

BBS MANAGEMENT

PREVENT. IDENTIFY. CONTROL



The Simple Truth.

You cannot get rid of Bacterial Black Spot- BBS for short- in tropical environments. You just have to work very hard to control it & keep infection levels to a minimum.

To do this requires a few steps with lots of activities being done right! And because it's spread from farm to farm, you'll need to work together to succeed.

What do you need to do?

Prevent.
Identify.
Control.



Prevent.

Planting Material:

- Use disease-free planting material from a professional nursery.
- Check that they use certified root stock and budwood (scions) from disease-free trees.
- The nursery should not be close to orchards or fruit bearing trees. Avoid those that are close to mango, cashew, citrus orchards & if they are be extra careful.
- BBS is easily spread by water. Check that irrigation at the nursery is not from an open water source that could be contaminated.
- Remember that specific trees need to be chosen for rootstock- usually a local variety. Avoid using Kent, Keitt or Palmer as root stock.

Screening

- Plant windbreaks around your orchard that provide a dense screen.
- Select trees that do not bare fruit. These can become hosts for BBS. Cashew or palm oil trees are thus not good options.
- Avoid trees that take up a lot of space or use lots of water. Acacia might be good option to consider.

Mulching & Packaging

- Using leaves as padding when transporting mango is NOT recommended. Leaves can be a source of contamination. If disease free, they can rather be used as mulch on the orchard and not moved around.

Transporting & Tools

- Make sure that trucks, picking crates, and pruning tools are properly cleaned before arriving in the orchard.
- Be especially careful if they have been on other farms recently.
- Avoid contamination at the packhouse or factory. Cross contamination can occur as fruit moves from orchard to orchard. Check fruit and ensure that crates and packing material have been cleaned and are free from contamination.

Pruning & Painting

- Prune your trees regularly and keep them small so they are easy to cover when you spray. A maximum of 4 meters is a good rule.
- Trees should not touch other trees in the next row and branches should not touch the ground.
- The canopy should be opened up so there is good air flow and lots of sunshine.
- Remove all dead wood from trees, such as dead branches and twigs which are easily infected.
- Paint stems to prevent sunburn. Adding a copper solution to the paint will also help to protect against BBS.

Clearing

- Old trees are more likely to be infected with bacteria and diseases. Remove these from the orchard or use them for top grafting.
- Clear fruit that falls from trees. They are a host for BBS, fruit-fly and other diseases.
- Clean the orchard completely after the last commercial harvest. Remember to clear all of the fruit.
- Keep the orchard free of weeds to improve airflow.



Identify.

Scouting

- Train staff to identify the signs of a BBS infection versus Anthracnose & other diseases.
- Chose a scouting captain- someone who is specifically tasked with regularly carrying out the "3 Point Check" described on the next page.

Harvest Checking

- The harvest period enables you to get a good view of the canopy. Spend some time checking the leaves and branches and especially the canopy.

The 3 point check for BBS

L.F.TB



LEAVES

- Raised Black Spots
- Yellow Halo



FRUIT

- Black Scabby Spots



TWIGS & BRANCHES

- Canker on twigs & branches



Control.

Chemical Control

- A copper fungicide is the only known way to prevent contamination.
- Your supplier will provide an accurate recommendation of how much and how often you should spray. A good rule that this should be done every 3-4 weeks from just after fruit set till the end of the season.
- The spray washes off in rain, so should be reapplied after a wet period.
- A sticking agent can be used during the rainy season to slow down the rate that the spray is washed off. This is usually a mild soap solution.

Manual Control

- Manually prune infected branches as you identify BBS.
- Step up your chemical spraying with a copper fungicide if you see signs of an infection.

Disposal

- Burn material from infected trees.
- Don't take it far from the orchard to prevent infecting others.

Equipment Cleaning

- Avoid further contamination by always properly cleaning equipment after pruning.
- You can use a rag that's been dipped in bleach, methylated spirits or strong alcohol.
- This is especially important where you are controlling the spread of BBS in an infected orchard.

Timing

- Avoid working in the Orchard when it is raining or when you are irrigating. This is especially important when removing infected material. Water helps to spread BBS!

Work Together

- Inform neighboring farms when BBS is identified on your farm, especially those downwind. You'll all need work together to slow the spread of this disease.



With Thanks

Many thanks to the South African Mango & Citrus farmers who so generously shared insights on how they tackle BBS.

Remember that to be successful at managing BBS you need to tailor this advice to your specific situation.