



Sour rot and Brown rot warnings

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Recent heavy rains in the northern parts of South Africa have created ideal conditions for higher than normal levels of sour rot and brown rot decay.

Orchard management

Meaningful control of both these decays will need to occur in the orchard.

1. Orchard sanitation

- a. All decayed and injured fruit must be removed from the orchard and destroyed. **By removing decayed fruit, the source of inoculum is lowered.**
- b. A sanitation team should, **ON THE DAY OF HARVEST**, move ahead of the harvesting team to remove all fruit that should not go to the packhouse or near export fruit i.e. rotten, injured, dirty, on the ground etc.

2. Skirt trees

- a. Low hanging fruit, or those covered in mud are at high risk of decay due to contact with the soil pathogens causing sour and brown rot.
- b. If trees are skirted low or not skirted at all, do not export the skirt fruit as they are at **high risk** of decay during transit. Infected sour and brown rot fruit are able to spread decay in the carton.
- c. Remove low hanging fruit and **DO NOT** put them onto the line with your export fruit.

3. Careful harvesting

- a. Decay will set in easier and quicker if the fruit is injured. Training of harvesting teams is imperative, and the importance to not injure the fruit during picking, must be highlighted.
- b. **NO FRUIT** should be harvested if it is decayed, injured, or lying on the ground. If the orchard has a high level of decayed/injured/fallen fruit then that orchard is a high risk/poorly managed one and fruit from those orchards should not be exported. Excessively dirty fruit e.g. splashed with mud, should also not be placed in the harvesting bins.
- c. Spot checks should be performed to ensure compliance to careful picking.

4. Control of insects

- a. Sour rot and brown rot pathogens occur in the soil, which is why low hanging fruit are at risk. However in years of high decay, adult fruit flies and vinegar flies feeding on decayed fruit can spread the disease higher into the tree.

5. Spray for **brown rot**

- a. There are registered pre-harvest chemicals, including systemic phosphonate products, contact fungicides e.g. copper and mancozeb, which are very successful at controlling brown rot. The contact fungicides need to be repeated if it has rained within a week of spraying. Consult Cutting Edge No. 233 for options and the specific product labels for dosages and registered applications. Also take into account market requirements and maximum residue levels (MRLs) when selecting a product.

Packhouse management

Packhouse control of sour and brown rot should be seen as a secondary method only and not the primary method of control.

1. Packhouse sanitation

- a. All floors and surfaces to be cleaned of fallen fruit and debris and sanitised in an ongoing manner, this should occur throughout the day with attention to cleaning the line during every break time.
- b. Any decayed or damaged fruit that the harvest team has accidentally picked or that comes out of degreening should be sorted out on the pre-sorting line to prevent these fruit from entering the packhouse/packline.
- c. The production managers/farm/orchard managers should inform the packhouse of problem orchards prior to fruit arriving at the packhouse. This will give the packhouse manager sufficient warning to place more graders as well as potentially divert fruit for processing or local market and will prevent contamination of the packhouse by already infected fruit.
- d. All rotten fruit that has been graded out must be removed from the packhouse as soon as possible – this includes juice/factory bin fruit.
- e. Recirculating systems – especially the drench and tip water – must be sanitised as sour rot and brown rot spores from the orchard will accumulate. Peracetic acids (PAAs) are compatible with our aqueous



fungicides but check the concentration often – it dissipates over time and can burn the fruit if too high. Calcium Hypochlorite (chlorine) can be used in systems where fungicides are not added, such as the wash or high pressure spray.

- f. Harvest bins should be washed, sanitised and rinsed well before being sent back into the orchard.

2. Fungicide control of sour rot

- a. If your markets allow guazatine, then use it as it is the best fungicide against sour rot.
- b. If your markets allow propiconazole, use it as it is effective on young infections.
 - i. Please refer to Cutting Edge No 314 on cleaning propiconazole off your line if you pack for the EU.
- c. If neither guazatine nor propiconazole is allowed then there are no fungicide options so alternative sanitation and control methods will need to be used.

3. Sanitation and alternative control of sour rot

- a. Plant based, registered products like Sani D/Sani-D Plus or Ecotizer (Clove oil) have shown to work against sour rot spores and can be used in the packhouse
- b. IMaculate applied in the wax is an Imazalil EC product with a GRAS chemical that has some action against sour rot.



Waarskuwings oor suurvrot en bruinvrot

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Onlangse swaar reën in veral die noordelike dele van Suid-Afrika het ideale toestande geskep vir hoër as normale vlakke van suurvrot en bruinvrot infeksies.

Boordbestuur

Betekenisvolle beheer van albei hierdie infeksies begin in die boord.

1. Boord-sanitasie

- Alle vrugte wat geval het en/of beseer is moet uit die boord verwyder word en vernietig word. **Deur vrugte wat geval het te verwyder, word die bron van inokulum verlaag.**
- 'n Sanitasiespan moet voor die oesspan beweeg om alle vrugte te verwyder wat nie na die pakhuis of naby uitvoervrugte **mag gaan nie** (geïnfekteerde, bederfde-, beseerde-, vuil vrugte, asook vrugte wat op die grond lê).

