KEEP WHAT WORKS WORKING

TomatoesNZ

Tomato russet mite control in greenhouse tomatoes

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The resistance problem

For the last 20 years the tomato industry placed heavy reliance on spiromesifen, a Group 23 insecticide (Trade names: Oberon®, Optimite®) to control Tomato russet mite (*Aculops lycopersici*) in tomato greenhouses. Because of the reliance on a single mode of action (MoA), the industry has identified a high-risk of resistance developing with repeated use of this chemistry.

Oberon®/Optimite® has been a preferred control tool for growers as it has low toxicity to beneficial insects such as *Encarsia* and *Engytatus*, and does not disrupt the integrated pest management (IPM) programme for whitefly control.

Tomato russet mite control in greenhouse tomatoes relies on spiromesifen (Group 23), trade name - Oberon®, Optimite®.

When there is reliance on a single mode of action to control a pest there is a high risk of resistance developing.

What is Tomato russet mite?

Tomato russet mite is particularly problematic in the greenhouse. All life stages are extremely small; adults are less than 0.2mm in length. Tomato russet mite has a very short life cycle (5.5 days from egg to adult at 25°C).

Its fast reproductive rate and the challenges of spotting the initial stages of an infestation mean that populations can build up unnoticed, causing significant damage to plants and fruit. Spot spraying is ineffective as the mite spreads quickly through the greenhouse, and spreads easily on workers' clothes. Tomato russet mite damage is pictured below.



Affected leaves are slightly curled and acquire a silvery sheen on the underside (on left). Later they become brown and brittle.



The skin of tomato fruit becomes coarse and turns reddish brown and the fruit itself is sometimes deformed.

Photography credit: Koppert

Why is the current approach not a good long-term option?

Because scouting for Tomato russet mite is difficult, the industry typically utilises a **calendar spraying** approach. A reliance on calendar applications of Oberon®/Optimite® poses a significant risk of resistance developing.

Tomato russet mite is known to develop rapid resistance to insecticides, with international reports of resistance to commonly used control agents, particularly spiromesifen. In New Zealand, growers are facing difficulties in managing this pest due to limitations on insecticide options.

Some growers have also observed that russet mite becomes more of a problem when whitefly is kept in check using the whitefly IPM programme as it incorporates BCAs and soft chemistry. Without the regular weekly spraying that has previously been used to control whitefly, russet mite tends to become more of a problem. Controlling one pest can inadvertently create favourable conditions for another.



What is being done?

The tomato industry has identified there is a high-risk of Tomato russet mite resistance developing with the repeated use of Oberon®/Optimite®.

The industry is taking a multi-pronged approach. With the support of the A Lighter Touch programme, TomatoesNZ have been looking to **integrated pest management** approaches to manage some of their key pests.

Alongside screening new MoAs for russet mite, the industry is encouraging the use of IPM approaches and reducing the reliance on agrichemicals as the primary means of control.

While the programme has been focused primarily on finding effective biological control options for whitefly, the industry has also prepared IPM advice for other key pests including Tomato russet mite. (See: https://www.tomatoesnz.co.nz/ipm/)

Integrated pest management for Tomato russet mite

- Regular scouting for russet mite damage on leaves and stems
- Keep the environment clean by having good hygiene measures and removing all weeds
- Remove any symptomatic plants at nursery stage
- Use a physical MoA spray (e.g. Eco-oil™)
- Use an agrichemical, rotate MoAs

To reduce the reliance on a single MoA, TomatoesNZ initiated trials to generate residue data for **new control chemistry**. The industry conducted residue trials of products that are effective at controlling mites. These products range from synthetic chemistry to organic and beneficial friendly.

Trade name	IRAC Group	Active ingredient	Beneficial and IPM friendly	Registered on indoor tomatoes?
ParaMite®	Group 10B	etoxazole	Yes	No
Mit e Mec®	Group 6	milbemectin	Yes	No
Sulphur	Group M2	sulphur	Moderate	No
Avid®	Group 6	abamectin	No	Yes

A **technote,** available here, provides guidance for the off-label use of ParaMite® and Mit E Mec® and appropriate pre-harvest intervals (PHIs) to meet default Maximum Residue Levels (MRLs) in greenhouse tomatoes.

Not all chemistries are beneficial friendly and will require cautious use in a control programme (TomatoesNZ, 2025).

TomatoesNZ have demonstrated how it is possible to reduce the **resistance risk** of tomato russet mite by combining IPM approaches with new control chemistry. This approach has little or no impact on beneficials and the IPM programme for whitefly control.



Pest scouting is a critical activity to better schedule insecticide applications.

Key lessons learnt

- There is a **high resistance risk** with repeated use of spiromesifen (Oberon®, Optimite®) to control Tomato russet mite.
- Adopting **IPM approaches** enables growers to manage Tomato russet mite, while preserving agrichemicals for occasions when pest pressure causes ongoing production issues.
- **Physical mode of action** sprays are recommended and compatible with an IPM approach.
- Agrichemical controls should be the last tool used, not the first.
- When agrichemical controls are used it is important to **rotate different MoA groups**.



Tomato russet mite action card.

Reports and resources

TomatoesNZ (2025) New Zealand residue compliance information for fresh greenhouse tomatoes. 25p. https://www.tomatoesnz.co.nz/dmsdocument/374-tnz-residue-compliance-information-booklet-2025-dp-web-pdf, accessed February 2026.

TomatoesNZ (2024) Russet mite action card. 2p. https://www.tomatoesnz.co.nz/dmsdocument/393-russet-mite, accessed February 2026.

Whitfield, C (2019) Control of Tomato Russet mite (review of control measures and efficacy trials). AHDB. 18p. (https://projectbluearchive.blob.core.windows.net/media/Default/Research%20Papers/Horticulture/CP165_SP34_Tomato%20Russet%20Mite_Final%20Review%20Report%20for%20publishing.pdf, accessed January 2026).

TomatoesNZ (2026) Off-label use of Mit E Mec® and ParaMite® for russet mite control in Greenhouse Tomatoes. (https://www.tomatoesnz.co.nz/ipm/)

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