



## *A relative newcomer here, tomato potato psyllids are awful little sucky bugs that exist to annihilate all members of the nightshade family*

Don't buy fresh tomatoes out of season. They're always a watery disappointment compared to the sun-ripened orbs of summer and autumn. I know summer is with me when I sink my teeth into thick slices of fresh tomato on well-buttered toast. But all has not been well in my tomato patch in recent seasons. You see, I've got psyllids – not something you really want to admit in company, but there you go, I've said it – so for the past few summers my tomato crop hasn't produced enough to decorate a water cracker, let alone a slice of toast.

A relative newcomer to New Zealand, tomato potato psyllids (TPP) are awful little sucky bugs that exist to annihilate all members of the nightshade family, which includes toms, spuds, chillies and peppers. Mature psyllids are around 3mm long and look like little cicadas. They lay eggs on leaves, suck the life out of plants and infect them with bacteria – all of which severely affect the quantity and quality of your crop.

They are easy to spot with the help of a magnifying glass and you'll know you've got them if you notice yellow, curling leaves and stunted growth on your tomatoes and potatoes. They get up to damaging levels only in the warmer months. Here in Nelson this is after Christmas, but because they breed like rabbits they still decimate all but the fastest, earliest varieties of tomato. They like to spend the winter on deadly nightshade and tamarillos, among other plants.

Given that many of my favourite tomatoes are big, beefy varieties that need a long growing season, I've been pretty much doomed. It has been traumatic buying tomatoes for pasta sauce, soup and relish. My "harvest queen" persona was pretty bruised and furtive as I harvested someone else's lovely field-grown tomatoes at the local PYO these past few seasons.



### *The plan*

After three summers of this carry-on, I'd decided enough was enough. The received wisdom is that the only way to overcome TPP is to apply chemical spray every seven days. But I've never been big on received wisdom or sprays. And, as all gardeners know, there is more than one way to solve a problem; you just have to try a lot of ways to find out the ones that work.

So over the winter of 2014 I planned a trial of five varieties of large heirloom tomatoes, grown three ways. One set would be sprayed with full chemical controls every seven days, another would be treated with organic controls and the third set would be left to fend for themselves. Each group would contain five plants, one of each variety.

I splashed out on special tomato mix and decided to grow in bags, propped up in recycled cardboard bins, in three different spots, well away from the main garden. My aim was to get a crop, even if it wasn't spray-free and hopefully to learn what worked to control TPP.

### *The trial*

We kicked off in mid-August with the seed tray on my windowsill. Within two weeks we had a good strike and after four weeks the seedlings were big enough to prick out into little pots for growing on. After another month of mollycoddling they were ready to plant outside – but outside wasn't ready for them.

Labour Weekend is traditionally the time to get your tomatoes in the ground, but a couple of weeks later is advisable in southern parts. You want night-time temperatures of around 12°C before you plant your tomatoes out, otherwise they will sulk. So I waited until early November before getting underway.

With the five organic control plants I assigned a different crop protection method to each and labelled them. One got a regular dressing of Neem granules around its feet. Its neighbour was sprayed with Neem oil. I used an organic pyrethrum spray on one, soapy water and companion planting on another, and the final plant in our organic control group got trussed up in a fancy new crop-protection mesh.

This fine woven mesh cover is being trialled by the Future Farming Centre at Lincoln University's Biological Husbandry Unit. It encloses the crop and is being evaluated for the protection it offers against fine insects such as carrot fly and tomato potato psyllids, as well as birds and weather damage. Rain and watering will penetrate the mesh. The scientists don't recommend it for upright crops like staked tomatoes because it is difficult to secure around the bottom and you have to get in and out frequently for lateralling, tying up and harvesting. I thought I'd give it a go anyway, because I could truss it up tightly around the base of the drum with some twine. If the mesh worked and lasted for up to 10 years as



## PLANTING TIPS

- **If you plant** your tomatoes deeply up the stalk to the first leaves, they will grow roots along the planted stalk, giving you sturdier plants.
- **If you're planting** into regular soil, first mix through some tomato fertiliser, rich in potassium, and some well-rotted manure.

*You want night-time temperatures to be around 12°C before you plant your tomatoes out, otherwise they will sulk*

The trial crop was grown in tomato mix propped up in cardboard cylinders



claimed, it could be a cost-effective organic protection method.

