

SYMPTOMS AND CAUSES

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DEPT MICROBIOLOGY AND PLANT PATHOLOGY

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There is a need for a more uniform interpretation of the various symptoms that appear on avocado fruit, leaves and twigs. Any abnormality, lesion or spot on the fruit is important and it should be correctly identified. Researchers who work on pre-harvest and post-harvest control are often in doubt about the cause of certain symptoms, because lenticel damage may look like *Cercospora* spot, cold damage or drought effects may be confused with *Dothiorella* / *Colletotrichum* complex etc.

Stem-end rot is a very common disease, especially during the early part of the season. *Thyronectria pseudotrichia* is mostly associated with stem-end rot, but there are many other fungal pathogens which may cause this disease viz. *Colletotrichum gloeosporioides*, *Dothiorella aromatica*, *Phomopsis perseae*, *Fusarium decemcellulare*, *Lasiodiplodia theobromae*, *Pestalotiopsis versicolor*, *Fusarium sambucinum*, *F. sotaní*, *Drechslera setarias* and *Rhizopus stolonifer*. (Darvas, 1982). Infection takes place in the field, through wounds, lenticels or direct. Infection also takes place through the picking wound (stem-end) especially during wet weather when the fruit is not fully mature.

C. gloeosporioides and *D. aromatica* are the most important causes of fruit decay apart from the stem-end complex. Infections take place in the field during the growing season, but the symptoms usually only appear after picking especially when the fruit gets soft.

Cercospora spot (*Pseudocercospora purpurea*) is spreading to new areas. It is a pre-harvest disease and spots do not increase on the fruit after picking.

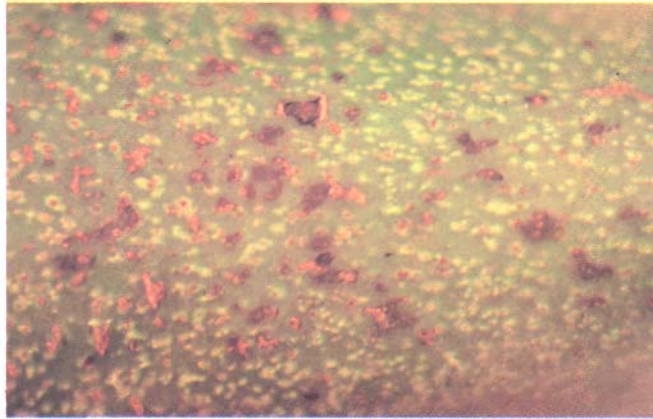
A disease which is under-estimated is Sooty blotch (*Akropeltopsis* sp) which spoils the appearance of the fruit. This disease can cause yield reduction by the reduction of photosynthesis of the leaves.

Of the non-pathogenic disorders zinc deficiency is causing serious yield reductions. This deficiency is common and wide spread and the symptoms are not always clear. However, when the deficiency is rectified, the trees respond remarkably and yields increase.

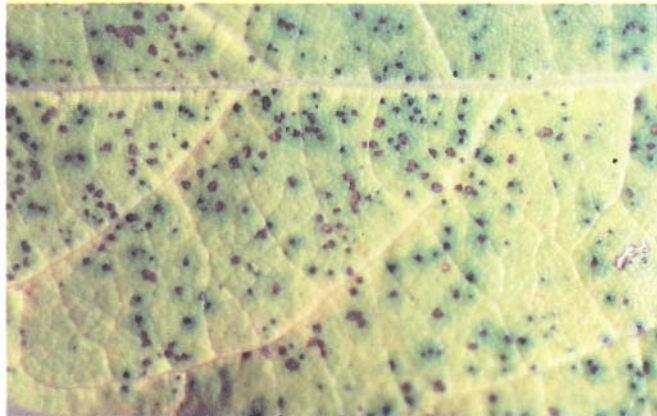
The following picture series will help to recognize the various diseases and disorders.



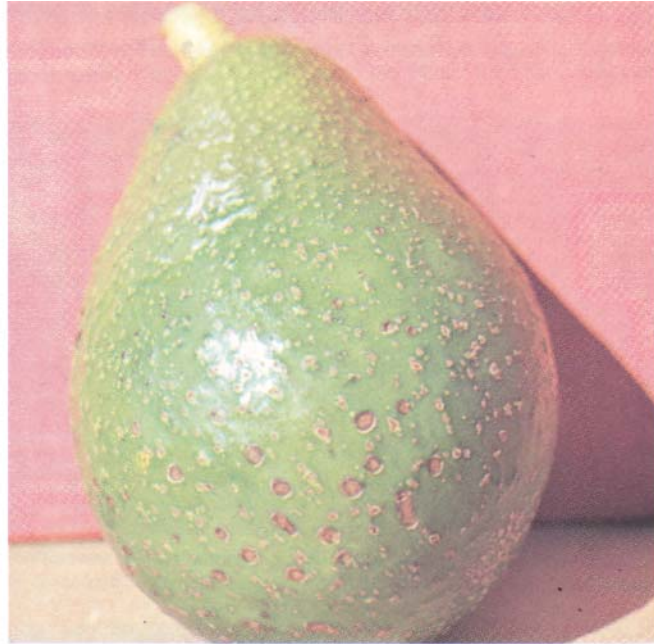
Cercospora spot disease caused by *Pseudocercospora purpurea*. Symptoms appear in the field and do not develop post-harvest.



