



FLIPPER[®]

*The **natural and sustainable** choice
for foliar pest control*

Introducing FLiPPER

FLiPPER is a new and effective biological insecticide with a considerate side for fruit and vegetable crops¹

Derived from a natural by-product of extra virgin olive oil, FLiPPER is ruthlessly effective at targeting pest insects that can cause crop rejection, loss of revenue and costly waste. FLiPPER presents minimal risk to beneficial insects or pollinators and is also perfectly compatible with conventional crop chemistry meaning that it fits neatly into an integrated pest management approach.²

¹Registered for use in strawberries, cucumbers and tomatoes. Extension of Authorisations for Minor Uses (EAMU) in selected field vegetables, leafy vegetables, herbs, tree fruit and soft fruit grown outdoors and under protection.

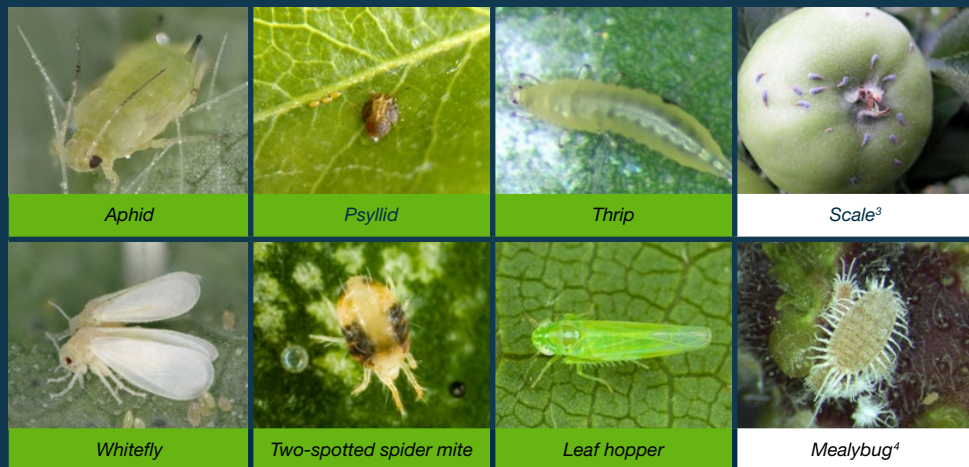
²When an established population of beneficial organisms is already present at the time of application, FLiPPER applied at standard rates does not cause unacceptable reduction to beneficial insect populations. Data source: FLiPPER Selectivity Study at IPM Impact Nederhespen, Belgium 2014. Two-spotted spider mite, Aphid, Whitefly (on label) and Leafhopper and Thrips (EAMU).

Active substances	479.8 g/L (47.8 % w/w) fatty acids C7-C20
Crops	Tomatoes, cucumbers and strawberries (all permanent protection with full enclosure); FLiPPER may only be used in a permanent glasshouse (no polytunnels); EAMUs exist for a wide variety of outdoor fruit and vegetable crops – see table on the next page for details
Maximum individual dose	16 L product per hectare with a maximum concentration of 1.6 L per 100 L water Water volume: apply in a volume of water sufficient to achieve total coverage of the target foliage; normally 400-1000 L/ha for smaller plants and 1000-1600 L/ha for larger plants with dense foliage
Pests controlled	Whitefly (<i>Trialeurodes vaporariorum</i> , <i>Bemisia tabaci</i> , <i>Aleurothrixus floccosus</i>) Aphid (<i>Myzus persicae</i> , <i>Macrosiphum euphorbiae</i> , <i>Aphis gossypii</i>) Two-spotted mite (<i>Tetranychus urticae</i>)
Maximum number of treatments	5 per crop
Frequency of applications	Apply every 7 days as required by pest pressure but do not apply more than three weekly applications consecutively
Application timing	Any time – no restriction
Latest time of application	No restriction

Note: Table only applicable for on-label authorisations.

Broad-spectrum activity across multiple crops and pests

FLIPPER's unique and multi-site mode of action provides consistent broad-spectrum activity across multiple crops and pests and is shown to be active at all stages of the target pest lifecycle. FLIPPER is active on insects resistant to other insecticides.



■ Efficacy proved by trials and commercial experience ■ Under confirmation

- FLIPPER is a contact-only insecticide and acaricide.
- It is active against all stages of insect and mite life-cycles, such as eggs, juveniles and adults.
- FLIPPER's unsaturated carboxylic acids (C14-C20) penetrate the external layers of the target pest, interacting with multiple vital metabolic processes. This interferes with feeding activity, resulting in mortality.

