

AVOCADOES: AVOCADO SUNBLOTCH DISEASE (ASBD)



CAUSAL ORGANISM

Avocado sunblotch disease (ASBD), caused by *Avocado sunblotch viroid* (ASBVd), is one of the important diseases of avocado worldwide that affects yield and quality.

PLANT PARTS AFFECTED

ASBVd has a narrow host range restricted to family *Lauraceae*, *Persia americana* species is the only natural host. Typical symptoms are found on leaves, fruit and bark of the tree, however, some trees do not display any visible symptoms and these are referred to as symptomless carrier trees.

SYMPTOMS

Characteristic symptoms are displayed on the young green stem, leaves and the fruits of the infected trees.

Stem symptoms: The symptoms appear as yellow or colourless sometimes reddish sunken longitudinal streaks on the green stems of young growth. On the older trees, the trunk usually develop rectangular cracking, also referred to as alligator bark, this is one of the common ASBV symptoms on the field and this symptom is of value in the diagnoses of ASBV

Fruit symptoms: ASBVd fruit symptoms are caused anatomical and chemical changes in the structure of the exocarp and mesocarp cells which results from cellular disorganisation, accumulation of phenolic compounds in the cytoplasm and cell walls and reduction in cytoplasmic content leading to cell collapse and death. Fruits develop streaks similar to those on the stem, depressed streaks with yellow or pink colour, which reduces fruit marketability. Streaks extend from the stem end to the entire fruit, sometime fruits appear small and misshapen.

Leaf symptoms: Leaf symptoms are expressed as white/yellow variegation and bleaching of the leaves, however, these are very rare in the field. The symptoms are associated with three ASBVd variants namely ASBVd-B associated with bleached symptoms, ASBVd-V associated with variegation and ASBVd-SC associated with symptomless carriers.



TRANSMISSION

The use of infected propagative material is the most important mode of spreading ASBD. ASBD can be transmitted via seed from the infected tree used for propagative rootstock, scion used for grafting and via root grafts and pollen. ASBVd can be transmitted on sap-contaminated pruning blades, injection material and harvesting clippers and care should be taken to disinfect tools

DISEASE MANAGEMENT STRATEGIES

It is important to apply the following best practices:

- Use source trees from reputable nurseries with proven indexing records
- Infected trees should be removed immediately
- Avoid mechanical transmission: pruning tools, injecting equipment and harvesting implements should be thoroughly disinfected with 1% active ingredient of a commercial bleach (sodium hypochloride) solution.

SAMPLING STRATEGIES FOR VIROID INDEXING

Currently, there is an option to send individual trees for indexing or to send pooled leaf samples. The pooling of samples is effective when there is a requirement to determine the status of an orchard or mother block. If a pooled sample then tests positive, individual trees of the pooled sample should be tested.

Proposed sampling protocol to increase representation of each tree per sample:

- Sample from all main branches of a tree
- Pool seven leaves from three trees for a pooled sample to have a total of 21 leaves per sample or collect 20 leaves from individual trees.
- Propagation material should be screened as individual samples, especially seed trees.

CONCLUSION

In conclusion, ASBVd is a threat to avocado production in South Africa, but with the proposed disease management strategies, the spread of ASBVd can be limited. Indexing of propagation material is extremely important and correct sampling protocols should be followed. Care should be taken to avoid ASBVd spread by tools and harvesting equipment. Infected plants should be removed immediately from orchards, especially the symptomless carrier trees that can act as sources of transmission between trees. ASBVd infected trees will have decreased yields yearly and keeping these trees in orchards will cause economic losses over years.



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