Q&A

What is SIVANTO® prime?

SIVANTO prime is a new insecticide from Bayer for the control of a range of sucking insect pests with an outstanding safety profile. SIVANTO prime controls important stages in the insect lifecycle and offers excellent crop protection. When used as directed, it allows for flexible application timing – including during flowering thanks to the proven honeybee and native stingless bee safety. The target pest selectivity in fruit, nut and vegetable crops provides a perfect fit for Integrated Pest Management (IPM) programs*. In addition, the mode of action (MoA) of the active ingredient flupyradifurone in SIVANTO prime means it is highly suitable for use in resistance management programs for insect control. SIVANTO prime is an innovative product for value-driven fruit, nut and vegetable growers.

What is the crop and pest spectrum of SIVANTO prime?

SIVANTO prime is a sucking pest insecticide with uses planned for a range of horticultural crops, including some fruit, nut and vegetable crops.

An application for registration of SIVANTO prime has been made for the control of; silverleaf whitefly (*Bemisia tabaci* Biotype B), greenhouse whitefly (*Trialeurodes vaporariorum*), green peach aphid (*Myzus persicae*) and cotton aphid (*Aphis gossypii*) in cucurbits, eggplant, peppers (capsicum and chilli) and tomatoes (including protected cropping production systems); silverleaf whitefly and green peach aphid in potatoes, sweet potatoes and green beans; and banana spotting bug (*Amblypelta lutescens*), fruit spotting bug (*Amblypelta nitida*), mango planthopper and green planthopper in avocados, papaya and mangoes. Registration is expected in the second half of 2021. Bayer recommends that SIVANTO prime is always used according to the most recent registered label.

SIVANTO prime is registered for use in macadamias for the control of macadamia lace bug (*Ulonemia concava* or *Ulonemia decoris*), banana spotting bug and fruit spotting bug, and for the suppression of scirtothrips (*Scirtothrips dorsalis*). Launch of the product for use in macadamia will follow in 2022, once suitable export tolerances have been established such that there will not be any trade impact for the Australian crop.

*Where predatory bugs are not employed.

What are the key benefits and properties of SIVANTO prime?

Based on new butenolide chemistry, SIVANTO prime is a systemic insecticide for controlling major sucking pests, including selected neonicotinoid-resistant pest populations (e.g. whiteflies and selected aphid species). SIVANTO prime is compatible with honeybees and native stingless bees allowing application during flowering when used as directed. Demonstrated selectivity to many beneficial species in fruit, nut and vegetable crops provides a perfect fit for IPM programs. SIVANTO prime provides significant benefits to growers, such as excellent crop protection, quick feeding cessation, effective virus vector control, and flexible application at any crop stage.

How fast does SIVANTO prime prevent pests from feeding?

After foliar application, SIVANTO prime leads to a rapid cessation of feeding, as demonstrated by aphids stopping honeydew excretion, even when feeding on the underside of plant leaves. Almost complete feeding cessation occurs within hours.

How does SIVANTO prime prevent virus transmission?

SIVANTO prime provides fast cessation of feeding and excellent control of insects that act as vectors for viruses and thereby helps to mitigate the effects of secondary transmission of viruses from insect feeding.

Is SIVANTO prime compatible with beneficial species and suitable for IPM programs?

Selectivity towards beneficial species and predatory mites is a prerequisite for a modern IPM compatible product. The effects of SIVANTO prime on beneficial species have been tested under field conditions in various semi-field and field-based trials. When used responsibly and according to the label directions, SIVANTO prime can be considered safe to many beneficial species (except for predatory bugs), and specifically to pollinators such as honeybees and native stingless bees.

The minimal impact to many beneficial species, e.g. ladybird beetles, hoverflies, predatory mites and lacewings, makes SIVANTO prime an ideal product for IPM programs. However, SIVANTO prime may affect some predatory bugs like *Orius laevigatus*, *Macrolophus caliginosus* and *Nesidiocoris tenuis*.

Can SIVANTO prime be applied during flowering and bee flight on crops attractive to bees?

Under Good Agricultural Practice, neither SIVANTO prime nor any other crop protection product should be applied to crops while bees are actively foraging.

Based on laboratory studies, SIVANTO prime is classified as moderately toxic to bees, however when used according to label directions in commercial crops, studies indicate that SIVANTO prime demonstrates low toxicity to mature and immature bees, and can be safely used in flowering crops, preferably at times when bees are not foraging.

