



Department
for Environment
Food & Rural Affairs

***Liriomyza* treatments for herbaceous plants to enable movement to Ireland and Northern Ireland**

Technical Guidance

Date: July 2026

Version: 1

This guide is relevant for growers and propagators of young herbaceous plants for movement to Ireland and Northern Ireland.

The key points are:

- EU requirements mean that herbaceous plants in Great Britain must be free from the tomato leaf miner (*Liriomyza bryoniae*), the South American or serpentine leaf miner (*Liriomyza huidobrensis*) and the American serpentine leaf miner (*Liriomyza trifolii*) to enable movement to Ireland and Northern Ireland.
- *Liriomyza bryoniae* is present in GB. *Liriomyza huidobrensis* and *Liriomyza trifolii* are absent and if found the relevant plant health authorities must be notified (see the Advisory Information section).
- There are four possible additional declarations (ADs) that can be added to the phytosanitary certificate. One of these ADs requires treatment for *Liriomyza* spp. followed by an official inspection by the PHSI immediately prior to marketing. Details on treatment options available for *Liriomyza* spp. to help meet the EU requirements are presented in this document.
- *Liriomyza sativae* is a quarantine pest which is absent from GB but is not subject to the EU additional declarations. If found the relevant plant health authorities must be notified (see the Advisory Information section).

Movement requirements

On 11th April 2022, new EU requirements applied that affected the movement of herbaceous plants to Ireland and Northern Ireland (see Annex 1). There is a list of plants that are considered to be herbaceous (non-woody) [here](#).

Due to the presence of *Liriomyza bryoniae* in the UK, only three of the possible four additional declarations can be put on the phytosanitary certificate (b, c or d). The additional declarations (ADs) that are available for most growers in the UK are b) or c).

AD b) requires official inspection of the plants at least monthly, for 3 months prior to the movement from that place of production. AD c) requires treatment for *Liriomyza* followed by an official inspection by the PHSI immediately prior to marketing. If no signs of *Liriomyza* are found, the relevant AD is added to the phytosanitary certificate and the movement is permitted.

For AD c), acceptable treatments to apply throughout the growing season can be preventative, cultural, biological or chemical or a combination, provided efficacy can be proven and there are no signs of *Liriomyza* spp. on the plants prior to marketing.

A general approach to *Liriomyza* control is summarised below, but it is recommended that growers consult a BASIS qualified adviser for tailored advice.

A plant pest factsheet on *Liriomyza* species is available [here](#) including symptoms and methods of detection.

Monitoring for *Liriomyza*

Monitoring for *Liriomyza* should be done routinely to provide evidence for the absence of the pest and to evaluate the efficacy of any treatments. If *Liriomyza* are found, the PHSI should be contacted to collect a sample and check whether it is either of the quarantine species *L. huidobensis* or *L. trifolii* (see Advisory information).

Sticky traps

- Yellow sticky traps are useful tools for the detection and monitoring of adult flies, particularly at low population densities.
- Traps should be placed as close as possible to the top of the plant canopy, as this is where larvae typically feed and where feeding and oviposition (depositing of eggs) by adults occurs. However, if using flying biological control agents, place the traps with the bottom edge about 20 cm above the plant canopy, this will reduce the numbers of flying beneficials caught. As the plants grow, cards should be moved upwards.
- Avoid placing traps in draughts or too near glass as this can reduce efficacy.
- Place traps around heating pipes and in areas where pests have previously been an issue or in high-risk areas such as over imported or favoured host plants.

- For general monitoring purposes place traps vertically and at a minimum spacing of 25 traps per ha (1 per 20m x 20m), this can be increased to 1 trap per 20 sq. m or for every 20 m of rooting bench/bed (1 - 1.5 m wide) to help confirm pest absence or in high-risk areas.
- There is some evidence that horizontally placed traps catch more adults compared to vertically placed traps and they may also reduce capture of flying biological controls agents e.g. parasitoid wasps.
- Check traps weekly and record the numbers of *Liriomyza* adults caught. Replace traps at least monthly and place new traps in the same position as the original traps. Date and number each trap to enable monitoring and recording of pest numbers over time.

