Kenya Avocado Industry Support Programme (KAISP)

Technical Note 3: White spot postharvest rot

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White spot (caused by various soil-borne fungi) is a postharvest disorder very commonly found on fruit after ripening for oil extraction. In some cases, almost all the fruit in a bin can be affected. It is not normally found in avocados that have been harvested and handled commercially for fresh fruit export.

Symptoms

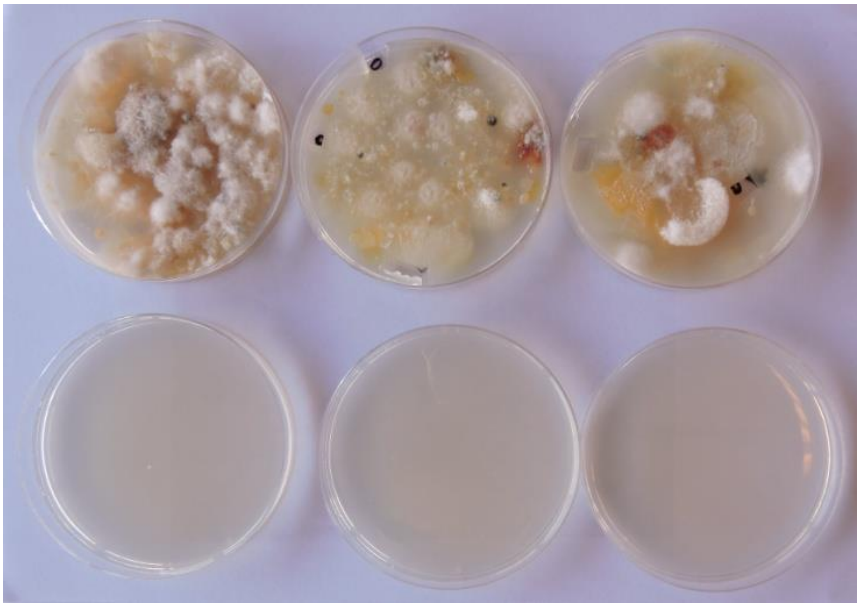
White spot occurs on the picking wounds of fruit that have been broken from the stem (snap-picked) leaving an open wound on the fruit. A dense mass of white fungal growth (mycelium) develops during storage and ripening for processing. Although predominantly white, other black and green moulds may be found on the wound site. Initially only the wound area is affected but soon the skin surrounding the wound turns brown and the affected area expands outwards sometimes covering up to a third of the fruit. Internally, a brown rot with a distinct margin between the diseased and healthy tissue extends into the flesh.

Figure 1 Internal rot extending from mould growth on wound.

Cause

Laboratory studies of the white mould showed that it contained a range of fungi, including *Geotrichum candidum,* various species of *Fusarium*, *Cladosporium* and *Penicillium*, and a number of other unidentified fungi. These species are not normally associated with postharvest rots of avocado. They are, however, very commonly found in soil.

Microscopic examination of the picking wounds of fruit that had been snap-picked and subjected to standard field handling showed that many the picking wounds were contaminated with soil particles. When the wounds of contaminated fruit were washed with a drop of sterile water and the liquid spread on culture medium in Petri dishes, various species of fungi, including those mentioned above, and bacteria were found. No micro-organisms were detected when freshly made wounds were similarly washed and plated.



Top row: Washings from picking wounds contaminated with soil in the field.

Bottom row. Washings from fresh, clean picking wounds

Figure 2. Washings from picking wounds.

The studies showed that the white spot disorder of ripened fruit is the result of contamination of picking wounds by soil at harvest. During the ripening and storage period, various soil microorganisms infect the exposed flesh, initially producing a mass of white mould on the wound and later invading the fruit tissue to cause a rot. White mould can also develop on skin wounds that have been contaminated with soil.

White mould does not develop on fruit that have been clipped from the tree leaving a short length of stalk attached as there is no exposed flesh that can be infected.

Placing harvested fruit on the soil or washing fruit in the field or packhouse to remove mud will contribute to the problem by exposing all open wounds to soil particles and soil-borne microorganisms.

Control

This disorder can be avoided in a number of ways:

1. **Avoid open harvest wounds on fruit**. Fruit should be clipped from the tree leaving approximately 5mm of stalk attached to the fruit. Clipping is not an option for a large proportion of fruit on tall trees where harvesters have only one hand available for picking; fruit that has been snap-picked should be excluded or rejected for export.

2. **Avoid soil contact by fruit**. Fruit should be lowered to the ground in baskets or bags (not dropped) and either accumulated on plastic tarpaulins or immediately transferred to clean crates.

3. **Do not wash fruit in the field or packhouse**. Muddy water will contaminate all exposed flesh with soil and soil-borne organisms.

4. **Ensure the period of storage and ripening of fruit is as short as possible**. The longer the period between harvest and processing, the greater the opportunity for white rots to develop.

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