



# TECHNICAL NOTES FOR CONSERVE

These notes are designed to support the main product manual insert on CONSERVE and give advice on how to obtain the best possible pest control.

## WHAT IS CONSERVE ?

CONSERVE is a selective insecticide for use in protected ornamental plant production and protected cucumber, tomato, pepper and aubergine for the control of Western Flower Thrip.

CONSERVE contains 120 g/l spinosad, an active ingredient with a unique mode of action that is highly active against Western Flower Thrips. Spinosad was developed from a fermentation process containing naturally occurring soil bacteria, *Saccharopolyspora spinosa*. The fermented broth is purified and formulated to produce CONSERVE.

CONSERVE was launched in 2002 for use in ornamental plant production. Approval for use on protected cucumbers was added in 2004 and protected tomatoes, peppers and aubergine in 2008.

## WESTERN FLOWER THRIPS (WFT)

### History and Host Crops:

Western Flower Thrips (WFT), *Frankliniella occidentalis*, originally a native of North America, first arrived in the UK in the late 1980's. It rapidly became established and is now one of the most serious pests on a wide range of plants grown under protection including flower, pot and bedding crops such as carnation, chrysanthemum, fuchsia, gerbera, geranium, saintpaulia, impatiens and a number of edible crops. Often there are differences in susceptibility of crops

and their cultivars.

### Description and Life Cycle:

WFT adults are 1-1.5 mm long, slender and yellow-brown in colour. WFT adults have two pairs of narrow wings, fringed with fine hairs. Female adult thrips lay up to 60 eggs, singly into a slit cut in leaf or flower tissue. Larvae are 0.4mm long, taking 5 to 14 days to pass through two larval stages to form pre-pupae which may drop to the ground as pupae after 2 days. However, a large proportion of WFT larvae will pupate on the leaf and do not drop to the ground. Adults will appear 4-11 days later.

At temperatures of 20-30°C the complete life cycle can take place in 12-18 days.

### Symptoms and Damage:

WFT infest both surfaces of leaves but are usually found on the lower surface. Severe damage occurs when they feed beneath bud scales, between the calyx and petals and directly on flowers.

Thrips feed by rasping and piercing plant cells and sucking out the contents. The damaged cells fill with air causing characteristic white, silvery flecking and scarring. Specks of black, shiny frass are deposited on both leaves and flower petals. Blanching of petals, is also common. Thrips feeding in the growing tip or on buds cause deformed growth.

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**ALWAYS READ THE LABEL: USE PESTICIDES SAFELY**

## Transmission of Plant Virus Diseases:

WFT is an important vector of plant viruses, the two most common on ornamentals being Tomato Spotted Wilt Virus (TSWV) and Impatiens Necrotic Spot Virus (INSV). The viruses are acquired by larval thrips feeding on infected plants, but are only transmitted to new plants by the adult.

Virus symptoms vary widely between plant species and cultivars but include distorted growth and dark-ringed lesions.

Even when thrips populations are very low they are still virus vectors, hence control of the pest is critical for effective disease management.

### MONITORING OF WFT

Effective monitoring is key to successful thrips control. Early detection is vital as small populations of WFT are far easier to control than large outbreaks.

Sticky traps can be used to detect low thrips numbers before damage is seen as well as helping to determine if control measures have been successful.

Traps should be placed just above the crop canopy with one to every 100-200 m<sup>2</sup>. Blue traps are more efficient than yellow traps for most of the year, although in winter under low light conditions the yellow traps may catch more.

Pheromone lure traps<sup>1</sup> are available specifically for WFT. Other pheromone lure traps are available to attract a wider range of thrips species.

Traps should be counted weekly and where the population trends are recorded graphically it can be more meaningful than simple numbers.

In pot plant production monitoring is often done by using indicator plants (known to be particularly attractive to thrips), rather than just using sticky traps.

<sup>1</sup> Thripline AMS pheromone lure.

### RESISTANCE ISSUES

Since the launch in 2002 control of Western Flower Thrips with CONSERVE has been an outstanding success; however resistance to spinosad by WFT has recently been confirmed on AYR chrysanthemums.

Resistance by WFT to spinosad is generated by repeated exposure to the chemical.

Where labels are adhered to and good resistance management strategies are employed no resistance incidents have been recorded worldwide.