For the chemical weapon I used Mavrik from Yates, the only spray on the market approved for use on the tomato potato psyllid bug. It contains the chemical tau-fluvalinate, a synthetic pyrethroid that is not as bad on bees as some chemical sprays, but still toxic to bees when wet. The recommended spray schedule for psyllids is every 7-14 days.

The final group of five plants were left to go it alone simply with lots of water, sun, good seaweed fertiliser and some tomato food from time to time. The regime for the other two groups involved an application of their control method every Saturday morning.

In the vegetable garden, if lettuces could be considered the 100m sprint, tomatoes are the marathon. They take a long time and the first half is the easiest. So it was with my trial. November and December passed uneventfully. The no spray group raced ahead of the chemical and organic groups and, four months in, I was beginning to think I'd wasted a lot of money on elaborate and unnecessary crop protections.



'Black Krim' - chemical spray



'Black Krim' - no spray



'Black Krim' - soapy water and companion planting

## The problems

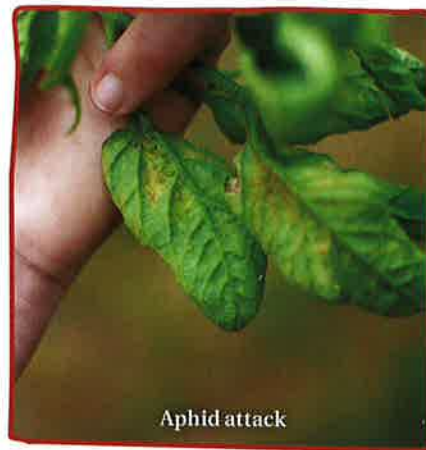
Then came January, the heat and, right on cue, the pests and diseases to put my trial to the test. But the first problem was not one I'd been expecting. The flowers were opening, breaking just above the neck and falling off in great numbers, across all trial plants. It wasn't happening to the tomato plants in the main veg garden so I thought it must be something about the bags.

Consulting with google and some real gardeners, I worked out that the plants were under stress because I'd put the bags in sunny spots. It had been very warm and the roots were getting too hot. The plants were self-regulating the crop by dropping their blossoms. The leaves were also cupping together – another tell-tale sign of overheating.

Then the tomato fruitworm showed up on everything except the plants that had been chemically sprayed or covered with the crop protection mesh. After an entree of leaves they settled down in the tomatoes for their main course.



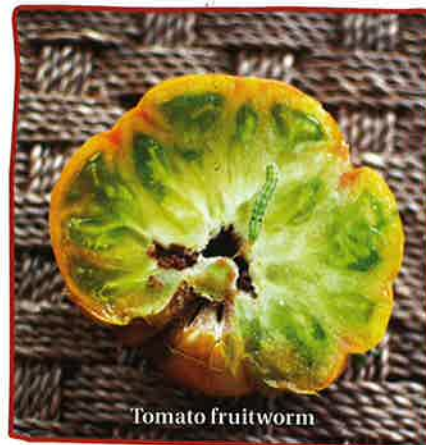
Blossom end rot



Aphid attack



Leaf curling



Tomato fruitworm

In late January the unsprayed toms succumbed to psyllids in less time than it took me to look up how to spell it

A bit of digital control on the organic group saw them off.

Then we had some rain, which threw out my nice, even watering regime. The grow bags have a wetting agent in the mix to keep moisture in the soil, so they soaked it all up like a runner grabbing a wet sponge; this split and cracked all the tomatoes that were nearly ripe. Blossom end rot also set in; another sign of uneven water uptake.

Then, right on cue, the real baddie showed up. For a while I thought we were going to have a psyllid-free summer, just because I wanted them to appear! But in late January the unsprayed tomatoes succumbed to the psyllid in less time than it took me to look up how to spell it. I went away for a weekend and by my return all the non-sprayed tomatoes had started

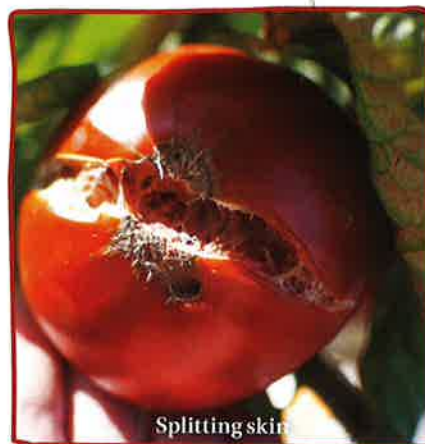
yellowing, leaf curling and a close inspection showed the little culprits. Out of all the non-sprayed varieties, 'Paul Robeson' and 'Aunt Ruby's German Green' put up the best fight.

