



# PEST MANAGEMENT GUIDE

## PROTECTED CROPPING

# SIVANTO<sup>®</sup>

prime



**Introducing innovative and selective insecticide classes is critical for sustainable pest management.**

SIVANTO<sup>®</sup> prime is a member of the novel **butenolide** class of insecticides, which was inspired by a naturally occurring compound produced by the plant, *Stemona japonica*. It offers advantages over existing management options by offering rapid protection, flexibility for use over flowering and a good level of beneficial species safety. With over a decade of field research in Australia, it has shown excellent performance on a wide spectrum of damaging sucking pests including aphids and whiteflies.

### PRODUCT AT A GLANCE

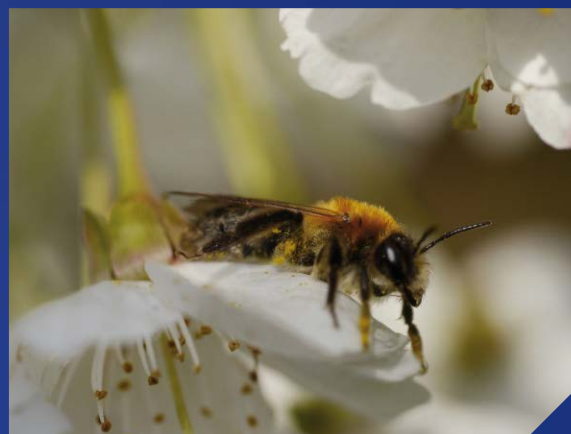
<b>Crops</b>	Cucurbits, eggplants, peppers (capsicum and chilli), tomatoes (includes protected cropping production systems)
<b>Pests</b>	Silverleaf whitefly ( <i>Bemisia tabaci</i> Biotype B) Greenhouse whitefly ( <i>Trialeurodes vaporariorum</i> ) Green peach aphid ( <i>Myzus persicae</i> ) Cotton or melon aphid ( <i>Aphis gossypii</i> )
<b>Use rate</b>	75 mL/100 L (Dilute spraying)
<b>Adjuvant</b>	Not required
<b>Number of sprays/spray interval</b>	2 applications per hectare per year/interval not less than 7 days
<b>Withholding period</b>	1 day
<b>Compatibility</b>	Broadly compatible with most commonly used products. For information on the compatibility of SIVANTO prime with other products, contact your reseller or local Bayer Crop Science representative
<b>Active ingredient</b>	Flupyradifurone (200 g/L)
<b>Formulation</b>	Water soluble concentrate (SL)
<b>Activity group</b>	Group 4D – Butenolide
<b>Mode of action</b>	Agonist of the insect nicotinic acetylcholine receptor (nAChR)
<b>Pack sizes</b>	3 L & 10 L

## RAPID PROTECTION

SIVANTO prime is quickly taken up in foliage before moving systemically upwards through the xylem and across the leaf surface (translaminar). Direct spray contact or uptake by ingestion through sap feeding, causes feeding to quickly cease, followed by insect death. It offers the maximum benefit when applied to newly establishing pest populations, where younger lifecycle stages are present.

## FLEXIBILITY OVER FLOWERING

SIVANTO prime shows low toxicity to Australian native stingless bees (*Tetragonula* spp. and *Austroplebeia* spp.) and European honeybees (*Apis mellifera*)<sup>1</sup> when used as directed. It can be safely applied during the period of crop flowering due to the presence of enzymes in these bee species that can break down the active ingredient into biproducts that are harmless to the bee<sup>2</sup>. However, under good agricultural practice, it is recommended not to apply SIVANTO prime or any other insecticides at times when bees are actively foraging. To maintain bee safety there are limits to the number of applications. When used as per the Directions for Use, SIVANTO prime is not expected to result in adverse impact on colony performance or survival<sup>1</sup>.



European honeybee

## EASY TO APPLY

SIVANTO prime is a water soluble concentrate (SL) formulation that has been optimised for rapid biological activity, without comprising its outstanding safety on beneficial species or pollinators. It contains an in-built adjuvant system, which provides rapid retention and penetration into the leaf, without the need for additional spray adjuvants. It mixes easily and has shown to be robust for use over a wide range of water pH, hardness and temperature.

