

# Tech Note

## Product Overview

Starbunch® Banana Bags are the result of combining the industry's two most effective banana protection techniques :

- Bifenthrin, a well-established, highly effective and broadly accepted insecticide, which is safer and less toxic to use than the current industry standard, chlorpyrifos.
- Banana Treebags, which have measurably improved the quality and quantity of the marketable banana harvest for more than 40 years.

Starbunch Banana Bags contain FMC's synthetic pyrethroid insecticide, Bifenthrin, which is extruded into a low density polyethylene matrix to give high performance against key banana pests and improved standards of environmental and applicator safety.

Bifenthrin as a molecule is particularly suited to this type of application for several reasons :

- 1 Bifenthrin is highly active against a broad spectrum of pests, enabling it to be used at doses that are one-tenth of competitive insecticides. The Bifenthrin loading in Starbunch Banana Bags is 0.1%.
- 2 Bifenthrin has a slow degradation rate when compared to other insecticides. This is due to its inherent stability under field conditions of high temperature and light intensity, resulting in longer protection periods in the field.
- 3 Bifenthrin is a pyrethroid insecticide - a class of chemistry developed from naturally occurring pyrethrum flowers. The characteristics of this molecule such as low dose, low volatility and low water solubility means that Starbunch Banana Bags pose an extremely low hazard to farm workers and applicators.
- 4 Bifenthrin has no odour. This means that Starbunch Banana Bags are more user friendly.
- 5 Bifenthrin is essentially a contact insecticide with additional strong repellent action against insects.

## For the Banana Grower

- **Extremely Low Vapour Pressure reduces** the risk of inhalation exposure for workers during installing, harvesting, storing and transporting.
- **Under a Starbunch plan**, there's no need for special safety equipment during application.
- **Water-Insoluble.** Practically insoluble in water, Starbunch Banana Bags reduce the risk of skin absorption through perspiration.
- **Better Bananas.** Higher quality and greater volume of harvested produce.
- **Familiar Delivery System.** Used and installed in the same manner as other banana bags.
- **Long-term storage** capability.
- **Free Global Trade.** USA, European and Japanese import tolerances allow free global trade and commerce of Starbunch Banana Bags and the fruit they protect.
- **Less Bag Rub.** The Starbunch bag is 12.5  $\mu$  compared to most standard bags at 40  $\mu$ , and has shown less bag rub than a standard bag.

## Field Efficacy

Starbunch Banana Bags have been tested in all major banana producing regions of the world and have shown robust performance under the widest possible range of climatic and growing conditions.

International registrations include :

- Brazil
- Costa Rica
- Ecuador
- Guatemala
- Honduras
- Panama
- Philippines.

FMC Australia currently has a registration to assist in the control of banana rust thrips. A registered bell injection treatment must be applied at the appropriate timing to minimise damage before the Starbunch Banana Bag is applied, with a mode of action other than a group 3A Insecticide as a part of a best practice resistance management plan.

Additionally, regular "floor" sprays as either a band or a stool treatment should be conducted – See Talstar 250EC label.

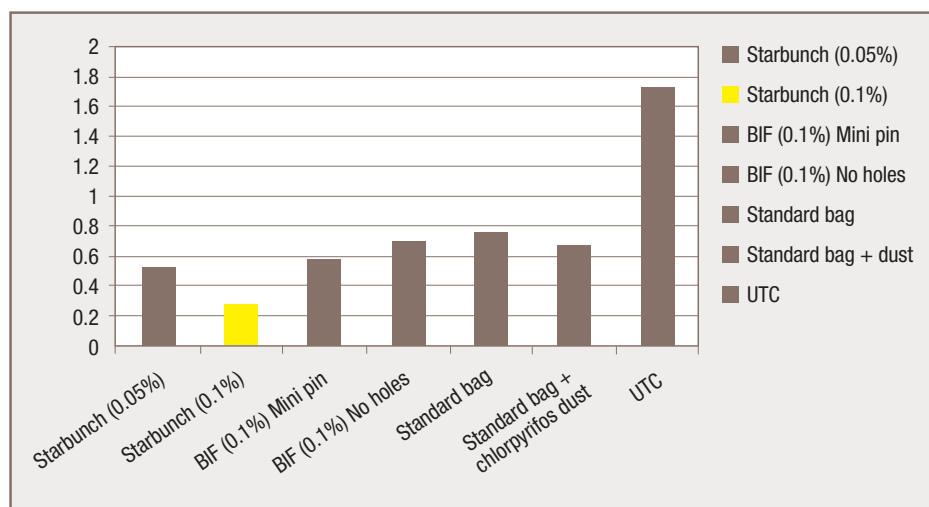
Bags should be monitored and in times of very heavy rust thrip pressure an additional bunch spray may be required.

