

# BIOPEST IMPROVES EFFICACY OF NPV APPLICATIONS

## TECH NOTE SERIES



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### KEY POINTS

- *BIOPEST*<sup>®</sup> increases droplet size and survival, reduces drift and increases leaf coverage which improves the effectiveness and longevity of NPV.
- Good coverage is critical for optimal results.
- *BIOPEST*<sup>®</sup> has activity in its own right on *Helicoverpa* by reducing egg laying.

### HELCOVERPA MANAGEMENT

As sorghum crops move from flowering to grain fill, infestations of *Helicoverpa* are common with the most damage occurring when eggs are laid on heads before flowering. The preferred option for *Helicoverpa* management in sorghum is nucleopolyhedrovirus (NPV), a disease of *Helicoverpa* available under commercially produced formulations (e.g. *ViVUS Max*<sup>®</sup> or *Gemstar*<sup>®</sup>).

### TIMING OF NPV SPRAY

The optimal timing for an NPV spray is 3 days after 50% of heads have completed flowering (brown anthers to the base of the head). This delay is necessary not only to target the right size of *Helicoverpa*, but also for *Microplitis* larvae (*Helicoverpa* parasites) to complete their life cycle before their host dies.

### BIOPEST IMPROVES EFFICACY OF NPV SPRAY

Adding *BIOPEST*<sup>®</sup> with an NPV spray increases droplet survival as well as increasing droplet coverage on the leaf surface.



**Figure 1:** NPV infected, and killed *Helicoverpa* larva.  
(Source: *The Beatsheet*)

SACOA has conducted significant research into the effect of *BIOPEST*<sup>®</sup> on VMD (volume median diameter), drift reduction, leaf surface coverage and droplet survival. Research conducted in cotton proved a significant reduction in drift and increase in leaf coverage with the addition of *BIOPEST*<sup>®</sup> even at relatively low rates (see Charts 1 and 2).

In addition, *BIOPEST*<sup>®</sup> reduces *Helicoverpa* egg laying as the oil prevents volatiles coming off the plant surface which make it less attractive for feeding.

### APPLICATION RATES

Aerial applications commonly consist of a total volume of 30- 40L/Ha, but can be as low as 10L/Ha including 0.5-1L/Ha

*BIOPEST*<sup>®</sup> and the recommended rate of NPV. For ground rigs 100L/Ha as a banded application with 0.5-1L/Ha *BIOPEST*<sup>®</sup> is commonly used.

Recent aerial application trials, indicate the addition of *BIOPEST*<sup>®</sup> can increase coverage by the equivalent of 10L/Ha of water (see Chart 3).

This work supports the recommendations contained on the *ViVUS Max*<sup>®</sup> label –

#### Broadacre Crops

- Ground Rig  
Apply in a minimum of 100 litres of water per hectare.
- Aerial - High Volume:  
Apply in a minimum of 30 litres of water per hectare. This application method is particularly susceptible to droplet evaporation, especially during hot and dry conditions (temperature greater than 30°C and humidity less than 40%). Droplet evaporation will reduce coverage, which can have a detrimental impact on performance.