<sup>1</sup>SIVANTO prime may cause short-term effects to bees - refer to label statement.

<sup>2</sup>Only known exception without detoxifying enzymes *Megachile rotunda* (alfalfa leafcutter bee)

## HOW DOES IT WORK?

SIVANTO prime is highly effective against juvenile stages of silverleaf and greenhouse whiteflies as well as both winged and juvenile stages of green peach and cotton aphids. It works quickly to prevent sap feeding as well as honeydew excretion and offers excellent residual control. It further reduces the population by reducing the ability of adult whiteflies to lay eggs.

## HOW TO APPLY

Apply at 75 mL/100 L to early instar stages of whiteflies and aphids on an establishing population. Using SIVANTO prime early in the season upon detection of pests may assist in avoiding population peaks later in the season. It has the flexibility to be applied during flowering<sup>1</sup>. A maximum of two applications may be applied to sprayed areas per year.



# APHIDS

## HOW DOES ITS PERFORMANCE COMPARE?

A glasshouse trial in Queensland has shown that SIVANTO prime provides strong residual green peach aphid control (Figure 1). SIVANTO prime was applied twice at 75 mL/100 L at a 24-day interval in greenhouse eggplant, under low aphid pressure during 2012.



Green peach aphid (*Myzus persicae*)

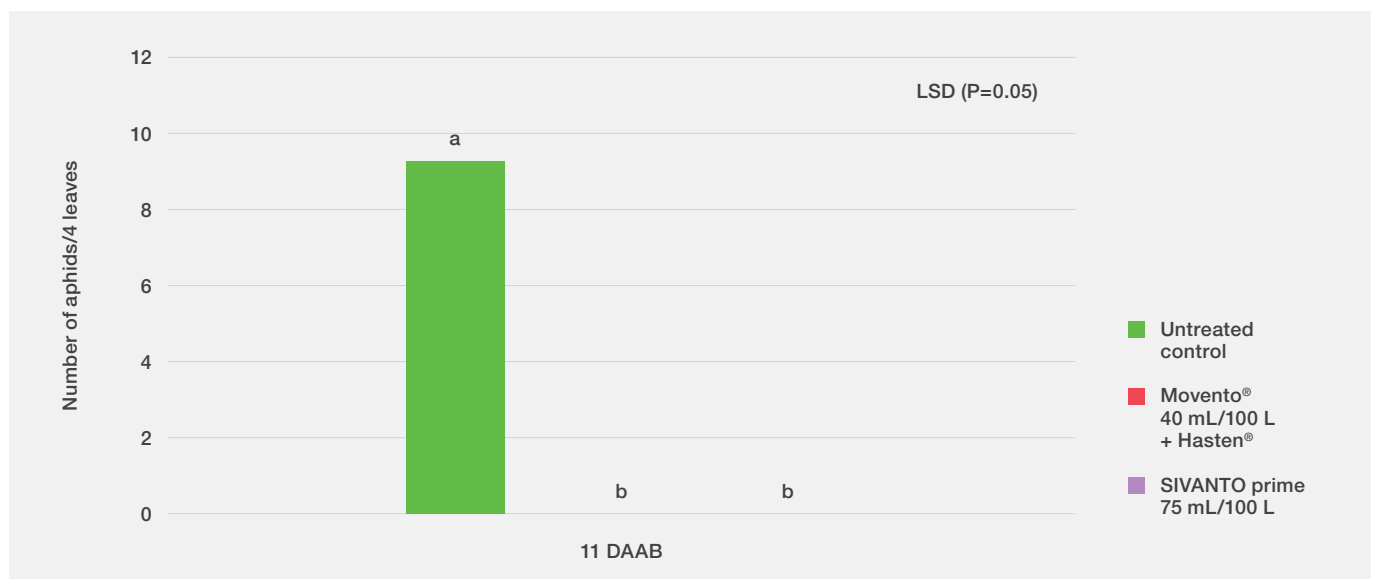


Figure 1. Number of green peach aphid per 4 leaves at 11 DAAB. Avondale, Qld. 11QF01



# WHITEFLIES

## HOW DOES ITS PERFORMANCE COMPARE?

A glasshouse trial in New South Wales has shown that SIVANTO prime provides knockdown activity on greenhouse whitefly adults (Figure 2) and strong residual control of immature stages of greenhouse whitefly (Figure 3). SIVANTO prime was applied as a single application at 75 mL/100 L in glasshouse tomatoes, under very high greenhouse whitefly pressure during 2010.



