



Philabuster Recommendations

Keith Lesar (CRI-Nelspruit) &
Paul Fourie (CRI-Stellenbosch)

Resistance in *Penicillium* spp. to our most important post-harvest fungicide **imazalil** is on the increase. The first sign of green and blue mould resistance to imazalil was detected in the Western Cape production areas in 2000. Preliminary screenings for imazalil and guazatine resistance in *Penicillium* spp. at Katco and the University of Pretoria indicate elevated levels of resistance development. Further *in vitro* testing is under way to characterise resistance levels. *In vivo* trials with imazalil sensitive and resistant strains at Stellenbosch University indicated that resistant strains were not preventatively controlled by dip-treatments in up to 4x the recommended dosage, nor was sporulation inhibited.

A new post-harvest fungicide, **Philabuster** from Janssen Pharmaceutica (Belgium) was recently introduced into the citrus industry, **primarily** for the control of **sensitive** and **resistant** *Penicillium* biotypes. **Philabuster** is a 400 SC formulation made up of the two post-harvest fungicides **imazalil** (200 g/l) and **pyrimethanil** (200 g/l). These two fungicides are specific fungicides with different modes of action.

The single formulation of these two fungicides has been shown to have preventive, curative and **anti-sporulating** effects on the pathogen.

CRI has screened the efficacy of **Philabuster** and found the product to be effective in controlling infections of both sensitive spores and TBZ (thiabendazole), imazalil and guazatine-resistant *Penicillium* biotypes. **Philabuster** has finally been registered (L8220) as a drench or dip treatment.

An **MRL** of 10 mg/kg for pyrimethanil is now in place in all export markets except **Japan** (until further notice). The **MRL** for imazalil has not changed and remains at 5 mg/kg for all markets.

CRI recommendations for use of Philabuster

Based on the anti-resistance strategy advocated in Cutting Edge #63, the known presence of imazalil resistance in our citrus packhouses, as well as poor management of drench-application

systems, CRI strongly favours the application of **Philabuster** in the **hot water fungicide bath**.

Fungicide bath. For use of **Philabuster** in the hot water bath (max 35°C), this application must be **managed** correctly.

- Start dip treatments with a clean mixture of **Philabuster**. Ensure a uniform suspension of the ingredients before treating fruit.
- Expose the fruit in the bath to the **Philabuster**, ideally for 1-3 minutes.
- To ensure the correct concentration is maintained in the bath, a titration must be conducted 3-5 times per day. Top up the bath with **Philabuster** based on the titration results, as done with the imazalil titration. Concise records of all the results must be retained on file for reference purposes.
- Ideal size of "bath" is 1000 – 3000 l to treat a maximum of 60 - 120 tons fruit or 150 - 300 crates. Thereafter discard the remaining bath mixture, clean and **sanitise** the bath.
- Make up a new clean bath solution of **Philabuster** and continue as above.

N.B. AFTER PHILABUSTER HAS BEEN APPLIED IN THE PACKHOUSE BATH DIP TREATMENT, APPLY 2000 PPM IMAZALIL 500 EC IN THE WAX, AS WELL. THIS ADDITIONAL APPLICATION WILL ENSURE THE RETENTION OF THE CORRECT IMAZALIL RESIDUE LEVEL OF 2-3 PPM NEEDED FOR SPORULATION INHIBITION.

THE APPLICATION CONCENTRATION OF PHILABUSTER IN THE BATH IS 2.5l / 1000 l = 500 PPM IMAZALIL + 500 PPM PYRIMETHANIL

Bad management of the application of this new compound places the active ingredients under pressure and the development of, or increase in resistance to, the compounds. **Philabuster must be protected for the future of the citrus export industry.**

Packhouses that do not have hot water fungicide baths.

Packhouses that do not have a hot water fungicide bath must continue with the standard recommendations of applying the fungicides in the wax. **Philabuster** is not registered in a wax application.



Philabuster aanbevelings

Keith Lesar (CRI-Nelspruit) &
Paul Fourie (CRI-Stellenbosch)

Bestandheid van *Penicillium* spp. teen ons belangrikste na-oes swamdoder **imazalil** neem toe. Die eerste teken van groen- en blouskimmel bestandheid teen imazalil is tydens 2000 in die Weskaap waargeneem. Die voorlopige onledings vir imazalil en guazatine bestandheid teen *Penicillium* spp., deur Katco en die Universiteit van Pretoria, het verhoogde vlakke van bestandheid gewys. Verdere *in vitro* ontleding om die spesifieke weerstandsvlakke te bepaal is onder weg. *In vivo* proewe, met imazalil sensitiewe en bestande isolate by Stellenbosch Universiteit, het gewys dat die bestande isolaat nie voorkomend in doopbehandelings selfs teen 4x die aanbevole dosis beheer is nie, en sporulasie ook nie inhibeer is nie.