FLIPPER's key Extension of Authorisations for Minor Uses (EAMUs) offer growers a new tool to help protect their crops from damaging pests.⁵

EAMU number	Crops	Pests controlled	Application timing	Maximum number of treatments
0103/2020	Outdoor and protected field vegetables	Thrips (<i>Thrips tabaci</i>), Aphids (<i>Aphididae</i>), Cabbage aphid	1 Mar to 30 Aug	Outdoor crops: 9 per crop Protected crops: 8 per crop
3416/2019	Leafy vegetables and fresh herbs	Aphids (<i>Aphididae</i>), Western flower thrip (<i>Frankliniella occidentalis</i>), Thrips (<i>Thrips tabaci</i>), Spider mite (<i>Tetranychus urticae</i>)	1 Mar to 30 Aug	Outdoor crops: 9 per crop Protected crops: 8 per crop
3418/2019	Outdoor and protected soft fruit	Aphids (<i>Aphididae</i>), Two-spotted spider mite (<i>Tetranychus urticae</i>), Western flower thrip (<i>Frankliniella occidentalis</i>), Leaf hoppers, Strawberry blossom weevil (<i>Anthonomus rubi</i>), Thrips (<i>Thrips fuscipennis</i>), Whitefly	1 Mar to 30 Aug	Outdoor and protected crops: 8 per crop
3419/2019	Tree fruit grown outdoor and under temporary protection	Aphids (<i>Aphididae</i>), Two-spotted spider mite (<i>Tetranychus urticae</i>), Blossom weevil	1 Mar to 30 Aug	Outdoor and protected crops: 8 per crop

³Limited data available with variations, trial work ongoing. ⁴Limited data available, trial work ongoing. ⁵Before use of FLIPPER under an Extension of Use Authorisation (EAMU), users must have a copy of the EAMU authorisation which can be downloaded from CRD's website: <https://secure.pesticides.gov.uk/offlabels/search.asp> Users must follow all conditions and advice in EAMU notice as well as the safety information on the label. These extensions of the authorised use provide for the use of FLIPPER in respect of crops and situations other than those included on the product label. Neither the efficacy or the phytotoxicity of the product for which an Extension of authorisation has been granted have been assessed and, as such, the user bears the risk in respect of failures concerning its efficacy and phytotoxicity.

Getting the best results from FLIPPER

Top 5 preparation tips



1 Ideally prepare the spray solution using non-hard water or collected rainwater for full efficacy. For water with more than 300 ppm, it is advisable that you add a Tri-sodium salt of citric acid (TSCA) water softener to the spray solution / water prior to the addition of FLIPPER. Do not use X-Change® water softener however as it's an acidifying water conditioner.



2 The final spray solution should always be alkaline. The pH level of the FLIPPER spray solution may increase up to pH 10 without issue.



3 Avoid vigorously stirring the solution to prevent foam formation.



4 FLIPPER is physically compatible with many chemical plant protection products and must always be added last to the tank. Do not tank mix pesticides or foliar feeds containing sulphur or metallic ions (such as zinc, copper or iron) – these may be physically incompatible and may cause phytotoxicity. Do not mix with acidic pesticides, fertilisers or with products containing fosetyl-aluminium.



5 Storage below 10°C may cause crystallization to occur – this is completely reversible and will not affect the effectiveness of the product.

Top 5 application tips



1 Direct contact with the target pest and coverage is key: ensure good coverage of the pest and placement of the spray, including the underside of leaves and growing points while avoiding surface runoff – FLIPPER is a contact insecticide, which means it must have direct contact with the target pest to be effective.



2 Apply FLIPPER at the very first signs of pest emergence so that population buildup is prevented through targeting the eggs and the very young larval stages.



