1. What is SIVANTO® prime?

SIVANTO® prime is the newest insecticide from Bayer CropScience for the control of major sucking insect pests and has an outstanding safety profile. Thanks to its strong efficacy SIVANTO® prime controls all important stages in the insect’s life and protects the crop at every stage, while meeting the highest safety standards. This allows full application flexibility with different application methods (foliar, soil, drip irrigation) and application timing – even during flowering thanks to its proven honeybee and bumblebee friendliness. The high target selectivity in fruit and vegetable crops provides a perfect fit for Integrated Pest Management (IPM) programs together with biological crop protection products and beneficials. In addition, the mode of action of its active ingredient flupyradifurone means that SIVANTO® prime is a highly suitable tool for use in anti-resistance management programs for insect control. Worldwide, SIVANTO® prime is an innovative product for value-driven fruit and vegetable. Growers who care about both the environment and their business success.

2. 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 of the insect’s nervous system and its subsequent collapse.

3. What makes SIVANTO® prime unique?

There is no other insecticide that combines such rapid and excellent effectiveness against sucking pests with favorable results in environmental and toxicological testing. This combination is unmatched worldwide. Thanks to its fast activity SIVANTO® prime also provides excellent control of insects that act as vectors for viruses and bacteria, and thereby helps to mitigate the effects of transmitted secondary diseases.

4. How is SIVANTO® prime classified in the IRAC MoA scheme?

Recently, the Mode of Action Team on the Insecticide Resistance Action Committee (IRAC) officially classified Bayer’s new active ingredient in SIVANTO® prime, flupyradifurone, in a new subgroup, 4D – Butenolides, within Group 4, the nicotinic acetylcholine receptor (nAChR) agonists.
5. How are regulatory authorities around the globe assessing SIVANTO® prime?

The SIVANTO® prime dossier was submitted to a large number of countries in 2012. In Europe, the Rapporteur Member State (RMS) is the Netherlands and EU approvals are expected by the end of 2015. The product dossier has also been submitted in a Global Joint Review (GJR) to Canada, USA, and Mexico (approvals expected September/October 2014), to Australia (approval anticipated early 2015) as peer reviewer, and to Brazil (approval expected 2018) and China (approval expected 2015) as observers. In addition, the dossier has been submitted in India, the Philippines, the Republic of Korea, and several countries in Latin America. Further submissions are planned in the next few years. In view of SIVANTO® prime's overall excellent safety profile, the United States Environmental Protection Agency (EPA) approved the product as a reduced risk candidate.

6. Is SIVANTO® prime globally trade-enabled?

In order to enable a global trade in fresh produce right from the first regulatory approvals, Bayer CropScience has applied for import tolerances for SIVANTO® prime for the most traded crops in Japan, Taiwan and China. Later this year, the residue data will be submitted to the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) with the aim of obtaining Codex Maximum Residue Levels (MRLs) in 2014. In addition, the European RMS agreed to evaluate not only the EU residue data but also the residue data of the GJR partner countries in order to enable global trade with import tolerances set for the most important traded agricultural commodities. By 2016 at the latest, Bayer CropScience expects to have a broad distribution of Maximum Residue Levels (MRLs) and import tolerances around the world for SIVANTO® prime, which will help to harmonize trade.

7. What innovation characterizes SIVANTO® prime's formulation concept?

SIVANTO® prime utilizes a unique formulation concept based on a specifically tailored emulgator system that has never been used before by Bayer CropScience. The formulation is easy to handle and store thanks to its improved cold stability and provides rapid solubility and good miscibility in the spray tank due to the excellent spontaneity of its formulation. The advanced retention properties result in high bioavailability and enhanced plant penetration to ensure rapid activity of the active ingredient.

8. What is SIVANTO® prime's crop-pest spectrum?

SIVANTO® prime is mainly a sucking pest insecticide with uses on many horticulture and broad-acre crops, including pome fruits, citrus, grapes, plantation crops like coffee and cocoa, cucurbits, legumes, brassica, leafy and fruiting vegetables, potatoes, hops, alfalfa, cotton, soybean, and dry beans.
9. What are SIVANTO® prime’s key benefits and properties?

With its new butenolide chemistry SIVANTO® prime is a systemic insecticide for controlling major sucking pests, such as aphids, whiteflies, hoppers and other key insect pests, including selected neonicotinoid-resistant pest populations (e.g. whiteflies and selected aphid spp.). Since SIVANTO® prime has an outstanding safety profile, it is highly compatible with honeybees and bumblebees, and thus allows broad application windows and treatments during flowering. Its selectivity to most beneficials in outdoor fruit and vegetable crops provides a perfect fit for Integrated Pest Management (IPM) programs. SIVANTO® prime provides significant benefits to growers, such as excellent speed of action, quick feeding cessation, effective virus vector control, and flexible applicability at any crop stage.