2. Soomsnoei / "Skirt" bome

- Laaghangende vrugte, of wat met modder bedek is, het 'n groter risiko tot infeksie van suurvrot en bruinvrot.
- Indien bome nie geskirt is en baie laaghangende vrugte het, behoort hierdie vrugte nie vir uitvoer oorweeg te word nie.
- Verwyder laaghangende vrugte voortydig en **MOET NIE** die vrugte op die paklyn plaas of uitvoer nie.

3. Noukeurige oespraktyke

- Bederf sal makliker intree as die vrugte beseer word. Opleiding van oesspanne is noodsaaklik, en die belangrikheid om die vrugte nie te beseer tydens die pluk nie, moet beklemtoon word.
- GEEN VRUGTE wat beseer is of wat op die grond geval het mag geoes word nie. Boorde met 'n hoë hoeveelheid besmette, beseerde vrugte of vrugte wat geval het, is 'n hoë risiko. Vrugte uit hierdie boorde moet nie uitgevoer word nie. Oormatige vuil vrugte bv. met modder bespat, moet ook nie in die plukkratte geplaas word nie.

- Lukrake kontrole moet deurentyd uitgevoer word om te verseker dat die oesspanne vrugte noukeurig oes.

4. Beheer van insekte

- Suurvrot- en bruinvrotpatogene kom in die grond voor, en daarom is laaghangende vrugte 'n risiko. In jare van hoë bederf kan vrugtevlieë en asynvlieë wat op besmette/bederfde vrugte voed, die siekte hoër in die boom versprei.

5. Bruinvrot beheer

- Geregistreerde voor-oes chemikalieë is beskikbaar: sistemiese fosfonaat-produkte en kontakswamdoders, bv. koper en mankoseb, wat baie suksesvol vir die bestryding van bruinvrot gebruik kan word. Aanwending van die kontak swamdoders moet herhaal word as dit binne 'n week na bespuiting reën. Raadpleeg Cutting Edge Nr. 233 vir opsies en die spesifieke produketikette vir dosisse en geregistreerde toepassings. Neem ook markvereistes en maksimum residu-vlakke (MRL's) in ag wanneer u 'n produk kies.

Pakhuisbestuur

Pakhuisbeheer van suur- en bruinvrot moet slegs as 'n sekondêre metode gesien word en nie as die primêre metode van beheer nie.

1. Pakhuis sanitasie

- Al die vloere en oppervlaktes moet gereeld gedurende die dag gewas en saniteer word van besmette vrugte, takkies en blare, die paklyn moet gedurende elke breuk skoongemaak word van alle vrugte.
- Bederfde of beskadigde vrugte wat die oesspan per ongeluk gepluk het, of wat uit ontgroening kom, moet op die voorsorteerlyn uitgehaal word om te voorkom dat dit in die pakhuis of op die paklyn beland.
- Produksiebestuurders / plaas- / boordbestuurders moet die pakhuis in kennis stel van potensiële probleemvrugte voordat dit by die pakhuis aankom, sodat alternatiewe opsies vir hierdie vrugte betyds oorweeg kan word, en te verhoed dat die paklyne besmet word.
- Alle bederfde vrugte moet so spoedig moontlik uit die pakhuis verwyder word - dit sluit sap / fabrieksvrugte in.
- Hersirkulasiesisteme - veral die dompelbad en tipwater - moet ontsmet



word, aangesien suurvrot- en bruinvrot-spore vanuit die boord sal opbou in die sisteme. Perasynsure (PAA's) is verenigbaar met ons swamdoders, maar die konsentrasies moet gereeld gemonitor word – beide produkte se dosisse kan mettertyd verdwyn of indien die konsentrasies te hoog is kan dit die vrugte brand. Kalsiumhipochloried (chloor) kan gebruik word in stelsels waar geen swamdoders bygevoeg word nie, soos was- of hoëdrukbespuiting.

- f. Plukkratte moet goed gewas en gesaniteer word voordat dit weer na die boord gestuur word.

2. Swamdoderbestryding van suurvrot

- a. As markte guazatine toelaat, kan dit gebruik word, aangesien dit die effektiëste swamdoder teen suurvrot is.
- b. Indien Propikonazool gebruik kan word na markte, sal dit effektië wees teen jong infeksies.
 - i. Raadpleeg Snykant Nr. 314 oor die skoonmaak van propikonazool indien vir die EU gepak word.
- c. Indien guazatine of propikonazool nie toelaatbaar is nie, is daar geen swamdoder-opsies beskikbaar nie, daarom moet alternatiewe bestuurspraktyke toegepas word.

3. Sanitasie en alternatiewe bestryding van suurvrot

- a. Plantgebaseerde, geregistreerde produkte soos Sani D / Sani-D Plus of Ecotizer (naeltjie olie) het getoon dat dit effektië is teen suurvrotspore en kan wel in die pakhuis gebruik word.
- b. IMaculate toegedien in die waks is 'n Imazalil EC-produk met 'n GRAS-chemikalië wat effek teen suurvrot is.