Plant monitoring

- Check plants regularly (e.g., every week) throughout the growing season for adult leaf miners (Fig.1), mines (Fig. 2) and their feeding and oviposition punctures (Fig. 3).

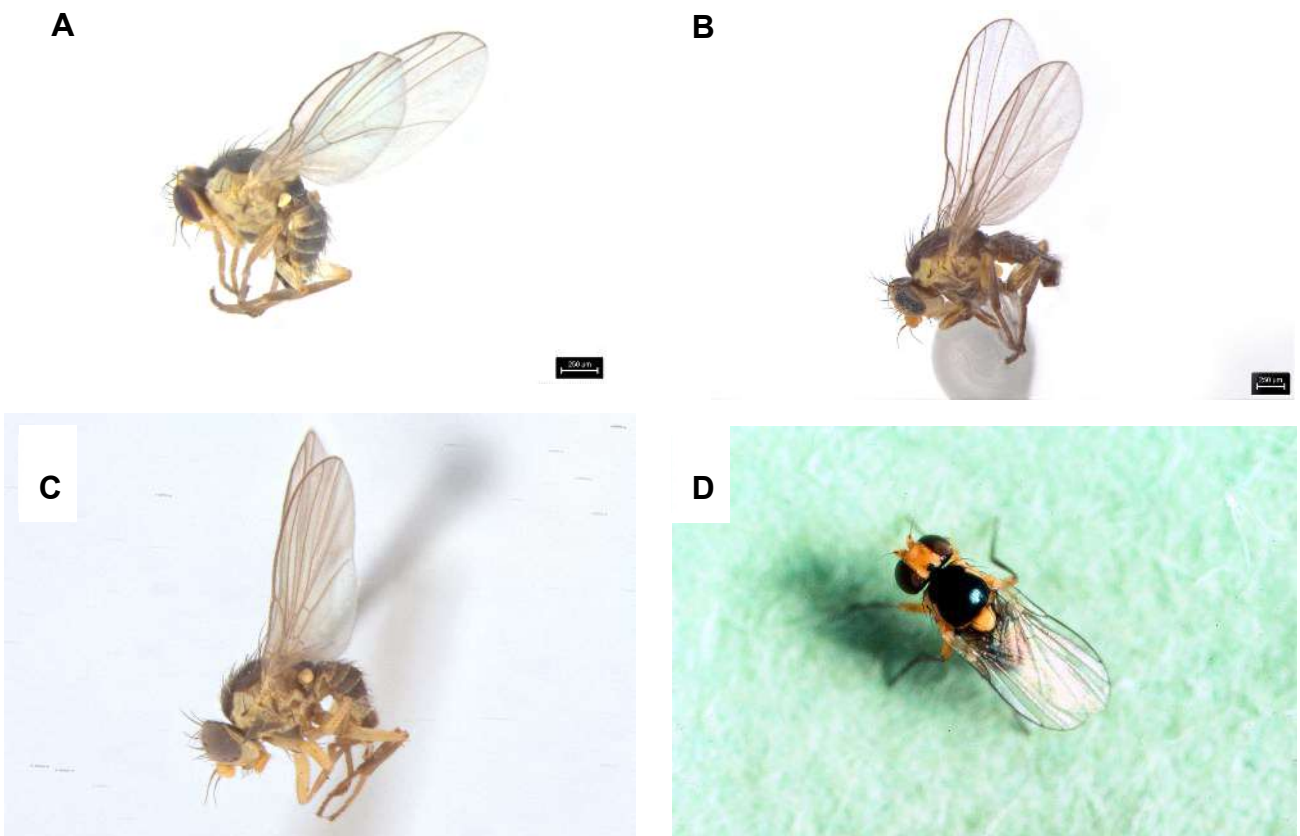


Fig. 1. *Liriomyza bryoniae* (A); *Liriomyza huidobrensis* (B); *Liriomyza trifolii* (C), *Liriomyza sativae* (D). Copyright, Fera Science Ltd.