Greenhouse whitefly (*Trialeurodes vaporariorum*)

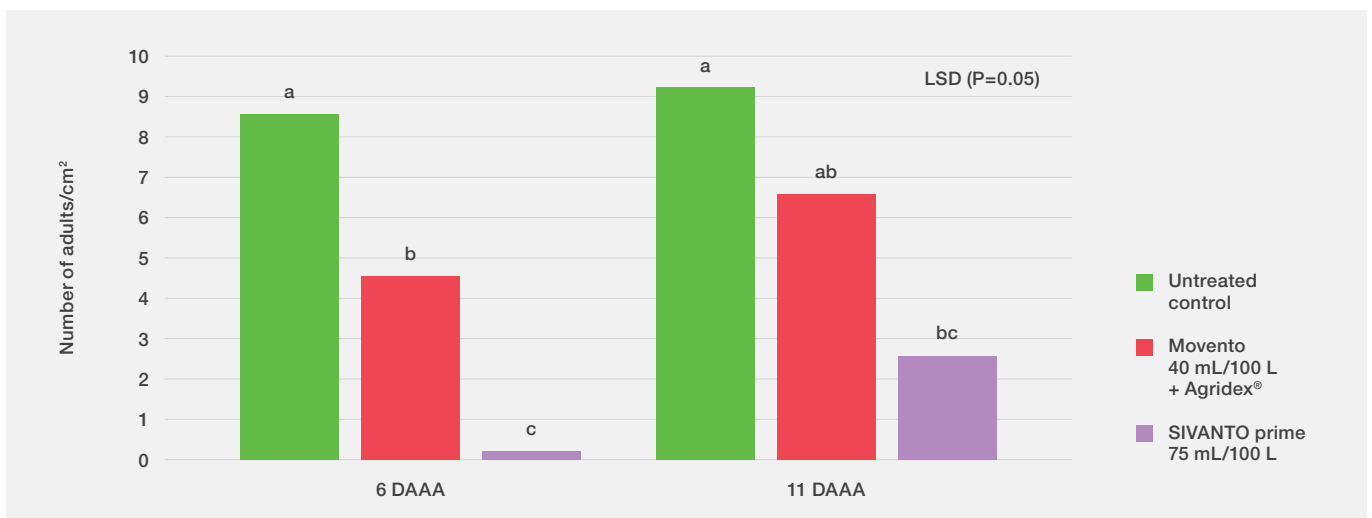


Figure 2. Number of greenhouse whitefly adults per cm<sup>2</sup> at 6 DAAA and 11 DAAA. Kemp's Creek, NSW. 10NC05