World-wide experience shows that where spinosad product labels have not been adhered to and excessive applications have been made (sometimes on a weekly basis), resistance problems with WFT have developed and the product has been withdrawn from use to those growers affected.

Where resistance has developed the removal of the product from use on the site has generally resulted in sensitivity returning within 6-12 months.

## FOLLOW THE LABEL RECOMMENDATIONS FOR MANAGING RESISTANCE.

### GENERAL INFORMATION ON CONSERVE

- CONSERVE acts by direct contact of thrips with spray or treated residue and by ingestion of treated plant tissue. Ingestion is 5-10 times more effective than contact.
- All stages are controlled, especially larvae and adults. Intoxicated insects can remain on the crop for 1 to 2 days, but their activity is stopped in a very short time.
- CONSERVE **does not** have any fumigant activity.
- It is essential to obtain thorough coverage of the crop. Apply at high volume (500 - 1000 litres per ha on ornamentals, 600 - 1000 litres per ha on cucumbers) with a medium spray (BCPC classification) at high pressure to ensure penetration of dense crop canopies. Thrips are mainly found on the under-sides of leaves and within buds so use appropriate techniques to ensure these areas of the crop are treated.

Allow 4 hours between application of CONSERVE and overhead irrigation.

### CROP SAFETY

CONSERVE has been tested on a wide range of ornamentals grown as pot plants and cut flowers. CONSERVE has good plant safety when applied at different growth stages, including flowering.

Some spotting of Saintpaulia (African Violet) flowers may occur.

In view of the large number of species and cultivars grown it is recommended to test CONSERVE on a small number of plants to confirm plant safety before spraying the crop.

## OTHER PESTICIDES FOR USE IN ROTATION WITH CONSERVE

Ideally best control of WFT is achieved by using both biological and chemical control along with cultural control.

When applying chemicals it is important that the chosen control methods are rotated and that reliance is not placed upon one chemical or a

group of products which have the same mode of action.

Among the pesticide products with activity, approval or specific off label approval (SOLA) against WFT are the following. :

<b>Pesticide products with activity, approval or specific off label approval(SOLA) against thrips:</b>			
<b>Products</b>	<b>Chemical name</b>	<b>Chemical group (IRAC Group*)</b>	<b>Comment (label or SOLA will limit crop use).</b>
Conserve	spinosad	Spinosyn (5)	
Dynamec	abamectin	Avermectin (6)	
Nemolt	teflubenzuron	Benzoylurea (15)	SOLA rate required for thrip control.
Calypso	thiacloprid	Nicotinoid (4A)	SOLA required.
XL All Nicotine 95% Nicotine Shreds	nicotine	Nicotine (4B)	Final use 08/06/10.
Decis/DecisProtech Toppel.	deltamethrin cypermethrin	Pyrethroid (3)	Not IPM compatible.
Mycotal	<i>Verticillium lecanii</i>	Biological	

\*IRAC Group International Resistance Action Committee mode of action classification groups For more information see [www.irc-online.org](http://www.irc-online.org)

### USING CONSERVE IN AN INTEGRATED PEST MANAGEMENT PROGRAMME

As part of an IPM strategy the crop should be monitored closely for the presence of WFT and applications of CONSERVE made only as required. CONSERVE has been shown to be safe to many predatory mites, insects and nematodes used as part of an IPM programme. Details are included in the Conserve product manual and product label.

### OTHER INSECTS CONTROLLED

Application at the label rates would be expected to offer control of caterpillar pests although there is no approval for this.

<sup>1</sup> Thripline AMS pheromone lure.

### Approval Holder

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### TANK MIXES

CONSERVE has been found to be physically compatible when mixed with one of the following: Chess, Bravo 500, Bumper 250EC, Aphox and Amistar.

Tank mixes are not manufacturers' recommendations and must be at grower's own risk and in accordance with both product labels.

CONSERVE is a registered trademark of Dow Agrosciences LLD; Amistar, Aphox, Bravo, Chess and Dynamec are registered trademarks of a Syngenta group company; Nemolt is a trademark of BASF; Calypso, Decis and Decis Protech are registered trademarks of Bayer; Mycotal is a registered trademark of Koppert; Nicotine Shreds are a product of Dow Agrosciences, Thripline AMS is a trademark of Syngenta Bioline. XL All Nicotine 95% is a product of Vitax, Toppel is a product of United Phosphorus.

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