- Feeding and oviposition punctures are generally rounded, about 0.2 mm in diameter, and appear as white speckles on the upper or lower surface of the leaf. Native genera like *Chromatomyia* produce ovate punctures.

- Both small and large mines may be visible.
- Larvae may be visible in the mines of symptomatic leaf material if held up to the light. Pupae may sometimes be visible on the leaf after exiting the mine (Fig.2) or the mine may be empty/vacated once larvae have dropped to the ground to pupate. If the pupa is embedded inside the mine, or sometimes with one end sticking out of the mine, the leaf miner is unlikely to be a *Liriomyza* species.



Fig. 2. *Liriomyza* spp. pupa exited from *Trigonella foenum-graecum*. Copyright, Fera Science Ltd.

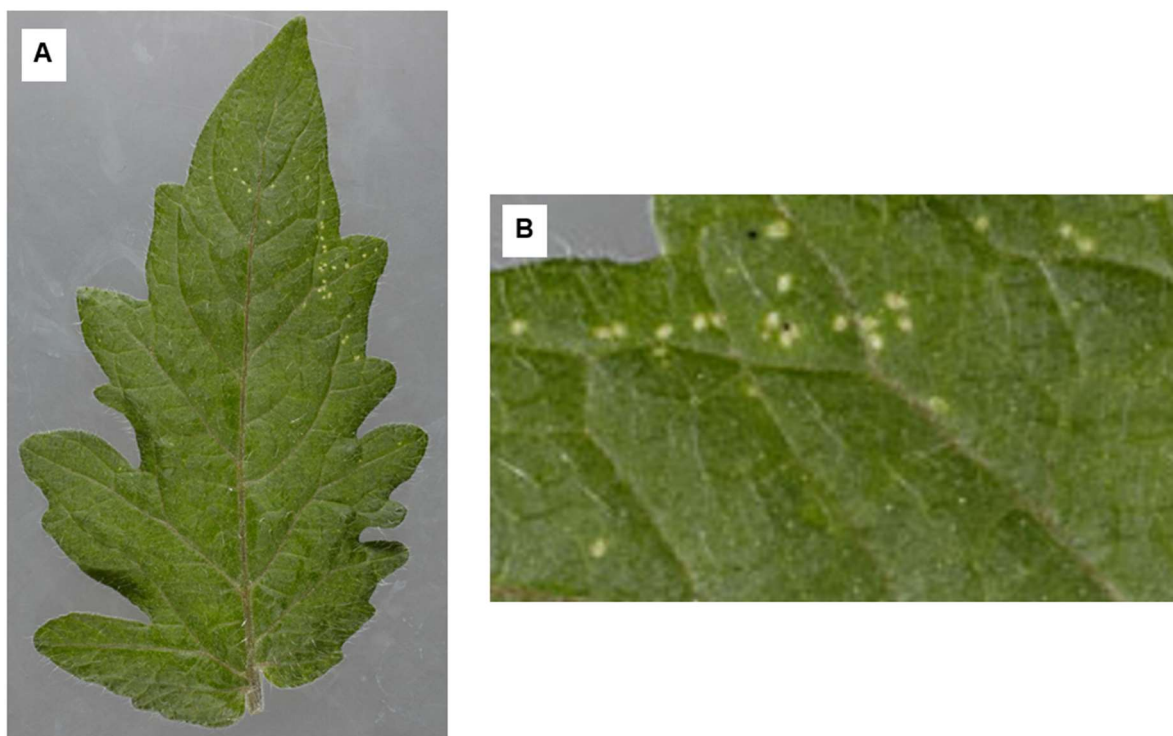


Fig. 3. A Oviposition punctures on a tomato leaf produced by tomato leaf miner (*Liriomyza bryoniae*). B. A magnified view of the same oviposition punctures Copyright, Fera Science Ltd.

Treatment options

A combination of treatment options can be applied depending on pest presence and pest pressure. The effectiveness of treatments should be continually checked by regular monitoring as outlined above.

