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Potato Update

Issue 4

Oils and selective insecticides for tomato potato psyllid management in potato

Introduction

This factsheet aims to introduce oils and selective insecticides suitable for inclusion in developing integrated pest management (IPM) programmes to combat TPP in potatoes. When developing effective and sustainable pest management strategies, and especially when it involves insect vectors, it is important to not rely on chemical control alone – other control mechanisms (cultural, physical and biological) should always be included to minimise the build-up of insecticide resistance, minimise insecticide use and optimise pest control.

Oils are active against pest insect species but are less harmful than broad-spectrum insecticides to non-target species, reducing disruption of biological control agents.

Selective, narrow-spectrum insecticides also cause less harm to some types of insects than they do to others (please see factsheet 'Protecting beneficial insects in potato crops' for more information).

Reduced spray programmes

These are part of sustainable pest management strategies and decrease the chances of pest insects developing resistance to insecticides. Options to reduce the number of insecticide sprays are:

- Incorporating oils into the spray programme.
- Increasing spray intervals, e.g. from 7 to 10 days.
- Using monitoring (plant and/or sticky traps) to determine the start of a spray programme.
- Using developed action thresholds to determine the start of a spray programme (Auckland only).
- Using Degree Days to determine the start of a spray programme.

Key points

- Both oils and a number of selective insecticides can be used in IPM programmes to control tomato potato psyllid (TPP).
- IPM programmes reduce the number of insecticide sprays and reduce the risk of resistance.
- Monitoring, using sticky traps or plant sampling, along with action thresholds and an understanding of insect development in degree days can be used to guide the start of spray programmes.
- Insecticide spray programmes should use a range of different insecticide mode of action groups to reduce the risk of resistance.

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Considerations for best practice for Insecticide Resistance Management (IRM) in potatoes

	Auckland and possibly rest of North Island	Canterbury
Emergence until December	Thiamethoxam should not be needed. Beneficial insects should control early season aphids and TPP.	Thiamethoxam is widely used, effect of beneficial insects on pest insects present not determined early season.
December onwards	Think about which reduced spray programme would work for you. A best practice programme includes: • spirotetramat (2 applications) • abamectin (4 applications) • spinetoram (4 applications) • cyantraniliprole (3 applications) is also available for early use, but is mainly untested. • Then, other mode of action (MoA) insecticides should be used to protect the crop from late season TPP and potato tuber moth (PTM). Note that resistance to synthetic pyrethroids (SPs) is reported for PTM in the north of the North Island. • Protect the crop from TPP and PTM right through until harvest, including after desiccation.	Think about which reduced spray programme would work for you. A best practice programme includes: • spirotetramat (2 applications) • abamectin (4 applications) • spinetoram (4 applications) • cyantraniliprole (3 applications) is also available for early use, but is mainly untested. • Then, other mode of action (MoA) insecticides should be used to protect the crop from late season TPP. • Protect the crop from TPP right through until harvest, including after desiccation.

Points to remember

- Rotate your different mode of action insecticides to decrease the risk of insecticide resistance in insects. Some active ingredients have the same modes of action; please check the Potatoes NZ poster, the product label and the Novachem manual for more information or visit the Insecticide Resistance Action Committee (IRAC) website (www.irac-online.org) for comprehensive data and default recommendations on IRM strategies.
- Visit www.sripmc.org/IRACMOA/IRMFactSheet.pdf for more information on IRM.
- Check the product label, the Potatoes NZ poster or the Novachem manual for more details on maximum number of applications for a product and recommended spray intervals.

Summary of effects of oils and selective insecticides on transmission of *Candidatus* Liberibacter solanacearum (CLso) and individual tomato potato psyllid life stages from SFF 11/058 laboratory studies. Symbols: ✔ = significant effect observed; (-) = slight or limited/short-lived effect observed; (✔) = potential residual effect on egg hatching rate; 0 = no significant effect was observed; NA = product/insect combination was not tested.

Product	Active ingredient	Classification	Mode of action	CLso transmission reduction[1]	Reduced oviposition or egg hatching[2]	Increased nymph mortality[2]	Adult repellence[1]	Increased adult mortality[1]
Organic JMS Stylet-Oil®	Mineral oil + adjuvant	Contact	Suffocation	0	(✔)	✔	✔	0
Excel® Oil	Mineral oil	Contact	Suffocation	✔	(✔)	✔	✔	0
Sap Sucker Plus/ Thunderbolt	Oxygenated monoterpenes, neem oil, dispersants and adjuvants	Contact	Inhibits feeding behaviour and development	0	(✔)	✔	✔	0
Benevia®	cyantraniliprole	Translaminar, systemic (xylem), contact (minor)	Disrupts muscle function, inhibits feeding behaviour	0	✔	✔	0	✔
Movento®	spirotetramat	Translaminar, systemic (phloem + xylem)	Reduces adult fertility and survival of offspring	0	✔	✔	NA	(-)
Sparta™	spinetoram	Contact, translaminar	Nerve poison, inhibits feeding behaviour	0	(-)	✔	(-)	✔
Avid®	abamectin	Translaminar	Nerve poison, inhibits feeding behaviour	✔	✔	✔	NA	✔

[1] Based on residual activity only.
[2] Based on residual and/or direct spray effects.

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For further information

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