



PASSIONVINE HOPPER FIELD DAY

2024



INTRODUCTION

Passionvine hopper (PVH) excrete honeydew onto fruit allowing a dark sooty mould to grow, creating considerable crop losses in the form of rejected fruit. To protect your crop from damage, it's important to be able to manage PVH across the season.

In 2021, Zespri and Plant and Food Research began a four-year project that investigated cultural, chemical and biological control practices to help develop an **Integrated Pest Management (IPM)** programme for PVH.

Zespri Grower Manual:

Integrated Pest Management aims to produce kiwifruit in a safe and sustainable way therefore minimising any adverse impact on human health or the environment. IPM achieves this through minimising the use of broad-spectrum products and emphasising the use of non-chemical techniques to limit pest and disease from causing economic loss.

The project has three key objectives:

1. Reduce PVH populations at the source (usually a gully with host plants),
2. Minimise migration of PVH adults from the source into the block,
3. Manage PVH within blocks.

Together this research supports current knowledge about PVH and will help growers develop effective IPM plans for PVH that work for their orchard and the industry.

KEY FINDINGS

- **Border clearing:** i.e. an open space $\geq 4\text{m}$ in width and, generally on the gully side of the shelter, can reduce the number of PVH adults in adjacent kiwifruit blocks. PVH typically use short flights between plants to disperse, and open areas with few host plants provide a buffer zone to PVH migration.
- The greater the distance cleared, the fewer the number of PVH in adjacent blocks.
- Replacing gully plants that are good hosts of PVH with those that are poor hosts can result in fewer PVH in adjacent kiwifruit blocks - see over *PVH Plant Guide*



KEY FINDINGS CONT.

- **Build a wall:** an artificial shelter can provide an effective barrier to PVH dispersal into kiwifruit blocks, especially when constructed from a single piece of woven cloth securely fastened to the ground so there are no gaps
- A dense Cryptomeria shelter can also be an effective barrier to PVH providing gaps at the bottom of the shelter are closed.

Shelter type	Clearing	Mean PVH per trap per day		Total PVH trapped per day (n = 40 traps)	
		Border	Kiwifruit	Border	Kiwifruit
Artificial	6-20m	0.37	0.02	15	0.8
Casuarina	8-12m	0.52	0.17	21	6.8
None	12-30m	0.30	0.09	12	3.6

TABLE 1: The number of passionvine hopper (PVH) adults caught on sticky traps positioned at the gully edge and in the adjacent kiwifruit block between late January and late March 2024.

- **Border spraying:** A single spray of pyrethrum plus 0.5% mineral oil applied to the edge of the gully can be highly effective against the nymphs. Apply when nymphal emergence is complete and the nymphs are aggregating on plant shoots - between late December to early January. A second spray in late January or early February against the adults can help reduce populations and delay migration.
- **Monitor with Mahoe:** Placement of one or more mahoe plants at the edge of the gullies can be a simple and cost-effective way to monitor PVH nymphs and optimise spray timing, as well as spray efficacy. These plants should be cut back each year to ensure there are fresh, actively growing shoots for the nymphs.

Site	Application method	Pyrethrum product	Fresh/stored product	No. of sprays	Mean nymphs per plant pre-spray 1	Mean nymphs per plant post-spray 1	% nymph reduction
A	Airblast	PyGanic	Fresh	2	41	2	96
B	Cannon	PyGanic	Fresh	1	72	1	98
C	Cannon	PyGanic	Fresh	2	93	2	97
D	Handgun	PyGanic	Stored	4	81	37	54
E	Handgun	ZetaPy	Stored	1	57	24	59
F	Airblast	ZetaPy	Stored	2	46	30	34

TABLE 2: The mean number of PVH nymphs per mahoe plant before and after a spray of pyrethrum plus 0.5 percent mineral oil.



KEY FINDINGS CONT.

- In winter check old fruit stalks and wooden structures within orchard blocks for signs of PVH eggs, which typically appear as tufts along the egg-laying substrate. If the block is heavily infested, a dormant spray of bifenthrin plus penetrant, or a spring spray of bifenthrin alone, may be helpful to prevent the establishment of PVH population within the block. The physical removal of fruit stalks can help reduce PVH eggs within blocks, though this practice can be labour intensive.

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WRITING/DOODLING



PVH PLANT GUIDE

Some plants are more attractive to PVH than others – you’ll want to avoid having these on your orchard boundary. Clear existing or avoid planting the plants below that are highlighted **RED** and in their place consider proactively planting those in **GREEN**.

ATTRACTIVE TO PVH	SOMEWHAT ATTRACTIVE TO PVH	NOT ATTRACTIVE TO PVH
Mahoe	Lemonwood	Rewarewa
Olearia	Black matipo	Mānuka
Lacebark	Kawakawa	Kānuka
Horopito	Red matipo	Kowhai
Shore hebe	Akeake	Leucopogon
Cabbage Tree	Coprosma robusta	Putaputawētā
Five finger	Hangehange	Kāmahi
Flax	Native broom	Celery pine
	Koromiko	Karo
		Coprosma propinqua
		Corokia buddleioides
		Totara
		Pomaderris rugosa

Mahoe plant acting as trap plant for monitoring