The range of control options available is summarised along with some general guidance on their implementation.

Cultural controls

These are some of the most effective control measures and should be implemented alongside any biological or chemical methods.

- Start clean
 - If possible, isolate plant material from different sources and temporarily keep imported material in a separate area for monitoring.
 - Thoroughly inspect all incoming plant material for signs of *Liriomyza* using a 10 – 20 x hand lens or smartphone lens, as well examining stock plants that are being used for propagation and young plants being grown from seed.
 - Ensure imported plants have the correct documentation and are sourced from a reputable supplier.
 - For each new crop use new or clean pots, trays, and matting.

- Maintain strict weed control in and around the growing area. Dispose of any weeds carefully, away from the glasshouses or tunnels.
- Ideally, floors should be concrete or covered with groundcover matting.
- Physical barriers
 - Yellow roller traps can be used to capture large numbers of adults in heavy infestations, such as between infested crops and new batches of plants, or in empty structures. However, these are not generally compatible with flying biological control agents such as parasitic wasps which can also be caught on the traps.
 - Insect screening can be put in place around vents and doors to help exclude pests such as adult leaf miners flying in from outdoors or other structures, but these are expensive and can affect ventilation unless fans are put in place.
 - Screens can also be used to confine pests to one part of a glasshouse or polytunnel.
- Remove *Liriomyza*
 - Remove leaves with feeding and oviposition punctures or mines.
 - Remove heavily infested plants completely.
 - Collect, cover, and destroy infested plant material as soon as possible.
- Hygiene
 - Staff should only move from clean to infested areas in any one day and avoid wearing yellow clothing, as *Liriomyza* adults are attracted to this colour and therefore staff could move the pest around on site.
 - Crop debris, plants, weeds, pots, trays, matting should be collected, covered and disposed of as soon as possible. If waste needs to be stored prior to disposal, this should be covered and as far away from any susceptible plants as possible.
 - Pots and trays that will be re-used should be sterilised as soon as possible.
 - Following infested crops, yellow sticky traps should be put in place and for heavy infestations industrial vacuums can be used to remove pupae from the floor.

Biological controls

Controlling *Liriomyza* with chemical plant protection products is difficult due to the larvae residing within the leaf and to potential insecticide resistance.

Biological control agents (BCAs) are effective in combination with cultural control methods and or compatible insecticides within an Integrated Pest Management (IPM) programme. Using IPM also reduces the risk of any further insecticide resistance emerging and avoids disrupting IPM strategies used for control of other pests.

As BCAs are living organisms, to ensure efficacy, all supplier instructions need to be carefully followed. An IPM specialist will be able to advise on the most appropriate approach for the situation.

The following BCAs are effective against *Liriomyza*:

- Parasitic wasps
 - *Dacnusa sibirica* (Fig 4a) is an endoparasitic wasp which lays its eggs within leaf miner larvae.
 - *Diglyphus isaea* (Fig. 4b) is an ectoparasitic wasp which paralyses leaf miner larvae before laying eggs alongside them.
 - *Diglyphus* adults and larvae kill leaf miner larvae and stop further mining, which is useful in ornamental crops where there is little tolerance of damage
 - The presence of small, narrow 'aborted' leaf mines indicates good establishment of the wasp
 - They are best applied as soon as the first active leaf mines are found. They should then be released weekly until the leaf miner population is controlled.
 - Prophylactic introductions can also be useful in high-risk areas where outbreaks have previously occurred.
 - *Diglyphus isaea* is the more effective parasitoid as the adult females paralyse and 'host feed' on the young leaf miner larvae and stop them feeding, before laying eggs alongside the older leaf miner larvae. The parasitoid larvae then feed on the pest larvae and kill them. *Diglyphus* establishes better at high leaf miner densities and is most effective at 15°C and above. The guideline rate is 0.5 to one wasps, per m² per week, although higher release rates may be needed in high leaf miner densities. The efficacy of *D. isaea* is evident by the presence of small, 'stopped' mines, parasitoid larvae or pale turquoise parasitoid pupae in the mines which turn black just before emergence as adults, and 'pit props' (frass columns) within the mines. The 'stopped' mines make *Diglyphus* a better choice than *Dacnusa* when the leaf miner damage tolerance is low e.g. for ornamental plants and fresh herbs.
 - *Dacnusa sibirica* should be used preferentially at very low pest densities. It will work at temperatures as low as 10°C but is less effective in hot sunny weather, so is best used early in the season. The guideline rate is 0.5 wasps per m² per week. *Dacnusa* parasitism allows the leaf miner larva to continue mining until pupation, so it is slower to give control than *Diglyphus*.
 - In areas of high pest density localised release of *Diglyphus* should be made throughout the season if temperatures allow.
 - An entomologist or IPM adviser can monitor the level of parasitism and advise when to stop release of parasitic wasps.

