Plant & Food RESEARCH
RANGAHAU AHUMĀRA KAI

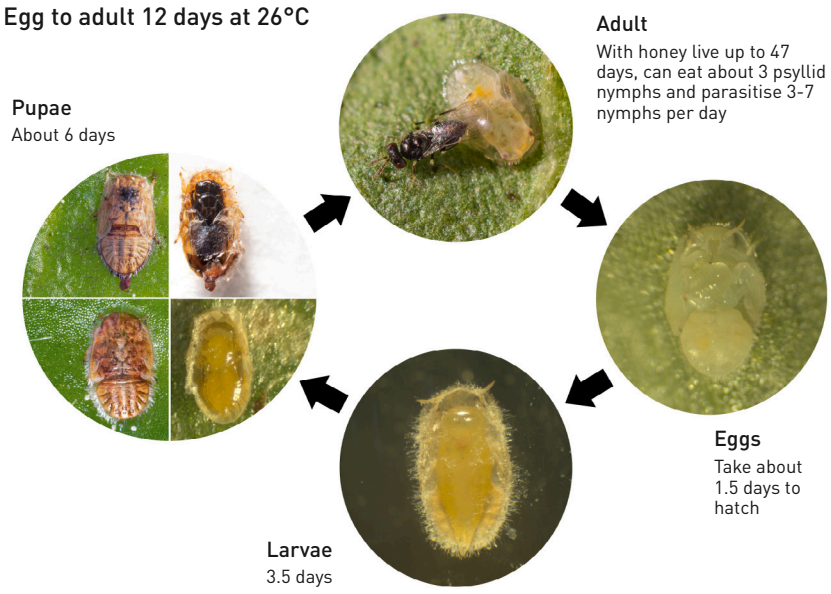
Tamarixia triozae: a parasitic wasp of tomato potato psyllid

INSECTICIDE USE GUIDE

This guide provides information on the sensitivity of *Tamarixia triozae* to insecticides used in Solanaceae crops.

TAMARIXIA TRIOZAE LIFE CYCLE

- → *Tamarixia triozae* females lay their eggs on the underside of the tomato potato psyllid (TPP, *Bactericera cockerelli*) nymph, between the nymph and the leaf, gluing the egg to the underside of the nymph
- → The parasitoid larva will feed on the nymph and kill it.
- → Adult male and female *T. triozae* also feed on TPP nymphs.



PROTECTING BENEFICIAL INSECTS IN YOUR CROPS

To keep *Tamarixia triozae* and other natural enemies (e.g. lacewings, hoverflies and ladybirds) of your pests working in your crops;

- → Minimise the use of insecticides
- → Use selective products first, if insecticides are needed. Only use broad-spectrum products as a last resort.

Use regular crop monitoring of pest and beneficial insect numbers to decide when chemical interventions are needed and likely to be most effective.

It is important to consider using insecticides that will preserve natural enemies in the crop. Biological control agents, such as *T. triozae*, are sensitive to many insecticides (see table in this guide).

Care is required in selecting and applying insecticides so that minimal damage is caused to beneficial insects, and the risk of TPP developing resistance to insecticides is minimised.

An insecticide that is acutely toxic to *T. triozae* can kill the parasitoid where;

- → The adult parasitoid comes into direct contact with the insecticide
- → The parasitoid is developing on a TPP host nymph that has been exposed to an insecticide that causes the immediate death of the TPP host upon the host's contact with the insecticide (e.g. abemectin was found to cause the immediate death of TPP nymphs).
- → Insecticide residues are deposited between the underside of the TPP nymph and leaf surface, the preferred location of *T. triozae* immature life stages.
- → Immature life stages of *T. triozae* feed on TPP hosts contaminated with an insecticide.

Sublethal effects can occur where eggs or larvae of *T. triozae* come into contact with an insecticide that does not kill them immediately (i.e. chronic toxicity), but reduces;

- → Adult emergence,
- → Percentage of females to emerge,
- → Fecundity of adult females or
- → Longevity of adults that emerged from eggs or larvae exposed to an insecticide.

This table summarises insecticides tested for activity toward *Tamarixia triozae*, registered for use in New Zealand Solanaceae crops (except beta-cylfuthrin a synthetic pyrethroid not registered for use in New Zealand, but with similar mode of action to lambda-cyhalothrin and deltamethrin that are registered for use in New Zealand).

Insecticides most toxic to *T. triozae* shaded in orange, moderately toxic shaded in blue, least toxic shaded in green.

IRAC group	Active ingredient	Chemical trade name
4A, Neonicotinoids	Imidacloprid	Acclaim™
5, Spinosyns	Spinosad	Hortcare® , Spinosad SC, Success®, Naturalyte®
	Spinetoram	Sparta™, Bond®Xtra
6, Avermectins	Abamectin	Avid®, Invert EW, Verdex® 18 EC
3A, Synthetic pyrethroid	beta-Cylfuthrin (not registered in NZ)	Similar mode of action, registered in NZ; Deltamethrin (Ballistic®, Deltaphar® 25 EC), Lambda-cyhalothrin (Agpro Lambda Cyhalothrin, Kaiso® 50WG, Karate® Zeon, Lavron®)
9B, Pyridine azomethine	Pymetrozine	Bravium®, Chess® WG, Endgame™
23, Tetronic and Tetramic acid derivatives	Spiromesifen	Oberon®, Optimite®
	Spirotetramat	Movento®
UN, Compounds of unknown or uncertain MoA	Azadirachtin (neem)	Neemazal – T/S™
28, Anthranilic diamide	Cyantraniliprole	Benevia®

FURTHER INFORMATION //

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REFERENCES

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2. Luna-Cruz, A., Rodríguez-Leyva, E., Lomeli-Flores, J.R., Ortega-Arenas, L.D., Bautista-Martínez, N., Pineda, S., 2015. Toxicity and residual activity of insecticides against *Tamarixia triozae* (Hymenoptera: Eulophidae), a parasitoid of Bactericera cockerelli (Hemiptera: Triozidae). Journal of Economic Entomology 108, 2289-2295.

RESOURCES

1. Insecticides registered on potatoes for control of tomato potato psyllid can be found at; https://potatoesnz.co.nz/mdocs-posts/tpp-control-poster-december-2018/
2. Guide to releasing *Tamarixia triozae*
   Download a copy of this release guide from the Vegetable Research & Innovation website (https://www.vri.org.nz/ Keyword search: tamarixia
3. Potato Update 5 - Protecting beneficial insects in potato crops
   Download a copy of this information from: https://potatoesnz.co.nz/research-and-development/technical-bulletins/
4. Walker, M., Davidson, M. and Wright, P. 2019. Generic IPM Guideline for Vegetable Crops. A Plant & Food Research report prepared for: Vegetable Research & Innovation Board, Horticulture New Zealand Inc. Milestone No. 80265. Contract No. 36516. Job code: P/336075/01. SPTS No. 17561. pp. 56. Download a copy from (https://www.vri.org.nz/ Keyword search: Generic IPM

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