



MANGO BLOSSOM MALFORMATION FACT SHEET

Causal organism: *Fusarium mangiferae*

**Updated by: Andre Botha
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SPORE DEVELOPMENT AND SANITATION



Low levels of conidia present.
6,9 conidia per gram of inflorescence.



Low levels of conidia present.
15,5 conidia per gram of inflorescence.
Start to break out malformed flowers.



Spore numbers start to increase.
169 conidia per gram of inflorescence.
Break out all malformed flowers.



Peak in spore release, escalates dramatically.
2428 conidia per gram of inflorescence.
Malformed flowers should have been all broken out.



Spore numbers start to decrease.
1133 conidia per gram of inflorescence.
Still masses of spores present that can infect apical buds.

Photos: Maritha Schoeman

BREAK OUT FLOWERS 30-40 cm BEHIND THE PANICLE AND REMOVE FROM THE ORCHARD IMMEDIATELY TO BE BURNED, OR PLACE IN CLEAR PLASTIC BAGS AND LEAVE OUT IN THE SUN. DO NOT LEAVE MALFORMED FLOWERS ON THE ORCHARD FLOOR!

SANITATION REMAINS ONE OF THE MOST IMPORTANT PRACTICES IN COMBATTING BLOSSOM MALFORMATION. SPORES RELEASED FROM MALFORMED FLOWERS WILL IMPACT THE OCCURANCE OF MALFORMATION IN THE NEXT SEASON.



CHEMICAL CONTROL

CHEMICAL CONTROL SHOULD PART OF AN INTEGRATED APPROACH TO COMBAT THE DISEASE. SANITATION IS THE FOUNDATION OF A CONTROL PROGRAMME. CHEMICAL CONTROL IS A SUPPLIMENT TO SANITATION. MALFORMED FLOWERS MUST BE REMOVED BEFORE THE PEAK OF SPORULATION. THEREAFTER, CHEMICAL CONTROL MUST BE APPLIED TO PROTECT THE NEW FLUSH.

LIMA 400 SL

ACTIVE INGREDIENT / AKTIEWE BESTANDDEEL:

potassium phosphite:.....560 g/l

phosphorous acid equivalent: 400 g/l

Withholding periods: **20 days** before harvest.

SAMGA recommends **50 days** before harvest.

NB: Do not use LIMA on mangoes destined for the EU, as there is no EU MRL for phosphorous acid in mangoes.

DIRECTIONS FOR USE

Tank mixes with MEGAFOL, Mineral oils, Dimethoate, Wettable sulphur, Copper-containing products, high calcium containing products or highly alkaline products is however not recommended.

- Villa 51 (wetting agent) can be added if necessary. Villa 51 must be added last into the mixing tank, to avoid excessive foaming. Do not add Villa 51 if LIMA 400 SL is being mixed with an agricultural chemical that already contains a wetting agent.

- If LIMA 400 SL is used in combination with any other agricultural chemical, all WARNINGS, PRECAUTIONS and DIRECTIONS FOR USE, as indicated on that label, must be followed.

APPLICATION RATES

Start applications in September when the first spring flush is evident. Continue with applications monthly in October, November and if possible in December, depending on the “Withholding period” as specified.

An additional two to three (2 to 3) applications on the late summer / autumn flushes in March, April and May are required. Ensure complete coverage of the tree with each application

Mango blossom malformation (*Fusarium spp.*)

400 ml / 100 L water



STEM INJECTIONS

Please note that this treatment is NOT registered on mangoes yet.

Time of treatment: March to April, whenever there is new flush on the trees.

Chemical: Avoguard 500 SL (potassium phosphite)

Application: 40ml / tree once off.

Dosage: 10 ml Avoguard + 10 ml water

Use 4 syringes per tree of 10 ml each

Directions:

- Drill hole at a downward angle of 30 degrees into the tree 5 to 10 cm above the graft union.
- Administer the syringes under pressure with a stopper
- Please note that the penetration time will be quicker on warmer days due to better sap flow.
- On warm days it can take 20 min compared to 4 hours on cold days.
- Use syringes with off-center nozzles that are made for stem injections, as used in the Avocado industry.

Practical tips:

- **Do not** use on small trees; burn and damage to the stem will occur.
- You will need a team of 4 to 5 people to inject up to 1000 trees per day.



BLOSSOM MALFORMATION vs BUD MITE DAMAGE

Blossom malformation attacks mango inflorescences. Bud mite attacks axillary buds (at stem nodes).

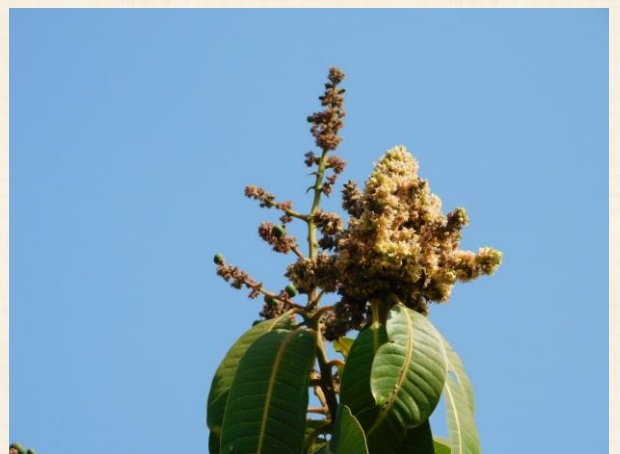
Bud mite damages leaves but the internodes develop normally (no restricted growth). In contrast, blossom malformation stunts internodal growth (cauliflower appearance).

Bud mites overwinter in infested nodes (flowers / vegetative growth / branches) – proper removal of ALL infested plant material can considerably reduce population levels.

BUD MITE INFECTION



BLOSSOM MALFORMATION





POSSIBLE COMBINATION OF FUSARIUM AND BUD MITE DAMAGE.

The literature suggests that there is a relationship between bud mite and *Fusarium* infection, in that the bud mite spreads the disease to a certain extent when feeding. Therefore, it is important that both are controlled simultaneously.

CONCLUSION:

Mango blossom malformation remains one of the most common and serious diseases on mangoes worldwide. Serious attention to its control is required. If left unattended, significant losses in yield could occur.

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