Additional field trials are currently being conducted on other pests including lepidopteran species.



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## RUST THRIP CONTROL

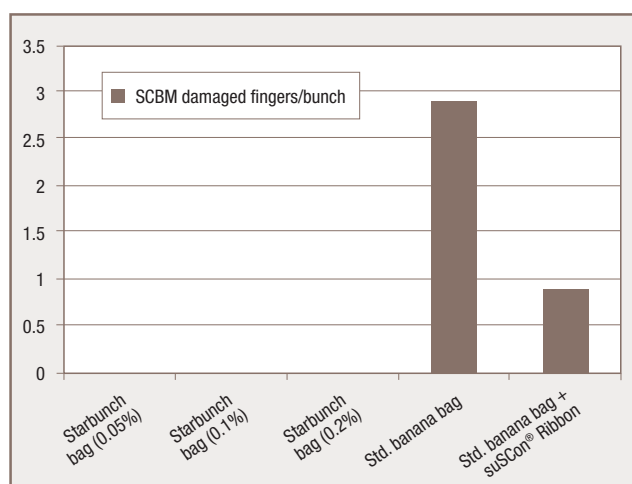


Rust thrip (*C. signipennis*) damage was recorded on a central finger of the top, middle and bottom hands of each bunch and the extent of damage was recorded using a 0-3 scale where 0 = no damage, 1 = damage up to an area the size of a 5c piece, 2 = damage greater than the area the size of a 5c coin and up to an area the size of a 20c coin and 3 = damage greater than an area the size of a 20c coin.

For each hand, one finger was chosen in the top row of fingers and one finger below that in the lower row so that for each of the top, middle and bottom hands, there were two fingers assessed for damage.

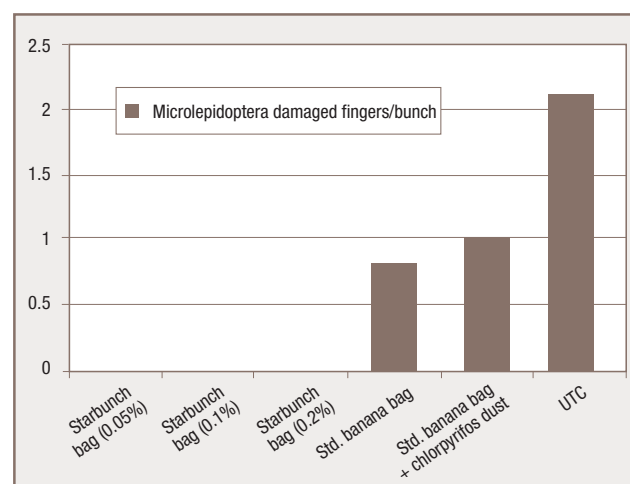
Tully 2009

## SUGAR CANE BUD MOTH CONTROL



Daradgee 2010 (Mc)

## MICROLEPIDOPTERA CONTROL



Tully 2009

Please note that currently, there is no registration for Sugar Cane Bud Moth or Microlepidoptera control with Starbunch Banana Bags. FMC will conduct additional trials to make a submission for registration for these pests with the APVMA.

## Residual Protection

Starbunch Banana Bags have been designed to give season-long protection, with 0.04% Bifenthrin remaining in the bag 10 weeks after application.

## Application

Starbunch Banana Bags should be applied using a similar technique to existing practices. However, it has been shown that these bags perform better when applied earlier at the 2 o'clock position. This means that the optimal application timing for Starbunch Banana Bags is around two weeks after flowering.

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