3 Apply in the period of the day when the pest is likely to be most vulnerable to contact.



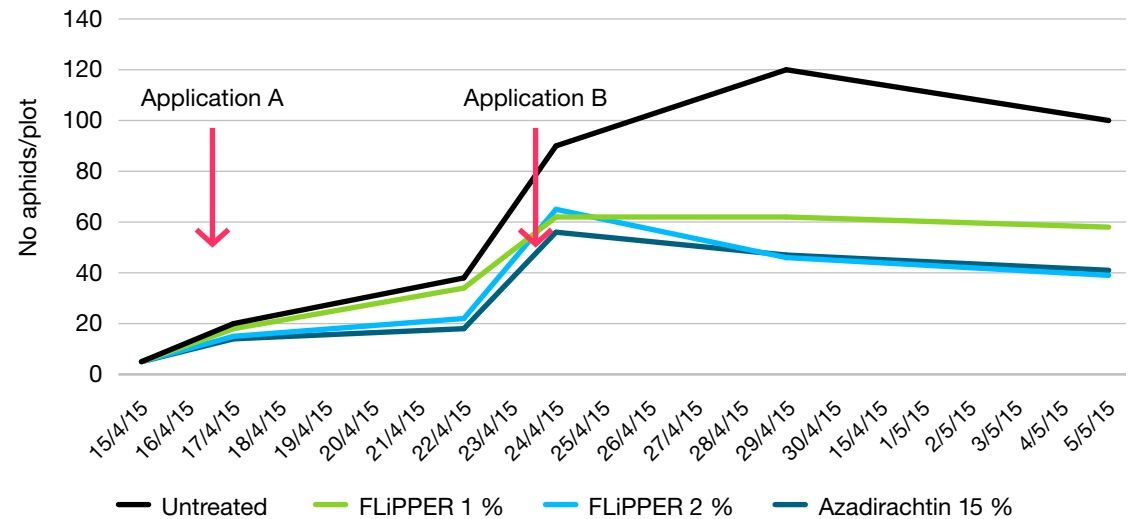
4 The suggested application rate is 1.0 L of product per 100 L of water, equivalent to an inclusion rate of 1 %.



5 Since FLIPPER has no residual insecticidal activity, wait for 3 days after the initial application to check if additional applications are required – if so, this should be done at 7-day intervals.

FLiPPER shows consistently high efficacy levels against different species on multiple crops

FLiPPER against aphids in outdoor lettuce



FLiPPER proved a highly effective biological treatment, reducing aphids by around 250 % versus untreated crop. FLiPPER efficacy appears fully competitive with Azadirachtin.

Products were applied twice on 15 and 22 April 2015 and the water volume was 750 L/ha. Trial conducted by Agrobli in 2015. Sp. *Nasonovia ribisnigri* AB15003IT01. Assessed 15/04/2015, 17/04/2015, 24/04/2015, 29/04/2015, 15/5/2015, 1/5/2015, 2/5/2015, 3/5/2015, 4/5/2015, 5/5/2015. Azadirachtin not approved for UK outdoor use.

Indication of use: Aphids

Timing

- Apply FLiPPER on founding colonies or at the first sign of infestation establishment – it is imperative that you do not wait until the establishment of a homogenous pest population as this may result in a poor level of control
- Apply in climatic conditions and at crop stages during which the aphids are exposed
- Delaying applications will risk contact being made only to the most exposed individuals in colonies and will lead to the ongoing development of those colonies unless multiple applications are made

Rate

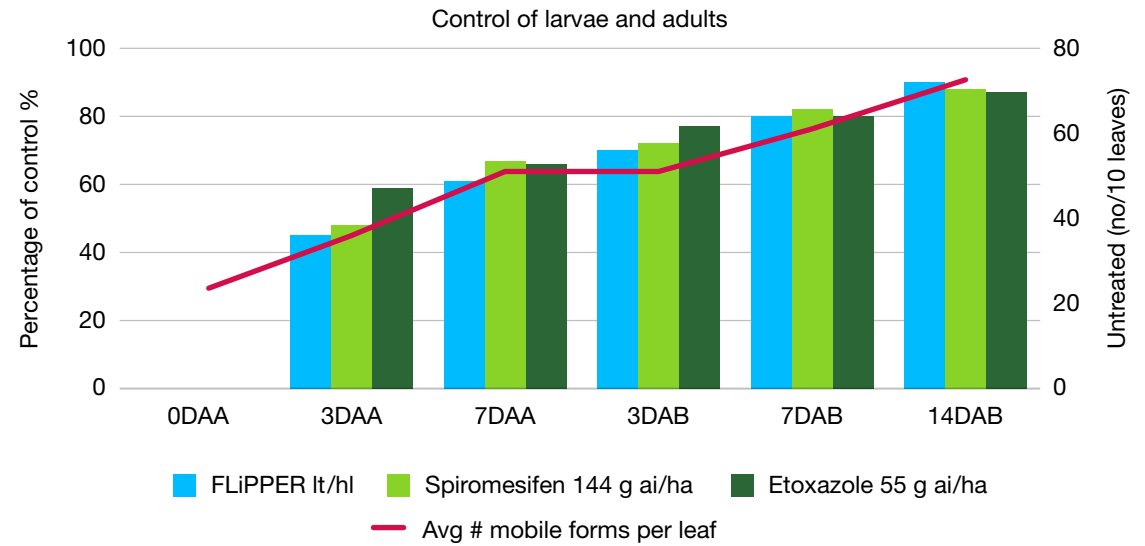
- Stand-alone applications at 1 % V/V rate (equivalent to 1 L product/ 100 L water)
- For *Hyalopterus pruni*, *Eriosoma lanigerum*, *Brevicoryne brassicae*, or other aphids protected by waxes or wool, use a max. application rate of 2 % V/V (equivalent to 2 L product/ 100 L water)

