INSECT CONTROL:
Soon there will be two ways about it

Bayer CropScience will shortly take insect control in a new direction with the introduction of 2-way systemicity – a revolutionary innovation whereby the active ingredient of their ground-breaking insecticide is distributed in both directions within the plant, allowing the product to eliminate targeted pests throughout the entire plant.

Previously, the active ingredients of systemic insecticides were transported through plants in one direction only, for example, from the upper side of the leaf to the underside or from the bottom of the plant to the top. Not only has this limited the ability of the active ingredients to protect the whole plant, ithas also allowed insects to attack unprotected, typically older leaves or hard-to-reach plant parts.

Bayer CropScience has developed a new insecticide which is distributed via both the xylem and the phloem transport systems within a plant, giving it 2-way systemicity. This unique ability of the insecticide to move through the plant in both directions provides long lasting, and truly systemic protection.

How does 2-way systemicity work?

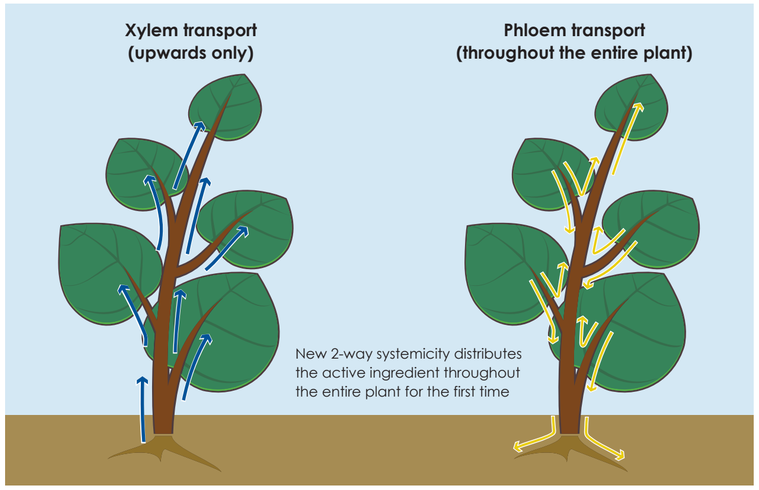
The 'systemicity' of insecticides refers to the uptake, transport and distribution of the active ingredient within the plant. There are two systems of transport within plants, however, traditionally only one has been utilised by the available chemistry.

Existing systemic insecticides are transported by the xylem, which carries water and nutrients upwards from the roots of a plant to its growing leaves. Transport through the xylem has given traditional insecticides one-way systemicity only and is most effective when applied to actively growing plant parts.

The additional transport system in the plant is the phloem, which transports the sucrose produced by photosynthesis from the leaves to the young shoots, leaves, buds, fruits and developing roots. Unlike the xylem, the phloem works in both directions – upwards from leaf to leaf and back down from the leaf to the roots.

The brand name of the first product exhibiting 2-way systemicity will be launched soon. This, and future products exhibiting 2-way systemicity can be identified by looking for this logo:

2XSYS



What does 2-way systemicity mean for the crop?

The high levels of mobility afforded by 2-way systemicity protect newly-forming, growing and older leaves from targeted pests during the control period, not just those leaves treated during application. This is particularly important considering the number of pests that target new, lush leaves as ideal feeding sites often protected and not exposed to the treatment at application.

Due to the constant redistribution provided by 2-way systemicity, there are no unprotected parts where pests can "run and hide". Therefore, crops will be more thoroughly protected than has ever been previously possible.

2-way systemicity in action

In trials to demonstrate the phloem transport from leaf to leaf, the following method was undertaken:

Young cabbage plants were wrapped before treatment to ensure only one mature leaf – the oldest one – could take up the active ingredient.

After treatment, the plants were infested with aphids.

Results showed that untreated plants remained infested, while the treated plants grew strongly. The single-treated leaf and all of the other leaves remained pest-free. Treating plants that have already been infested produces equally good results.

Fully developed leaves no longer grow, therefore they don't require nutrients. They supply sucrose to the phloem as sources of energy. The young leaves and shoots, however, are intensively growing and require ample amounts of sucrose for energy. In practice, foliar applications rely on uniform spray coverage to protect mature leaves. However, unlike the conventional one-way distribution, this new product that displays unique 2-way systemicity from Bayer CropScience provides long-term protection to sensitive growing leaves following foliar application.

"This unique product displaying 2-way systemicity is set to send sucking pest control across a range of vegetable and fruit crops in a rewarding new direction when it is introduced in Australia,"

said Chris Staff, Product Manager, Viticulture and Temperate Fruits, Bayer CropScience Australia.

For more information on 2-way systemicity and planned crops for registration, please contact: **Chris Staff**, Product Manager, Viticulture & Temperate Fruits at **chris.staff@bayercropscience.com**

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