

Figures 1: A, B, C



A



B

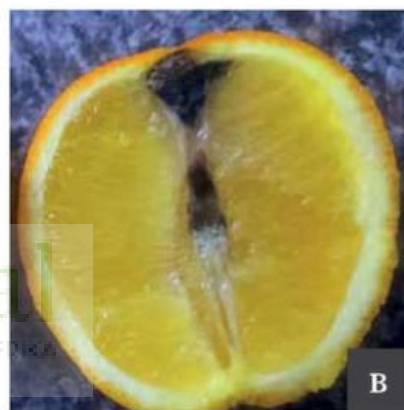


C

Figures 2: A, B



A



B

Figures 3: A, B



A



B

Figures 4: A, B



A



B

Getting to know your citrus postharvest diseases

LATENT PATHOGENS

C. Savage, W. du Plooy and L. Mamba

Next: Getting to know your postharvest diseases: cosmetic pathogens



Latent pathogens are disease causing agents that infect early on during the development of citrus fruit, but do not cause any decay until the fruit starts to mature. They are called “latent” because they lie dormant and only appear later when conditions are suitable. The main latent pathogens that affect citrus postharvest

are *Diplodia*, *Alternaria*, *Colletotrichum* (anthracnose) and *Phomopsis*. When we speak of them, we use the causal pathogen name (e.g. *diplodia*) or symptom (e.g. anthracnose) to identify them.

Identifying latent pathogens?

Some latent pathogens are easy to identify and others nearly impossible. For the four most common ones, *Diplodia*, *Alternaria*, *Colletotrichum* (causing anthracnose) and *Phomopsis*, the typical symptoms are usually easy to identify.

Diplodia: This is easiest to see on lemons where the typical brown finger marks are usually clear (Fig 1A). When decay is very advanced, there is a dark ooze (Fig 1B) or a complete coverage that becomes silvery and almost translucent (Fig 1C).

Alternaria: This fungus manifests in three forms, namely stem end rot, black spot, and core rot. Stem end and black spot (Fig 2A) are easy to notice as black, usually circular rot on the surface of the fruit. *Alternaria* core rot (Fig 2B) is only easy to identify once the fruit is cut open and the black, rotten core is revealed, while the outside of the fruit often looks perfect.

Collectotrichum: The easiest symptom of anthracnose to identify is the dry, silvery or brown leathery skin of the rind (Fig 3A and B). Sometimes the disease shows as brown spots, and those are difficult to identify conclusively compared to other brown rots or rind defects.

Phomopsis: At first it looks like brown rot, but the sunken edge is a dead giveaway. It can cover the whole fruit (Fig 4A), or be present in patches (Fig 4B).

Stop the rot!

In most cases there is very little that the packhouse can do to control latent pathogens. In fact, symptoms usually don't appear until the fruit is packed and shipped. Keeping retention or shelf life samples are an excellent way that the packhouse can be forewarned about latent pathogens. Packhouses that apply thiabendazole both during pre-packhouse drenching and waxing, give the fruit some chemical control. It is believed that application of the plant growth regulator, 2,4-D, also helps as it keeps the button green and intact. A healthy calyx protects the fruit from latent pathogens for longer. However, the best practice in controlling latent pathogens happens in the orchard. Clearing out of season fruit, particularly decayed and fallen fruit, will reduce inoculum. And pruning out all deadwood from the trees will stop the latent pathogens from entering the fruit. In some rare cases, a pre-harvest spray can also help, such as for *Alternaria* where a spray at petal fall can control the disease. If *Alternaria* was a problem during the current season, then a spray before the next season is highly recommended. 🍋



W. du Plooy



C. Savage



L. Mamba