

Spirotetramat

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Vascular plants (higher plants) have transport tissues as opposed to nonvascular plants that do not have conducting tissues. There are two types of transport tissues in vascular plants: xylem and phloem. The xylem transports water and some nutrients up the plant to the leaves. The phloem transports sugars and other products down the plant from the leaves. Insects may feed on the phloem or the xylem. The majority of systemic insecticides are transported in the xylem to the leaves. Spirotetramat is transported in both the xylem and phloem, providing systemic activity against insects in both the xylem and phloem. This article presents some properties of spirotetramat.

The Insecticide Resistance Action Committee places spirotetramat in group 23 (tetronic and tetramic acid derivatives). Spirotetramat interferes with fat synthesis and the development of immature insects and is slow acting. It has little activity against adult insects. It is active as a systemic in both the xylem and phloem, as a translaminar and if eaten. Spirotetramat has limited contact activity.

After application of spirotetramat to leaves, it penetrates the leaf and is translocated down the plant to the roots and up the plant to developing shoots. This movement allows the insecticide to manage insects that are hiding under plant parts and are difficult to contact with an insecticide. The movement also allows the insecticide to manage feeding below ground on the roots and protect growing plant parts. The translaminar activity of spirotetramat allows the material to move through the leaf from one surface to the other. Thus, good coverage with the insecticide is less important but good coverage with an insecticide is always recommended.

Spirotetramat is effective against aphids, mealy bugs, psyllids, scales (soft and armored), whiteflies and some thrips. Cross-resistance to other groups of insecticides is not known. Thus, this insecticide is very useful in managing resistance by rotating groups of insecticides applied to insects.

Spirotetramat is much more active against immature insects than adult insects. It is up to 30 times more active against first instar nymphs of green peach aphid than adult aphids. However, adult aphids give birth to fewer nymphs. Once immature insects eat spirotetramat they die in two to five days. Spirotetramat should be applied when numbers of insects are low and in the early stages of the infestation. For scales applications should be made at the crawler stage.

Spirotetramat is harmless to slightly harmful to beneficials such as hoverfly larvae, spiders, predatory bugs, wasp parasites, ladybird beetles and lacewings. Spirotetramat is potentially toxic to bee larvae, and if exposure of bees will occur, applications should be made only in early morning or late evening to protect bees. Applications should not be made to bees in the field.

In summary, spirotetramat is a systemic insecticide that is translocated in both the phloem and xylem. It is useful in managing hidden insects and those on roots and on growing shoots. It also shows translaminar and oral activity. It is most effective against immature insects. Several sucking insects are managed by spirotetramat. It is useful in insecticide resistance management. It is harmless to slightly toxic to predators, and parasites and bees should not be exposed to spirotetramat. Products containing spirotetramat include Kontos and Movento.