressive as *Phytophthora cinnamomi*².

Symptoms

Infected feeder roots are black, firm and brittle compared to suberized healthy roots and the rot eventually progresses into larger roots (Fig. A)². The entire root system may be invaded, and feeder root tips may be absent or few (Fig. A). Other symptoms include yellowing (Fig. B) and drooping of leaves (Fig. C), rapid leaf drop, or leaves remain attached to the plant, followed by rapid tree death (Fig. D). It can be difficult to distinguish between *Phytophthium* root rot and *Phytophthora* root rot based on symptoms alone.

Known Hosts

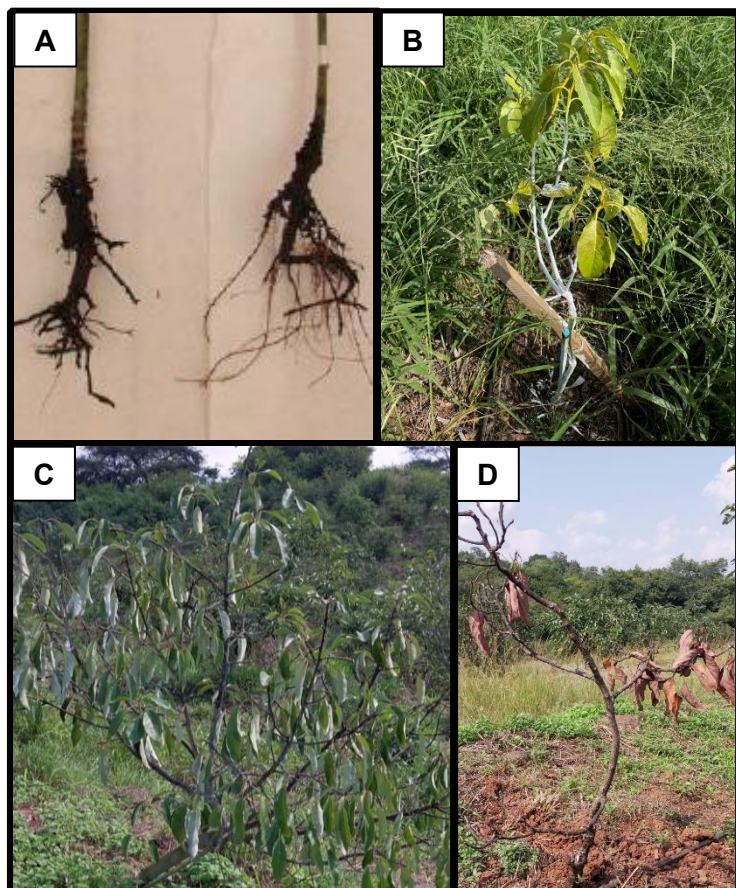
This pathogen has a world-wide distribution with a wide host range including kiwi, cashew, potato, apple, pear, cotton, rubber tree, eucalyptus, pine³.

Control

To effectively manage *Phytophthium* root rot, it is advisable to adopt the principle of minimizing initial inoculum in nursery seedlings, preventing introductions, and controlling the growth rates of pathogens⁴. Various practices such as using pathogen-free cuttings, seedlings, using clean or disinfected irrigation water, and avoiding standing water in production areas could limit the introduction and reduce the primary inoculum⁴. Disinfection of irrigation water using various approaches such as chlorination, ozonation and UV-C radiation is possible⁴. Panth et al. (2021) verified that drench applications of the fungicides pyraclostrobin, pyraclostrobin and boscalid, oxathiapiprolin, and mefenoxam were able to significantly suppress the root rot disease caused by *Pp. vexans* on infected ornamental plants (maple and ginkgo)⁴.

What to do?

1. Monitor your trees for dieback, cankers and/or root rot.
2. Visit the ARP Disease clinic website for more fact sheets and instructions on sampling.
3. Fill out a FABI diagnostic clinic form, available at <https://www.fabinet.up.ac.za/index.php/specialprojects/diagnostic-clinic>



A: Picture of avocado roots infected with *Pp. vexans*². B-D: Other symptoms often observed with *Pp. vexans* infection (photos from ARP Disease clinic archive).

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References

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2. Rodriguez-Padron, C., Siverio, F., Perez-Sierra, A. and Rodriguez, A., 2018. Isolation and pathogenicity of *Phytophthora* species and *Phytophthium vexans* recovered from avocado orchards in the Canary Islands, including *Phytophthora niederhauserii* as a new pathogen of avocado. *Phytopathologia Mediterranea*, 57(1), pp.89-106.
3. Ghimire, B. and Baysal-Gurel, F., 2023. A diagnostic guide to *Phytophthium helicoides* and *Phytophthium vexans* causing root and crown rot diseases. *Plant Health Progress*, 24(4), pp.527-538.
4. Baysal-Gurel, F. and Ghimire, B., 2023. Impact of *Phytophthium vexans* on plant health: Hosts, symptoms, detection, and management. *Plant Health Cases*, (2023), p. phcs20230019.