Close-up of *Cercospora* spot disease on Fuerte fruit.



Small spots on Fuerte leaves caused by *Pseudocercospora purpurea*.



Phomopsis spot on Edranol fruit caused by *Phomopsis* sp.



Close-up of *Phomopsis* spot disease.



Sooty blotch on an avocado twig caused by an *Akaropeltopsis* sp. Note that this disease differs from sooty mould caused by *Capnodium* spp.



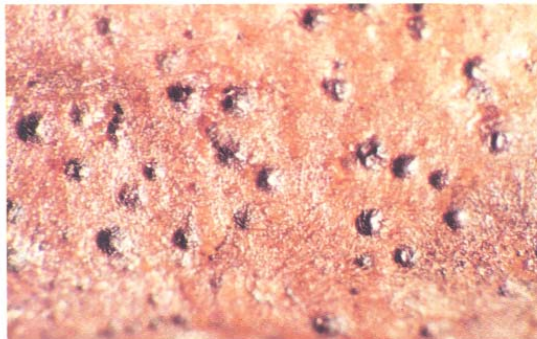
Close-up of the *Stibella* asexual form of *Thyronectria pseudotrachia*. These fruiting bodies are prevalent on dead twigs and branches.



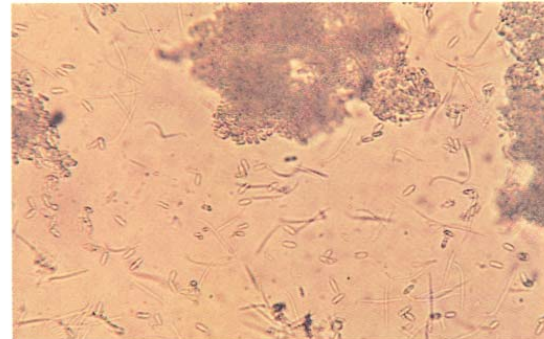
Sooty blotch on avocado leaves. The blotches become more pronounced as the leaves get older.



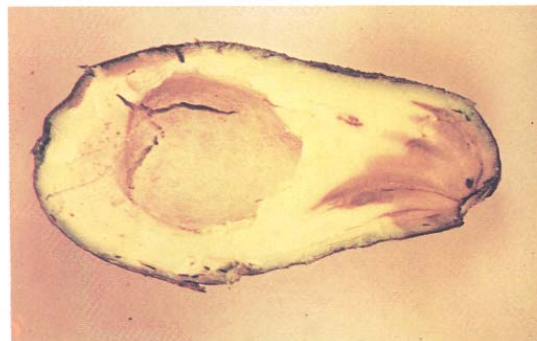
Stem-end rot pathogen *Lasiodiplodia theobromae*.



Ascstromata of *Akaropeltopsis* sp. as it appears in the lesions on the leaves and twigs.



Stem-end rot pathogen *Phomopsis perseae*.



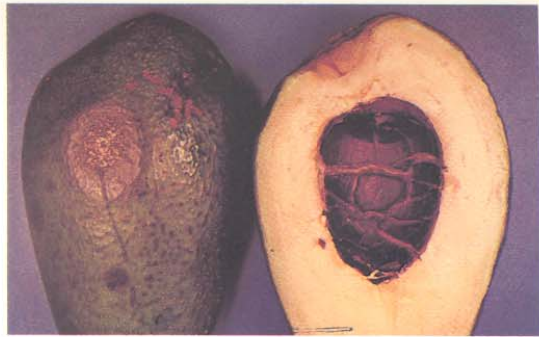
Stem-end rot on Fuerte fruit caused by *Thyronectria pseudotrachia*, a very common stem-end rot pathogen.



Stem-end rot pathogen *Pestalotiopsis versicolor*.



Stem-end rot and twig die-back pathogen *Fusarium decemcellulare*.



Anthracoze on Fuerte fruit with deep flesh penetration.



Stem-end rot and fruit rot pathogen *Rhizopus nigricans*.