10. How can SIVANTO® prime be applied and is it selective to crops?

Foliar application in orchards, drip irrigation of vegetables, the „floating“ technique for treating tobacco seedlings, industrial seed treatments: whatever the application method, SIVANTO® prime is an ideally suitable insecticide. SIVANTO® prime generally displays excellent plant compatibility, though there are reports of leaf margin burn on cucurbits (cantaloupe melons and greenhouse cucumbers) where the benefit and possible harm should be well balanced and will be addressed in the label language.

11. Can SIVANTO® prime be applied during bloom and bee flight on crops attractive to bees?

All the results of extensive lab and field testing under worst-case exposure scenarios indicate that SIVANTO® prime has a low intrinsic toxicity to adult and immature stages of honeybees. Studies indicate that SIVANTO® prime has no adverse effects on foraging honeybees, their foraging activity, brood and colony development, hive vitality and honeybee health or on over-wintering colonies when used according to label instructions.

12. Which chemical classes (mode of action) are a good fit for SIVANTO® prime?

As a modern insecticide with an outstanding safety profile for controlling major sucking pests, SIVANTO® prime is a perfect new tool for Integrated Pest Management (IPM), especially as a complementary partner in integrated spray programs with different ketoenols and biological crop protection products.
13. Are there any restrictions in miscibility with other crop protection products?

SIVANTO® prime is generally well miscible with chemical crop protection products. As a general rule, each and every plant protection product should be tested before it is mixed with another chemical crop protection product or any other partner in the spray tank. If you want to tank-mix SIVANTO® prime with another product, first check with a small amount 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.

14. Why is the use of SIVANTO® prime favorable to the environment?

Selectivity towards beneficial insects and predatory mites is a prerequisite for a modern IPM-compatible product. The side effects of SIVANTO® prime on beneficial arthropods have been tested under field conditions, e.g. in various realistic semi-field and field trials. When used responsibly and properly according the label instructions, SIVANTO® prime can be considered safe to most beneficial insects (with the exception of predatory bugs), and specifically to pollinators such as honeybees and bumblebees.

15. Is SIVANTO® prime compatible with beneficial arthropods and suitable for IPM programs?

The minimal (negligible) risk to many beneficial arthropods, e.g. ladybird beetles, hoverflies, predatory mites and lacewings, makes SIVANTO® prime an ideal product for Integrated Pest Management (IPM) programs. However, SIVANTO® prime may affect predatory bugs like Orius laevigatus, Macrolophus caliginosus, Nesidiocoris tenuis and cannot be fully foliar-applied in a glasshouse under an IPM regime. There is no unacceptable effect on non-target arthropod populations after use of SIVANTO® prime under practical conditions in the field.

16. 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. In a study measuring the frequency of the feeding phases of Asian citrus psyllid (ACP) adults on treated citrus leaves using the electrical penetration graph (EPG) technique, it was shown that the ACP adults immediately stopped probing and feeding. In comparisons with standard competitors, SIVANTO® prime provides the fastest cessation of feeding, leading to quick mortality of target pests.
17. How long will SIVANTO® prime work?
Residual control of insect pests depends on the method of application and use rate. Foliar applications have displayed residual control of key pests for up to 28 days. Soil applications have demonstrated control for up to 50 days.

18. What is meant by SIVANTO® prime’s systemicity and translaminar activity?
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 translaminarily into adjacent plant cells. Soil applications provide systemic protection of new plant growth as well, while moving from the roots toward the tips of leaves. Foliar application provides local systemic protection and is also efficacious on insects feeding on the underside of plant leaves.

19. 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, such as whiteflies, aphids, leafhoppers and psyllids, as well as certain leaf miners.

20. Will you also provide mixture / co-formulation products?
We are testing and developing co-formulations featuring flupyradifurone and compounds from different mode-of-action groups and with different features in order to broaden the spectrum of targeted pests and crops, and optimize the potential of the final product.

21. What is your recommendation for active resistance management with SIVANTO® prime?
The IRAC mode of action (MoA) classification ensures that insecticide and acaricide 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 Mode of Action 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 unless there are no alternatives among other MoA groups. In the absence of a suitable rotation group option, it may be possible to rotate insecticides between subgroups if it is clear that cross-resistance mechanisms do not exist in the targeted insect population.