Conditions

- Best results are achieved with colonies of 10-40 individuals/shoot. With very high populations individuals shielded from the spray may restart the infestation and will require a second treatment
- If leaves are curled, use FLiPPER in sequence with systemic partners, such as Movento in brassicas and other field vegetables or with Batavia in top fruit and soft fruit



FLiPPER against two-spotted spider mites in protected strawberries



FLiPPER proved a highly effective biological treatment. FLiPPER efficacy appears fully competitive with systemic acaricides for both adult and larvae growth stages.

Neapoli, Greece 2012. Water volume 1000 L/ha.

Indication of use: Mites

Timing

- Apply FLiPPER at the first sign of infestation establishment
- For bud mites, apply during migration before entering the buds
- Repeat the application when the newly hatched mites first appear

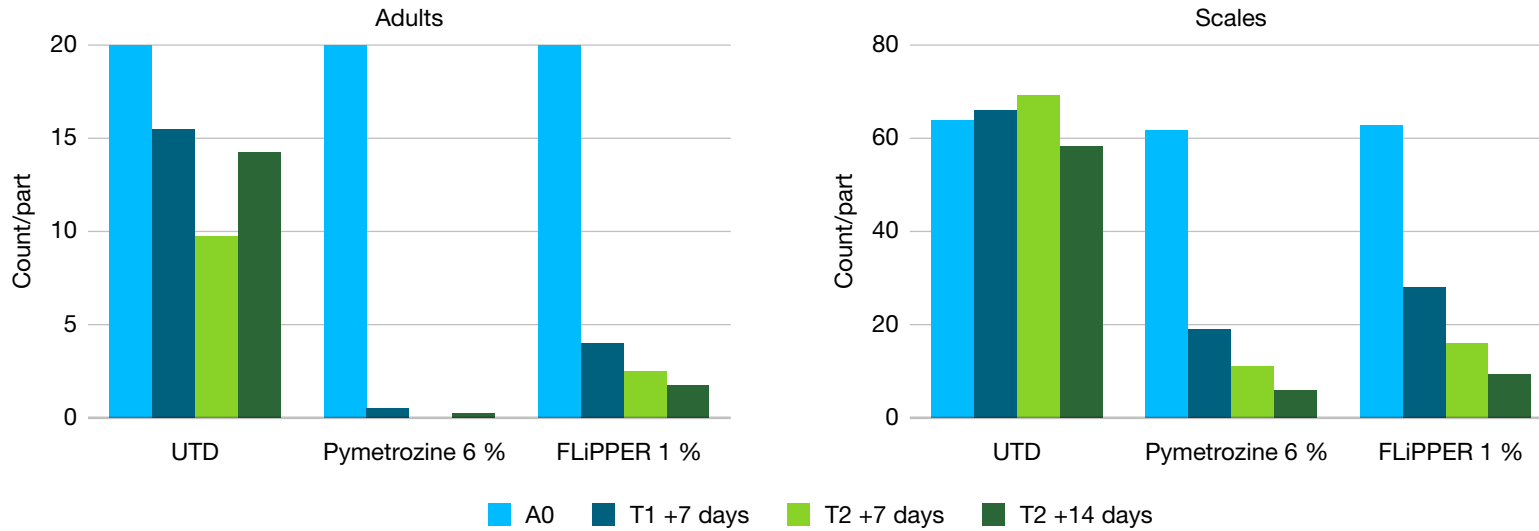
Rate

- In case of low infestation, conduct 2 applications at 1 % V/V rate (equivalent to 1 L product/ 100 L water) vs. motile forms
- Under average or high infestation pressure, use a max. application rate of 2 % V/V (equivalent to 2 L product/ 100 L water) at first application to control eggs or to reduce high infestation levels

Conditions

- Target eggs and juveniles on both sides of leaves
- Pay particular attention to the areas from which the infestation originated

FLiPPER against whitefly in protected tomatoes



FLiPPER proved a highly effective biological treatment, with performance close to that of Pymetrozine.

Source: 2017 trial STC whitefly. Control lab conditions. Pymetrozine no longer registered for use in the UK and used for trial purposes only.

