

Sunblotch disease of avocado caused by *Avocado sunblotch viroid* (ASBVd)

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Background

Avocado sunblotch is a disease caused by *Avocado sunblotch viroid* (ASBVd), first observed in California, USA, in 1914, and officially described in 1928 [1, 2]. The causal agent of this disease was only identified to be a viroid in 1979 [3], though the sunblotch symptoms were observed in South African orchards as early as 1954 [4]. Presence of the viroid was officially recorded in South Africa in 1983 [5], and currently it is known to be present in orchards in Australia, Israel, Ghana, Mexico, Peru, Spain, Venezuela and the United States of America [6].

Symptoms

The disease is characterized by symptoms which were originally attributed to sunburn [1]; these symptoms include the formation of coloured, sunken lesions on avocado fruit (Fig. A), discoloured streaks on young stems (Fig. B), and discolouration and malformation of leaves (Fig. C). While the fruit symptoms are the most characteristic of the disease, discoloured stems or the cracking of bark on mature trees (Fig. D) are more often observed in the field [6, 7]. Infected trees may also remain symptomless for long periods of time. These symptomless carrier trees will not display any of the characteristic visible symptoms, but they have been shown in some cases to have reduced fruit yield, with a sprawling growth habit, altered flowering and fruit set, and/or reduced canopy [6].

Biology

Transmission of the viroid is achieved primarily by grafting – either during the grafting of propagative material in avocado nurseries [8], or by the formation of natural root grafts between avocado trees in orchards [2]. Additional pathways of transmission include the use of contaminated nurse seed during propagation [9], the use of contaminated tools and equipment in avocado orchards [10], and pollination of avocado flowers from infected trees [11].

Known Hosts

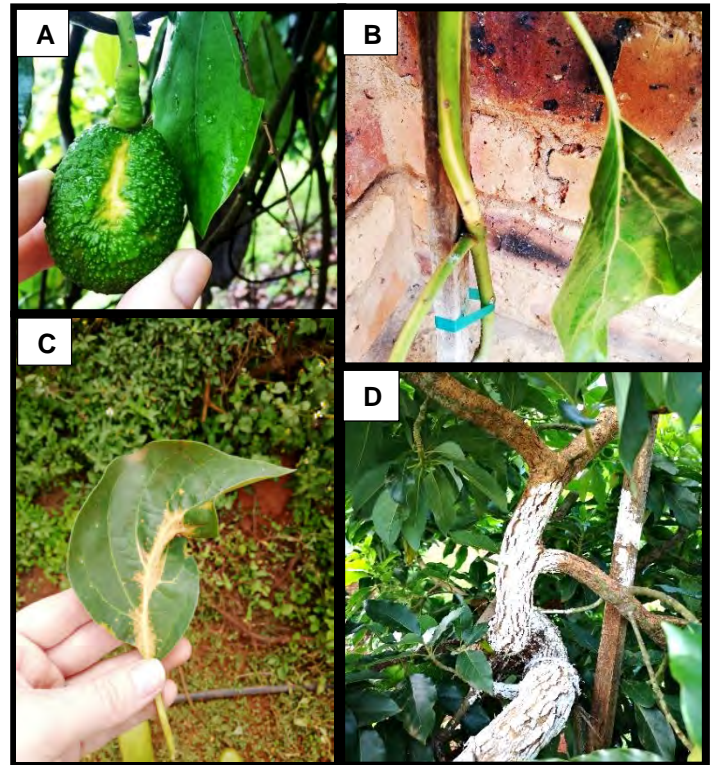
Avocado remains the only natural host of the viroid discovered to date, though infection of other members of the Lauraceae family (*Persea schiedeana*, *Ocotea bullata* and *Cinnamomum camphora*) has been experimentally demonstrated [12].

Control

There are no methods to eradicate the viroid once host plants become infected. Current strategies to manage the disease involve the use of viroid-free propagative material in avocado nurseries, the sanitization of harvesting and pruning tools in the orchards, and the removal of infected trees once they are positively identified [6].

Diagnostic clinic

The ARP disease clinic does not screen samples for ASBVd. To have trees tested for ASBVd, please contact the Agricultural Research Council of South Africa (ARC-Tropical and Subtropical Crops) or a private testing facility (QMS Foodtech (restech@qmslab.com)).



Pictures provided by Delney Nortje, Westfalia Technological Services, and Melissa Joubert.

What to do?

1. Monitor your trees for sunblotch symptoms on fruits, stems, bark and leaves.
2. Sterilise pruning and cutting tools in 1% bleach to avoid mechanical transmission between trees.
3. Should a tree test positive for ASBVd, remove the tree immediately, and do not replant in the same space until all debris has been removed/decomposed. Monitor all trees surrounding the ASBVd-positive tree for sunblotch symptoms in the following years.

References

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