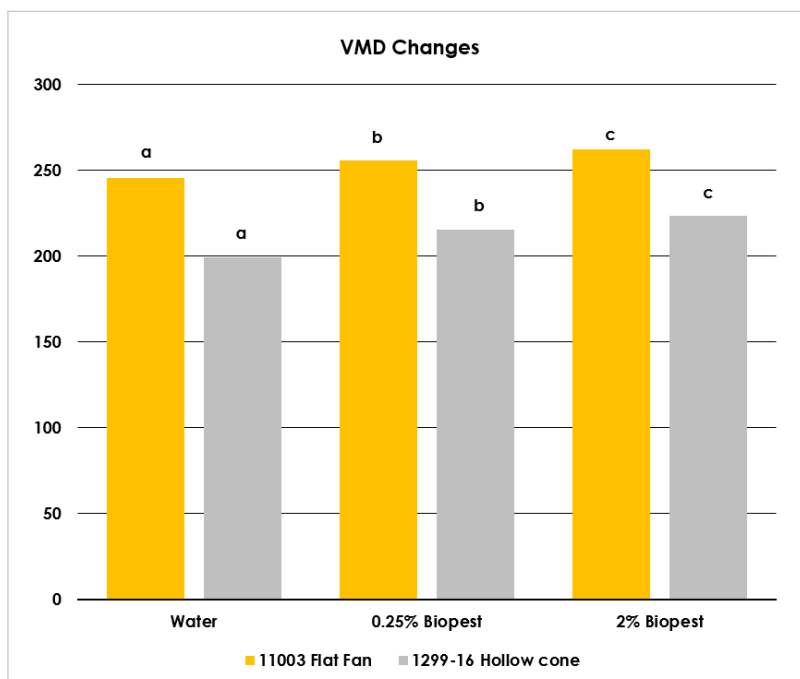


**Figure 2:** Assassin bug feeding on *Helicoverpa*  
(Source: DAF QLD)

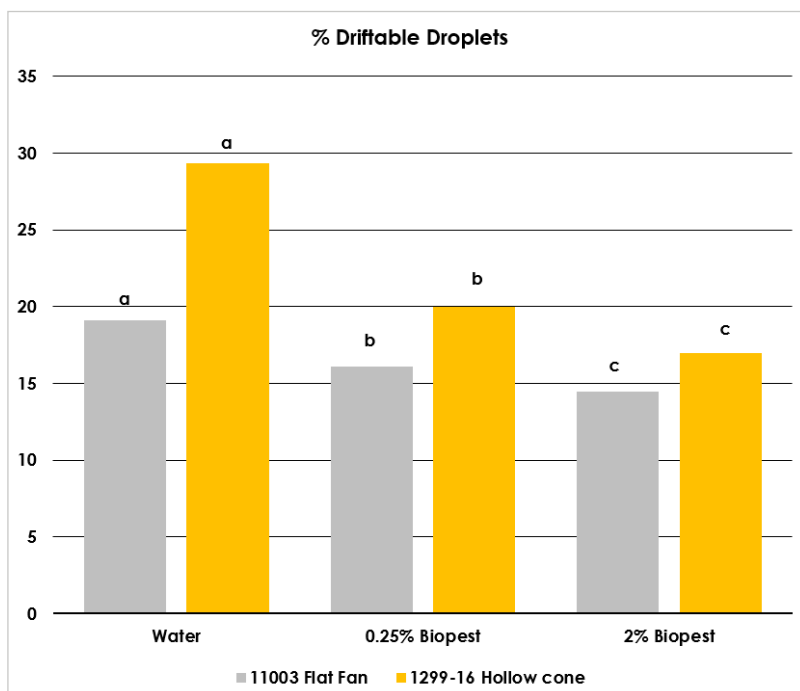
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**Chart 1:** Droplet size changes with the addition of *BIOPEST*<sup>®</sup>, treatment differences are between treatments. Nozzle Type 11003 @ 300kPa, 1299-16 @ 400kPa. Means followed by the same letter are not significantly different.  
(Source: UWS 3C CRDC Final Report 2003)



**Chart 2:** Change in % driftable droplets with *BIOPEST*<sup>®</sup>, treatment differences are between treatments. Nozzle Type 11003 @ 300kPa, 1299-16 @ 400kPa. Means followed by the same letter are not significantly different.  
(Source: UWS 3C CRDC Final Report 2003)

During hot and dry conditions avoid using aerial application method - wait until conditions favour good coverage or apply in ULV (see below).

Alternatively, if application in water by air during hot and dry conditions cannot be avoided, increase application volume and/or use an anti-evaporation additive to improve coverage such as *CROPSHIELD*<sup>®</sup> at 1-2L/Ha.

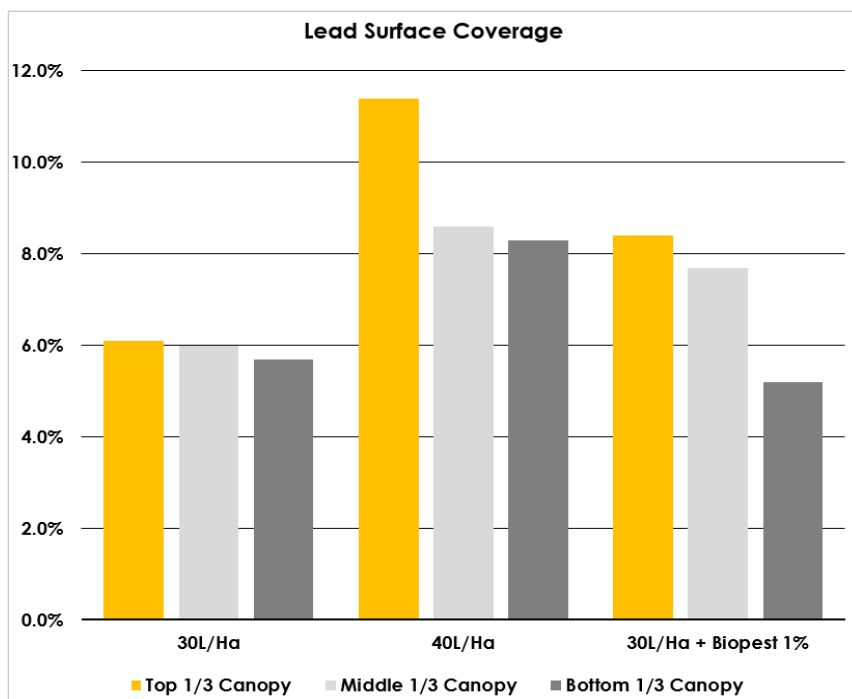
**Aerial - Ultra-Low Volume (ULV):**

Use an approved carrier such as *BIOPEST*<sup>®</sup> oil and apply in a minimum volume of 3 litres per hectare. When applying ViVUS Max in ULV, do not tank mix with other pesticides or fertilisers (refer to compatibility).

*BIOPEST*<sup>®</sup> is also an effective mix partner with dilute spraying by ground or air as it will reduce droplet evaporation, increase droplet survival and increase coverage on target pests."

**SUPPRESSION OF APHIDS**

The addition of *BIOPEST*<sup>®</sup> to the spray mixture also allows the suppression of aphids present at low numbers and delays a build-up of large colonies. As *BIOPEST*<sup>®</sup> is soft on beneficials, such as Predatory shield bugs and Assassin bugs, their population will not be disrupted and they will continue to assist in the control of *Helicoverpa*



**Chart 3:** Increase in canola leaf surface coverage with the addition of BIOPEST®.

(Source: AgVivo demonstration Trial June 2014)



## REFERENCES

- Agbitech  
<http://www.agbitech.com/media/4157/vivus-max-label.pdf>
- The Beatsheet  
<http://thebeatsheet.com.au/crops/grains/sorghum/helicoverpa-and-midge-management-in-sorghum/>
- CRDC Report - UWS 32 - Evaluation of mineral oils for cotton IPM - October 2003
- DAF QLD  
<https://www.daf.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/integrated-pest-management/a-z-of-predators,-parasites-and-pathogens/assassin-bugs>

## FIND OUT MORE

Further information is available at [www.agrion.com.au](http://www.agrion.com.au) or by contacting Agrion on 1800 778 247 or contact your local Agrion representative;

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