What is the mode of action of SIVANTO prime?

SIVANTO prime acts in the central nervous system of target insect pests as an agonist of the insect's nicotinic acetylcholine receptor (nAChR). The active ingredient flupyradifurone mimics the natural neurotransmitter but, in contrast to acetylcholine, cannot be inactivated by acetylcholinesterase. The lasting effect of the product results in disruption to the insect's nervous system and subsequent insect mortality.

How is SIVANTO prime classified in the CropLife resistance management table?

CropLife classify the MoA for the new active ingredient in SIVANTO prime, flupyradifurone, in a new subgroup, 4D – Butenolides within Group 4, the nicotinic acetylcholine receptor (nAChR) competitive modulators.

What is the recommendation for active resistance management with SIVANTO prime?

The CropLife MoA classification and product labels ensures that insecticide users are aware of MoA groups and that they are a sound basis on which to implement season long resistance management strategies. The novel chemistry of SIVANTO prime, a result of its unique pharmacophore system, and the lack of metabolic-based cross-resistance were approved by IRAC and assigned to a new subgroup 4D within the MoA Group 4 of nicotinic acetylcholine receptor agonists. Since the cross-resistance potential between subgroups is higher than between different MoA groups, it is not advisable to rotate between subgroups.

The CropLife Australia Expert Committee on Insecticide Resistance has not yet revised any strategies to include Group 4D insecticides. Continue to review changes to

strategies at the CropLife Australia website (www.croplife.org.au) following new crop and pest registrations for SIVANTO prime.

The label will indicate the maximum number of SIVANTO prime applications per crop. Further, it is critical for the longevity of all available control options, that judicious use, compliance with all label directions, adherence to resistance management strategies and good agricultural practice are followed to ensure effective chemistry remains available for pest control according to the registered uses.

Is SIVANTO prime effective against the various life stages of targeted pests?

SIVANTO prime provides excellent control of many adult and immature (nymphs and larvae) sucking pests.

How long will SIVANTO prime work?

Residual control of insect pests depends on a range of factors. SIVANTO prime has exhibited excellent residual control of key pests when used as directed.

What is meant by systemic and translaminar activity of SIVANTO prime?

The active ingredient of SIVANTO prime is xylem mobile and exhibits translaminar movement. After uptake into the plant, flupyradifurone is translocated acropetally in the xylem in the direction of the transpiration stream and is distributed through translaminar movement into adjacent plant cells forming a reservoir of active ingredient (e.g. from the top sprayed surface of the leaf to the underside of the leaf) delivering the product to where insects may be concealed and feeding.

What innovation characterises the formulation of SIVANTO prime?

SIVANTO prime utilises a unique formulation with properties that make it easy to handle and store, as well as providing rapid solubility and good miscibility in the spray tank. The advanced leaf retention properties result in high bioavailability and enhanced plant penetration to ensure rapid activity of the active ingredient.

How is SIVANTO prime applied and is it selective to crops?

SIVANTO prime is designed for foliar application. SIVANTO prime generally displays excellent plant compatibility. Occasional transient leaf margin burning has been noted in some cucurbit crops; however this has not resulted in any negative effects in terms of yield or fruit quality.

Which chemical classes (modes of action) are a good fit with SIVANTO prime in a spray program?

As a modern insecticide providing excellent control of a range of key sucking pests, SIVANTO prime is perfect as a complementary partner in integrated spray programs which include products with different modes of action, biological crop protection products and many beneficial species.

Is SIVANTO prime compatible with other crop protection products?

SIVANTO prime is generally compatible with other chemical crop protection products. As a general rule, each product should be tested before it is mixed with another partner in the spray tank by first checking a small amount of the combination in a jar test to see if the spray solution develops any undesirable features, such as crystals or sediment. SIVANTO prime should not be mixed with azole-fungicides because this could potentially have a negative impact on the pollinator safety of the mixed product.

For more information on SIVANTO prime, visit sivantoprime.com.au

An application for registration for the use of SIVANTO prime in a range of vegetable and fruit crops has been made. At the time of publication Sivanto Prime is not registered for use in vegetable and fruit crops. Registration is expected in the second half of 2021. Bayer recommends that SIVANTO prime is always used according to the most recent registered label.

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