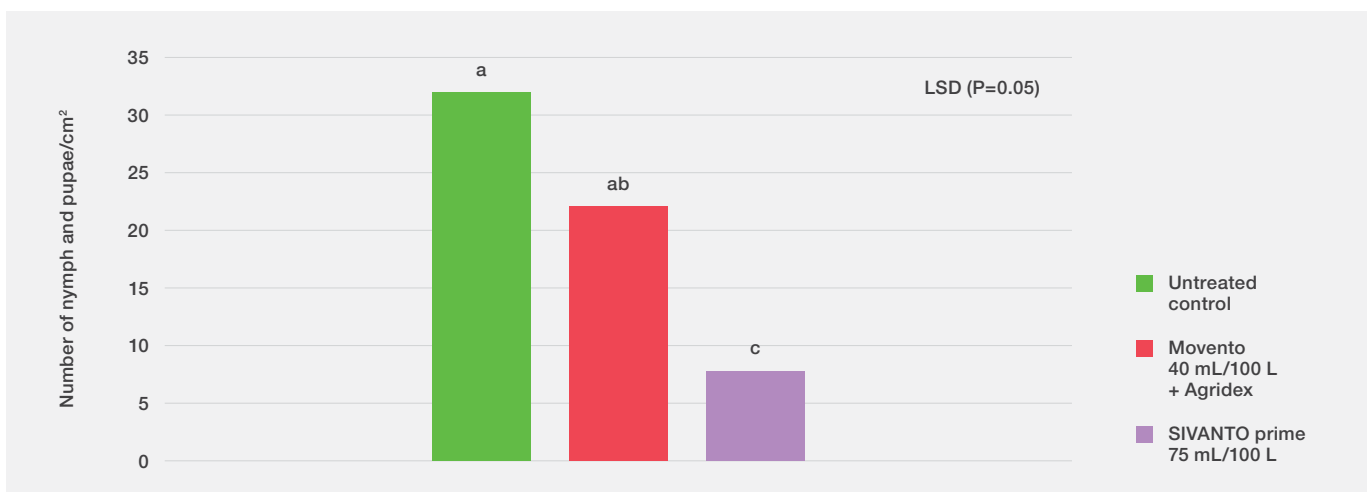


Figure 3. Number of greenhouse whitefly nymphs and pupae per cm<sup>2</sup> at 11 DAAA. Kemp's Creek, NSW. 10NC05



# SAFETY TO BENEFICIAL SPECIES

Important beneficial species such as parasitoids, predatory mites, lacewings, hoverflies and ladybird beetles are highly compatible with the use of SIVANTO prime (Figure 4). Applied under field conditions, it has been shown to have minimal impact on most beneficial species, except for predatory bugs, for example *Orius* spp. Use of SIVANTO prime does not flare mites, which can occur with other Group 4 insecticides.

BENEFICIAL GROUP AND SPECIES TESTED	IOBC RATING				
	1	2	3	4	CAUTION
<b>FOLIAR USES</b>					
<b>Predatory mites</b> <i>Amblyseius swirskii</i> <i>Amblyseius andersoni</i> <i>Kampimodromus aberrans</i> <i>Typhlodromus pyri</i> <i>Typhlodromus</i> spp.					<i>A. swirskii</i> most sensitive species. Avoid applying on established populations.
<b>Ladybird beetles</b> <i>Adalia bipunctata</i> <i>Coccinella</i> spp.					Higher doses may have detrimental effects on larval stages when sprayed directly. Drastic reductions on aphid populations may have an effect on the predator through starvation, but not because of product toxicity.
<b>Predatory bugs</b> <i>Macrolophus caliginosus</i> <i>Anthocoris nemoralis</i> <i>Orius laevigatus</i> <i>Orius</i> spp. <i>Nesidiocoris tenuis</i>					
<b>Lacewings</b> <i>Chrysoperla</i> spp.					Doses equal to or higher than 75 g a.i./ha may have a moderate to harmful effect on larval stages if directly exposed to the product.
<b>Hoverflies</b> <i>Episyrphus balteatus</i> <i>Syrphus</i> spp.					
<b>Parasitoids</b> <i>Aphidius colemani</i> <i>Aphelinus mali</i> <i>Encarsia formosa</i> <i>Eretmocerus</i> spp.					Caution needs to be exercised when applying SIVANTO prime in systems where <i>E. mundus</i> is the most prevalent biological control agent.

IOBC rating	Mortality of beneficial arthropod tested	
1	Harmless	<25%
2	Slightly harmful	25 – 50%
3	Moderately harmful	50 – 75%
4	Harmful	75 – 100%

Figure 4. Selectivity profile of SIVANTO prime for beneficial species.

The size of the rectangle indicates the relative number of trials for each group of beneficial species. IOBC: International Organisation for Biological and Integrated Control



Predatory mite (*Phytoseiulus persimilis*)



*Aphelinus abdominalis*



*Encarsia formosa*



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prime

For more information on SIVANTO prime, visit [sivantoprime.com.au](http://sivantoprime.com.au)  
or talk to your local Bayer Crop Science representative.

**Always consult the product label for detailed information.** The information and recommendations set out in this brochure are based on tests and data believed to be reliable at the time of publication. Results may vary, as the use and application of the products is beyond our control and may be subject to climatic, geographical or biological variables, and/ or developed resistance. Any product referred to in this brochure must be used strictly as directed, and in accordance with all instructions appearing on the label for that product and in other applicable reference material. So far as it is lawfully able to do so, Bayer CropScience Pty Ltd accepts no liability or responsibility for loss or damage arising from failure to follow such directions and instructions.

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