



Reestablishing New Zealand's stink bug networks

Erin Lane - Kiwifruit Vine Health

A fact-finding trip to Chile helped Kiwifruit Vine Health staff get more insight into the current state of brown marmorated stink bug research and networking around the world.

TECHNICAL



Photo 1. Meeting with Chilean kiwifruit growers to better understand pest and disease challenges on-orchard.

KVH was fortunate enough to recently be included in a fact-finding mission to Chile, on the hunt for information about one of our most unwanted pest threats, the brown marmorated stink bug.

The trip objectives were simple - to get an update on the current stink bug situation in this South American (and fellow Southern Hemisphere) nation, and reestablish our collaborative, knowledge sharing

connection with our Chilean counterparts.

When it comes to the brown marmorated stink bug, we've traditionally had a great relationship with Chile, important because of the seasonal alignment and similar climates of both nations which can help inform our knowledge of how the bug may behave if it established here. In 2017, a New Zealand contingent that included members from KVH, assisted with the early stages of a stink bug response in the

greater Santiago area, and Chilean officials have come to New Zealand to share their experiences and knowledge, particularly in monitoring and trapping.

However, in recent years, and mainly due to Covid-19 travel restrictions, regular contact has been interrupted so we thought it was timely to get back on the ground in Chile and reconnect. What this trip has demonstrated is the priceless value of connecting face-to-face and



Photo 2. Image from first reports of Hort 16A being impacted by Verticillium wilt (Chile in 2010).

learning from those who are dealing directly with immediate biosecurity issues. Enhancing relationships, exchanging ideas and coordinating efforts is made so much easier when you can see firsthand and discuss challenges surrounding the situation.

This trip was funded as part of New Zealand's joint readiness efforts for stink bug under the Government Industry Agreement (GIA) partnership and included representatives from KVH as well as the Ministry for Primary Industries (MPI). We met with a wide range of groups, including Servicio Agrícola y Ganadero (SAG, the Chilean equivalent to MPI), growers, scientists, and industry representatives.

Why Chile?

Brown marmorated stink bug is found in more than 40 countries, so why are we so interested in Chile particularly? The answer is threefold.

Firstly, the Chilean population of stink bug is significant because it represents the only known occurrence of the pest in the Southern Hemisphere. Up until this find, the stink bug "season" had been confined to the months between October and April, when overwintering adult stink bug could enter New Zealand from the Northern Hemisphere and potentially establish.

What this means is, if stink bug becomes widespread in Chile, we could expect to see the bug arriving year-round in New Zealand.

Secondly, the current stink bug populations in Chile are still relatively small in volume which will likely reflect what we would see

in the early stages of a response in New Zealand.

Thirdly, history of invasions has shown us that stink bug incursions into new countries often start in urban areas - which, unsurprisingly, coincides with the greatest movements of people and goods.



We are Chartered Accountants and kiwifruit farmers too.

As harvest approaches it's this time of year that we squeeze the very best out of our vines. We all know, **YIELD, TASTE, and TIME** are the Big Three drivers of orchard profitability.

Summer pruning impacts on fruit size which improves YIELD, enhances dry matter which improves TASTE, and enhances the storage life of the fruit which impacts on TIME. The key goals of summer pruning are to enhance light into the canopy, reduce vegetation to support good spray protection, and importantly identify quality fruiting wood for next year's crop. Along with this growers will also be considering crop load and their fruit thinning strategy. Not long to go now!

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The expectation is that if we do happen to find stink bug in New Zealand it will most likely be in an urban environment.

So, what is being experienced in Santiago provides us with an excellent opportunity to test and refine our own response strategies in a real world, urban environment that will most closely reflect what we expect to see in New Zealand should we get an incursion of stink bug.

Timeline of stink bugs in Chile

2010

Brown marmorated stink bug increasingly intercepted at Chilean borders - primarily in the north from shipments originating in the USA.

2011

First stink bugs detected in metropolitan Santiago. Controls placed on imported goods to manage risk.

2015

Another detection in metropolitan Santiago, followed by another five separate detections during the 2015/16 season.

2016

SAG confirmed multiple life stages, indicating a breeding population.

2017

Official stink bug surveillance trapping network set up with the assistance of visiting New Zealand contingent, including KVH.

2018

SAG increased stink bug trapping but still appears to be confined to metropolitan Santiago.

2019

First traps set up in the north where crops are grown (and where lots of goods enter Chile). Stink bug detected, although further traps found nothing further, so unknown if single bugs or a population present.

2020

Chile is in the throes of a social crisis, impacting surveillance activities. SAG attempted to reinstate the trapping system but with the arrival of Covid-19 funding is no longer available.

2021

Stink bug has established in the northern region, where commercial crops are grown, however no damage is reported from growers.

2022+

Industry is encouraged to engage in trapping and monitoring in rural areas. This is ongoing and reports are made back to SAG if stink bugs are detected.



Takeaways and next steps

The trip was a great success, with important connections across government, industry, and researchers in Chile reestablished and reinvigorated.

These face-to-face connections (especially where there are language barriers, making it harder to meet online) are invaluable and are worth investing in, because talking to those with boots on the ground is the best way to gauge biosecurity threats and see potential impacts for growers.

Ultimately, we have come away with a much clearer picture of the stink bug situation and what we could reasonably expect to happen in New Zealand, and how we can collaborate in the future. What was evident was the renewed eagerness from all to continue strong collaboration. Within the coming years we hope to have research underway testing all-important response tools.

GIA is a strong framework that helps us collaborate and secure funding for this type of proactive readiness and response work.



Photo 3. Meeting with Los Olmos, a large nursery, to discuss BMSB awareness and understand all parts of the supply chain.

What's happening in kiwifruit?

We were fortunate enough as part of our visit to head down to Curico, a prominent horticultural growing region just south of Santiago and a key growing area for kiwifruit. While BMSB was the primary topic, it was a great opportunity to also ask if they have any other concerns in kiwifruit. One of the first things that came out of every grower's mouth was *Verticillium Wilt*.

Verticillium Wilt has been high on KVH's radar since 2010 when it started causing devastating impacts to Hort16A in Chile where reports of

up to 80 percent vine loss on severely impacted orchards wasn't uncommon. Since then, reports of damage have quietened, and we were speculating if it was still something we needed to be concerned about. What we learnt was that yellow varieties are still severely impacted, with certain varieties collapsing rapidly. There are no known control tools, so breeding for verticillium resistance has become a priority - even more so than Psa for some.

None of this information is found

within scientific literature, so without the ability to go and talk to the industry, this type of knowledge is hard to collect. Now, with a renewed understanding of *Verticillium*, KVH will take this information and look to build industry resilience for this disease-through research, planning and collaboration with government. ■

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