A round-up of organic sprays and protection methods (that is, a written roundup, not a Monsanto Roundup) demonstrated that the Neem granules proved quite effective at holding off the psyllid, but the tomato fruitworm caterpillars were undeterred.

The Neem oil worked a treat at keeping both caterpillars and psyllids at bay, as did the pyrethrum spray, even after a slow start for both these plants. The plant sprayed with soapy water controlled the aphids and psyllids, but not the caterpillars. I also under-planted it with basil as a companion plant, which can't have hurt.



Flowers breaking off



Splitting skin



Fine mesh provided a microclimate and kept psyllids and caterpillars at bay

### *The verdict*

The surprise of the organic methods was the crop protection mesh. I had my doubts about its efficacy, but it turned out to be brilliant on a number of levels. Not only did it make a nice little microclimate away from too much sun and wind for the plant, it stopped psyllids and caterpillars, and the rain did get through. The foliage was in great condition and the fruit set evenly with no blossom dropping. If you were using it in the garden it might be easier to set up a more permanent frame over your crops that you dug into the earth at the edges. Research into this mesh is ongoing: visit [bhu.org](http://bhu.org) for the latest findings.

It pains me to say it, but the chemical spray tomatoes fared the best here. Not by a million miles though and the plants were not as healthy-looking as the organic control plants, which counts for something.

Perhaps the part I enjoyed most was determining the best variety for tomatoes on toast. After many research sessions I called a tie for first place between 'Mortgage Lifter' and the rich, spicy 'Black Krim'.

I'm not setting out my findings as scientific or in any way conclusive; they are just what worked for me last season. My own little trial has taught me an awful lot, and not just about psyllids. I learned that time spent on your crop is truly the home gardener's best ally. Most pests, diseases and problems can be controlled, if not conquered, by spending time with your crops regularly. I thought I was applying sprays once a week, when really I was having a good catch-up with my crop, seeing what it thought of my care and helping it set its house in order for the coming week.

And the biggest thing I learned was that this sort of crop communing doesn't take very long. A small investment of time produced a bumper reward of tomatoes. I avoided a furtive trip to the PYO last summer, and for the first time in years my tomato pantry of soup, sauce, relish and dried tomatoes has all come from my own garden. What's more, I don't want to eat tomatoes on toast again until January! ❀

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### 'PAUL ROBESON'

was outstanding across all three tests: the spray-free plant lasted best against the psyllids and the plants all produced good, large crops. The second variety to ripen, the fruit were a bit prone to cracking but not as much blossom end rot as the others. Beautiful, rich flavour and very meaty.



### 'AUNT RUBY'S GERMAN GREEN'

was a little slower to ripen, was a favourite with the caterpillars and we lost quite a few to blossom end rot. But it has a sweetness and nuttiness that all green tomatoes seem to have. You can tell when they ripen as they get a little orange blush along the shoulders and go slightly softer.



### 'CHEROKEE PURPLE'

was slow out of the blocks. I lateralled the top out of the no-spray one and it sulked. The organic spray plant had an early setback and didn't produce either. I might reserve judgement on this variety. We had some plants in the main garden that did well. The fruit we did have had a lovely rich flavour.



### 'BLACK KRIM'

Large and funky shapes. A little cracking after rain but the fruit still ripened. It didn't hold up well to pests and diseases, with the no-spray plant succumbing overnight when the psyllids showed up. It does have a lovely, smoky, deep taste that is not as sweet as some other tomatoes but well worth trying.



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### 'MORTGAGE LIFTER'

is a 'Beefsteak'-type tomato we had high hopes for as a sauce and soup variety. It set large, meaty fruit and out of all the varieties it ripened first. Some of our customers prefer it for flavour over 'Beefsteak' - and I can see why. It has a gorgeous, sweet, old-fashioned tomato taste.