Die nuwe na-oes swamdoder, **Philabuster** vanaf Janssen Pharmaceutica (België) is onlangs in die sitrusbedryf in gebruik geneem, **hoofsaaklik** vir die beheer van **sensitiewe** en **bestande** *Penicillium* biotipes. **Philabuster** is 'n 400 SC formulase, bestaan uit die twee na-oes swamdoders **imazalil** (200 g/l) en **pyrimethanil** (200 g/l). Hierdie twee swamdoders het verskillende meganismes van werking.

Dit is gewys dat die mengsel-formulasie van hierdie twee swamdoders 'n voorkomende, genesend en **anti-sporulant** effek op die patogeen het.

CRI het die effektiwiteit van Philabuster geëvalueer en gewys dat die produk infeksie deur sensitiewe isolate asook TBZ- (tiabendasool), imazalil- en guazatine-bestande *Penicillium* biotipes beheer.

Philabuster is as 'n storting ("drench") of 'n doopbehandeling geregistreer (L8220).

'n **MRV** van 10 mg/kg vir pyrimethanil is van krag in alle uitvoermarkte behalwe **Japan** (tot verdere kennis). Die **MRV** vir imazalil het nie verander nie en bly 5 mg/kg vir alle markte.

CRI aanbevelings vir die gebruik van Philabuster

CRI ondersteun die aanwending van **Philabuster** in die **warm water swamdoderbad**, gebaseer op die teenweerstandstrategie wat in Snykant #63 aanbeveel is, die teenwoordigheid van imazalil bestandheid in ons sitruspakhuse, en die swak bestuur van storting ("drench") aanwendingstelsels.

Swamdoderbad. Die gebruik van Philabuster in die warm water bad (maksimum 35°C) moet reg **bestuur** word.

Begin die doopbehandelings met 'n skoon mengsel van Philabuster. Maak seker van 'n deeglike, egalige suspensie van die aktiewe bestanddele voor die vrugte behandel word.

- Stel die vrugte aan Philabuster vir ideaal 1-3 minute in die bad bloot.
- Maak seker dat die regte konsentrasie in die bad gehandhaaf word deur titrasies 3-5 keer per dag uit te voer. Vul die bad aan volgens die titrasie resultate, soos met die imazalil titrasie. Goeie rekordhouding van al die resultate moet vir verwysingsdoeleindes op lêer gehou word.
- Die ideale grootte van die "bad" is 1000 - 3000l om 'n maksimum van 60 - 120 ton fruit (of 150 - 300 kratte) te behandel. Verwyder daarna die oorblywende bad mengsel, maak die bad skoon en **ontsmet** die bad.
- Maak 'n nuwe skoon mengsel van Philabuster op en begin weer behandel soos bo aangedui.

Let Wel. NA DIE AANWENDING VAN PHILABUSTER IN DIE SWAMDODERBAD DOOPBEHANDELING, WEND 2000 PPM IMAZALIL 500 EC IN DIE WAKS OOK AAN. HIERDIE ADDISIONELE AANWENDING SAL VOORSIENING MAAK VIR DIE BEHOUD VAN DIE REGTE IMAZALIL RESIDUVLAK VAN 2-3 DPM OP DIE VRUGTE OM SPORULASIE INHIBISIE TE HANDHAAF.

DIE AANWENDINGSKONSENTRASIE VAN PHILABUSTER IN DIE BAD IS 2.5l / 1000l = 500 DPM IMAZALIL + 500 DPM PYRIMETHANIL.

Swak bestuur van die aanwending van hierdie nuwe produk plaas die aktiewe bestanddele onder druk en dit veroorsaak die ontwikkeling of vermeerdering van bestandheid teen die twee



middels. **Philabuster moet, vir die toekoms van die sitrus uitvoerbedryf, beskerm word.**

Pakhuse wat nie warm water baddens gebruik nie.

Pakhuse wat nie warm water swamdoderbaddens het nie moet met die standaard aanbevelings vir die aanwending van die swamdoders in die waks volhou. **Philabuster** is nie in die waks aanwending geregistreer nie.