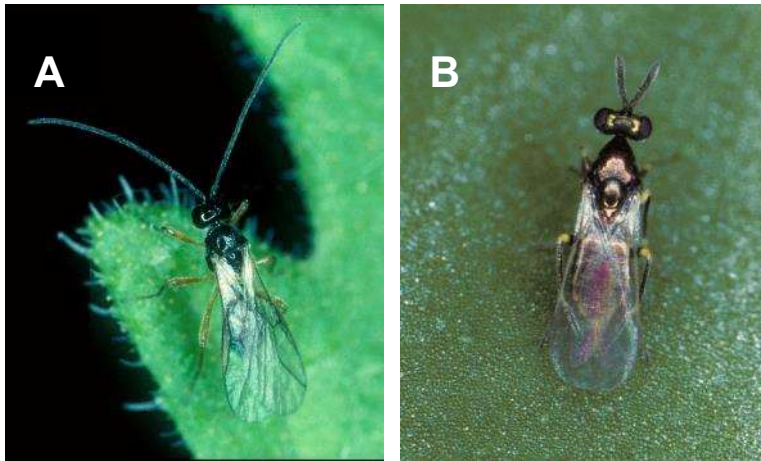


Fig. 4. Parasitic wasps that are effective against *Liriomyza*. *Dacnusa sibirica* (A). *Diglyphus isaea* (B). Copyright, ADAS.

- Nematodes
 - *Steinernema feltiae* is an entomopathogenic nematode which has successfully been used in trials against *Liriomyza* larvae on protected lettuce, Chinese brassicas and tomatoes.
 - The nematodes can be used at temperatures between 10 and 30°C but perform best at between 14 – 26°C and are applied as a foliar spray. They enter the leaf mines through the leaf miner feeding punctures or exit holes, therefore they are more effective in higher leaf miner densities. Once inside the leaf miner larvae they release symbiotic bacteria which kill the pest.
 - *Steinernema feltiae* may provide some control of *Liriomyza* larvae if already being used for thrips control.
 - Nematodes should be applied carefully, following all label recommendations, to just before run-off and when relative humidity is high in the evening and ideally the crop should remain wet for at least two hours after application.

Chemical controls

- Leaf miners are difficult to control with pesticides as larvae are protected within the leaves and *Liriomyza* species generally drop to the ground to pupate and are thus not affected by foliar sprays.
- In addition, *L. huidobrensis* and *L. trifolii* may be resistant to some plant protection products e.g. spinosad.
- Label recommendations and conditions of any Extension of Authorisation for Minor Use (EAMUs) must be followed. A BASIS-qualified adviser or the Health and Safety (HSE) website should be consulted for the most up to date information: <https://secure.pesticides.gov.uk/PestReg/>
- It is advised that for any untested Plant Protection Product / crop variety combination, an application is made to a limited number of plants to test for phytotoxicity, before application to the whole crop.
- Foliar sprays against larvae should be applied when the first small mines are seen and repeated at intervals of one week or longer, depending on temperatures, species and product recommendations and number of applications permitted.