Indication of use: Whiteflies

Timing

- Apply FLiPPER at the first signs of infestation establishment
- Apply in the morning avoiding the peak heat of the day
- Assess the efficacy of the treatment not earlier than 48 hours after application
- If needed, repeat the application at 7-day intervals, up to 5 applications in a crop cycle, but with a maximum of 3 applications per block

Rate

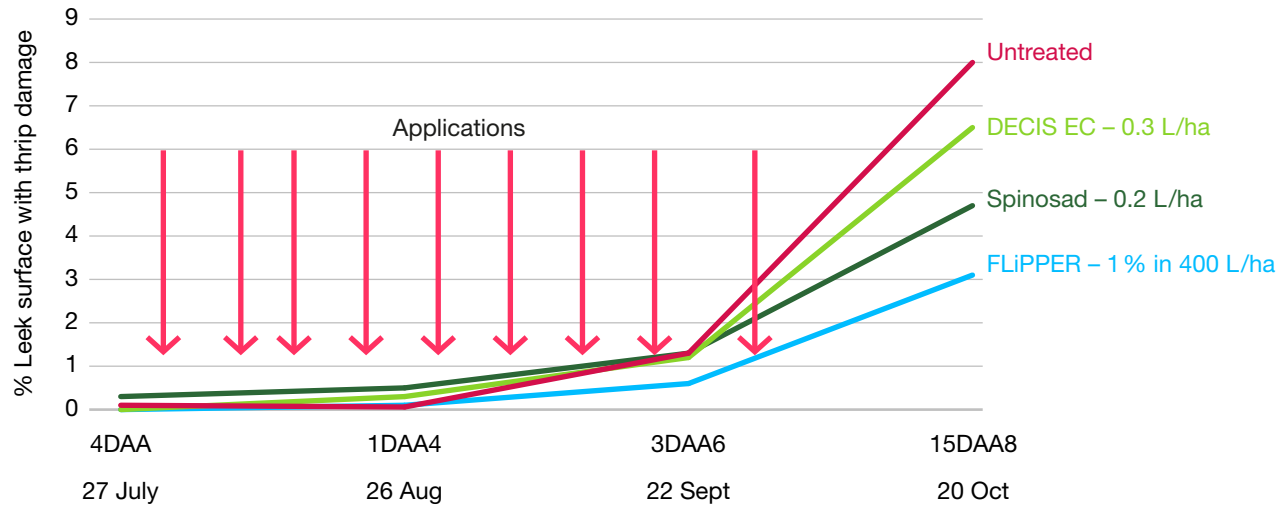
- Stand-alone applications at 1 % V/V rate (equivalent to 1 L product/ 100 L water)

Conditions

- Target larvae or nymphs to better control the infestation build up



FLiPPER against thrips in leeks



FLiPPER proved a highly effective biological treatment. In trial conditions FLiPPER outperformed Decis EC and Spinosad. FLiPPER's new mode of action also combats known resistance and can be used as part of an IPM strategy.

Source: 2015 trial 150950 in NLD for thrips in leeks. Nine applications for trial purposes only.



Untreated leeks



Leeks treated with FLiPPER

Indication of use: Thrips

- | | |
|-------------------|---|
| Timing | <ul style="list-style-type: none"> Apply FLiPPER at the first sign of infestation establishment Apply at times of the day/meteorological conditions when the pest is likely to be more vulnerable to contact. NB, in hotter, drier conditions the pest will be deeper in the plant and therefore less vulnerable to contact with spray applications |
| Rate | <ul style="list-style-type: none"> Stand-alone applications at 1 % V/V rate (equivalent to 1 L product/ 100 L water) |
| Conditions | <ul style="list-style-type: none"> Target juveniles and adults |

FLIPPER offers:

- Fast knockdown of a range of pests for improved crop quality and yield.
- Exemption from MRL (Maximum Residue Levels) testing, no preharvest interval. Can be used in conventional and organic⁷ farming.
- Good compatibility with crop protection products with minimal risk to beneficial insects making it an ideal partner for integrated spray programmes.
- No resistance and controls strains of pests resistant to other insecticides.

⁷Certification received from Organic Farmers & Growers (OF&G) and Scottish Organic Producers Association (SOPA).



For more information, call 0808 1969522 for technical advice or visit:
cropscience.bayer.co.uk/flipper

**Biologicals by Bayer – the power of nature,
empowered by science**

FLIPPER contains fatty acids C7-C20. FLIPPER is a registered Trade Mark of AlphaBioPesticides Limited. Use plant protection products safely. Always read the label and product information before use. Pay attention to the risk indications and follow the safety precautions on the label.
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