The asexual form of the anthracnose pathogen, *Colletotrichum gloeosporioides*.



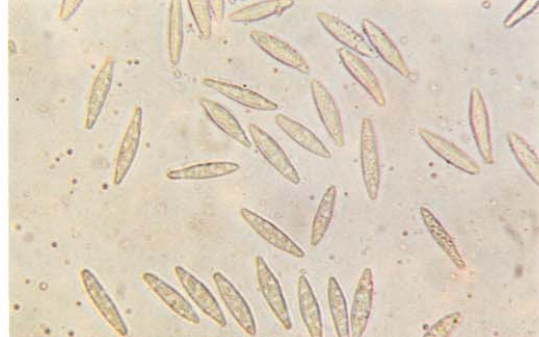
Anthracoze on Edranol fruit caused by *Colletotrichum gloeosporioides*.



Dothiorella/Colletotrichum (D/C) complex fruit rot on Fuerte caused by *Dothiorella aromatica* and *Colletotrichum gloeosporioides*.



Stem-end rot and vascular blackening caused by *Colletotrichum gloeosporioides*. Vascular discolouration is not always associated with this pathogen.



The *Dothiorella* component of the D/C complex fruit rot, *Dothiorella aromatica*.



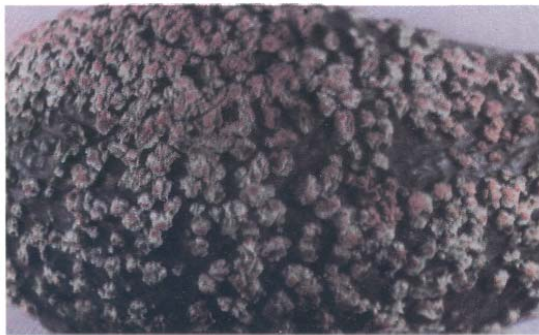
Symptoms of thrip damage around the stem-end.



Leaf symptoms of zinc deficiency.



Lenticel blossoming, a physiological disorder which occurs when freshly picked fruit are kept under high humidity.



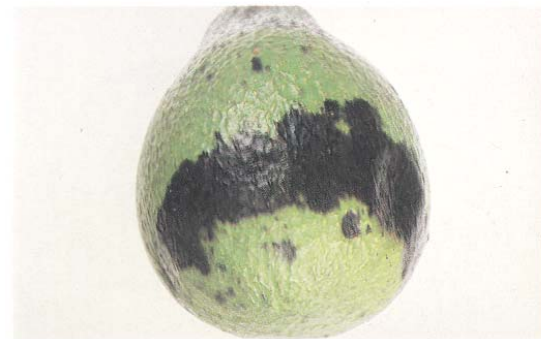
Close-up of lenticel blossoming.



Chlorine damage on avocado leaves. These symptoms usually occur during winter and spring when water with a high chlorine content is used for irrigation.



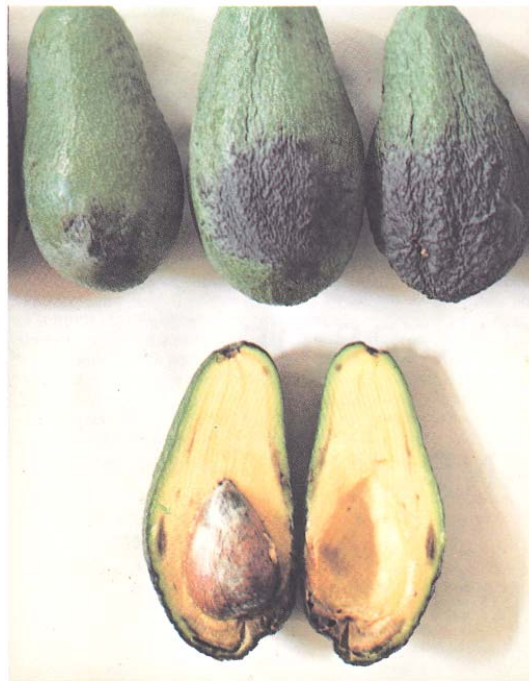
Leaf symptoms of zinc deficiency.



Cold and mechanical damage on the fruit. The shape of the lesions may vary considerably.



Sunburn on Fuerte fruit.



Drought symptoms on mature fruit where trees have received no irrigation for four months prior to picking. Note the necrotic lesions on the cheeks of the fruit and the corkiness at the blossom-end.



Shrinkage of Edranol fruit. After picking Edranol loses up to 17% of its mass due to loss of water.

REFERENCES:

DARVAS, J M 1982 Etiology and control of some fruit diseases of avocado (*Persea Americana* Mill) at Westfalia Estate, D. SC-thesis, University of Pretoria, 136 pp.