- Products with translaminar and/or systemic activity are most effective against larvae.
- Good spray coverage is important.
- Select plant protection products with the least adverse effects on any biological control agents being used on the crop.
- To avoid insecticide resistance, any resistance management guidelines on the label or EAMU should be followed. General guidelines are given below, further information can be found from a BASIS-qualified adviser and on the Insecticide Resistance Action Group ([IRAG website](#)).
 - If an insecticide treatment is deemed necessary, products should be applied at their full label rate. Applying insecticides below label rates can lead to a subsequent increase in resistance problems.
 - If more than one insecticide application is required, insecticides with different Modes of Action (MoA) should be alternated in the spray programme, if available.
- A list of currently approved products or those with EAMUs with documented evidence of efficacy against *Liriomyza* is provided in Annex 2.

Official inspection

For AD c) following treatment throughout the growing season the PHSI will conduct an official inspection of the plants to ensure they are free from signs of *Liriomyza bryoniae*, *Liriomyza huidobrensis* and *Liriomyza trifolii* prior to movement (Annex 1).

The PHSI will need to discuss the treatment/s that have been applied with the sender, so will need to see evidence of control measures that have been implemented e.g.:

- Records of *Liriomyza* monitoring and numbers if applicable
- List of cultural controls in place
- Treatment schedules including any biological control agents used and evidence of their efficacy
- Spray records and justification for their efficacy against *Liriomyza* spp.

Advisory Information

If the presence of quarantine species of *Liriomyza* has been confirmed following laboratory analysis or there is a strong suspicion that they are present, the finding(s) must be reported to the relevant authority:

For finds at garden centres and nurseries in England and Wales, contact your local APHA Plant Health and Seeds Inspector, or the PHSI headquarters, in York:

Tel: 0300 1000 313

Email: planthealth.info@apha.gov.uk

For Scotland, contact the Scottish Government's Horticulture and Marketing Unit:

Email: hort.marketing@gov.scot

For Northern Ireland, contact the DAERA Plant Health Inspection Branch:

Tel: 0300 200 7847

Email: planthealth@daera-ni.gov.uk

Web: <https://www.daera-ni.gov.uk/topics/plant-and-tree-health>

For additional information on UK Plant Health please see:

<https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/>

<https://planthealthportal.defra.gov.uk/>

<https://www.gov.uk/plant-health-controls>

<http://www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases>

<https://www.daera-ni.gov.uk>

References

Biobest, side effects app: [Biobest Side Effects app | Biobest](#)

Control of leaf miners on pot and bedding plants, HDC Factsheet:

<https://projectblue.blob.core.windows.net/media/Default/Horticulture/Publications/Control%20of%20leaf%20miners%20on%20pot%20and%20bedding%20plants.pdf>

Herb Best Practice Guide, AHDB: [B8 - Leaf miners - HDC Herb Best Practice Guide](#)

Side effects database, Koppert Global:

<https://sideeffects.koppert.com/side-effects#:~:text=With%20this%20application%20you%20can,pesticides%20are%20for%20your%20organisms>.

Authors

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Annex 1: Additional declarations to move herbaceous plants to the EU

To move herbaceous plants to Ireland and Northern Ireland, one of four additional declarations must be detailed on the phytosanitary certificate, as outlined in 3.1 of Annex X in Regulation (EU) 2019/2072: [EUR-Lex - 02019R2072-20260706 - EN - EUR-Lex](#)

Plants, plant products and other objects	CN code	Protected zones	Special requirements for protected zones
Plants of herbaceous species, intended for planting, other than bulbs, corms, plants of the family Gramineae, rhizomes, seeds and tubers	ex 0602 10 90	(a) Ireland	Official statement that:
	0602 90 20		(a) the plants originate in an area known to be free from <i>Liriomyza bryoniae</i> (Kaltenbach), <i>Liriomyza huidobrensis</i> (Blanchard) and <i>Liriomyza trifolii</i> (Burgess),
	ex 0602 90 30	(b) United Kingdom (Northern Ireland)	or
	ex 0602 90 50		(b) no signs of <i>Liriomyza bryoniae</i> (Kaltenbach), <i>Liriomyza huidobrensis</i> (Blanchard) and <i>Liriomyza trifolii</i> (Burgess) have been observed at the place of production, on official inspections carried out at least monthly during the three months prior to the movement from this place of production, or
	ex 0602 90 70		(c) immediately prior to the marketing, the plants have been officially inspected and found free from <i>Liriomyza bryoniae</i> (Kaltenbach), <i>Liriomyza huidobrensis</i> (Blanchard) and <i>Liriomyza trifolii</i> (Burgess) and have been subjected to an appropriate treatment against <i>Liriomyza bryoniae</i> (Kaltenbach), <i>Liriomyza huidobrensis</i> (Blanchard) and <i>Liriomyza trifolii</i> (Burgess), or
	ex 0602 90 91		(d) the plants originate from plant material which is free from <i>Liriomyza bryoniae</i> (Kaltenbach), <i>Liriomyza huidobrensis</i> (Blanchard) and <i>Liriomyza trifolii</i> (Burgess); are grown in vitro in a sterile medium under sterile conditions that preclude the possibility of infestation with <i>Liriomyza bryoniae</i> (Kaltenbach), <i>Liriomyza huidobrensis</i> (Blanchard) and <i>Liriomyza trifolii</i> (Burgess); and are shipped in transparent containers under sterile conditions.
	ex 0602 90 99		
	ex 0704 10 00		
	ex 0704 90 10		
	ex 0704 90 90		
	ex 0705 11 00		
	ex 0705 19 00		
	ex 0705 21 00		
	ex 0705 29 00		
	ex 0706 90 10		
	ex 0709 40 00		
	ex 0709 99 10		
	ex 0910 99 31		
	ex 0910 99 33		

Annex 2: Approved pesticides in GB with efficacy against *Liriomyza* spp., on range of herbaceous plants (correct as of July 2026)

Active substance and example product/s with their MAPP number	Insecticide group & IRAC Insecticide group	Baby leaf production, lettuce and brassicas*	Ornamentals	Herbs*	Mode of action & leaf miner stage controlled	Compatibility with biological control agents (based on spray)**	Authorisation expiry date
cyantraniliprole 'Mainspring' 19198 'Minecto One' 18649	28 Diamides	Outdoor: on label ('Minecto One') range of brassicas and lettuce. Baby leaf crops EAMU ('Minecto One') 2026/0659. Indoor: protected EAMU ('Minecto One') 2026/0661 and EAMU ('Minecto One') 2025/3452.	Outdoor: not available Indoor: on label ('Mainspring') Permanent protection with full enclosure.	Outdoor: EAMU ('Minecto One') 2026/0658. Indoor: protected EAMU ('Minecto One') 2026/0660.	Translaminar action. Larvae.	No information for <i>D. sibirica</i> and <i>D. isaea</i> . Harmless, slightly harmful / non toxic to <i>S. feltiae</i> .	14/03/2029
spinosad 'Conserve' MAPP 12058 'Tracer' MAPP 12438	5 Spinosyns	Outdoor: range of brassicas on label ('Tracer') and EAMU ('Tracer') 2022/3088 and EAMU ('Tracer') 2021/0741 Indoor: EAMU 2022/3088 ('Tracer')	Outdoor: EAMU ('Tracer') 2021/0734 Indoor: on label ('Conserve') protected.	Outdoor: EAMU ('Tracer') 2022/3088 Indoor: EAMU 2022/3088 protected ('Tracer')	Enters the insect by contact or ingestion from feeding on treated surfaces. Larvae.	Harmful / moderately toxic to larva and adult <i>D. sibirica</i> and <i>D. isaea</i> . Non toxic to <i>S. feltiae</i> .	30/04/2029 (EAMUs 15/09/2027)

*The authorisation must be checked for individual herbs and brassicas.

** The toxicity of the active substances to biological control agents (BCAs) is based on the Koppert side effect lists. If different BCAs are being used then effect of the active substance to them should be checked. See the Koppert and Biobest tool in the references.