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Kiwifruit Winter Pruning – Day 4 of 5

consultancy ● *training* ● *innovation*

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Aim of the day

- To understand the role of pruning for removing pests and diseases
- Understand the importance of biosecurity protocols used on kiwifruit orchards

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Topics

- Aim of the day
- Kiwifruit pests and diseases relevant at Winter Pruning
- Biosecurity

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Aims of Pruning

- Renewal of fruiting wood
- Prevention of shading and overcrowding
- **Removal of diseased** and broken wood
- Maintenance of vine form and size
- **Maintenance of plant health**

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Relevant Pests and Diseases

Pests

- Armoured Scale
- Passion Vine Hopper
- Cicada
- ????

Diseases

- Psa-V (*Pseudomonas syringae pv actinidiae*)
- ????

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Armoured Scale

- Sap sucking insect, but more significant as a quarantine pest affecting market access (e.g.China) if found on fruit
- Hide in the nooks and crannies of the leader
- Remove heavy gnarled wood and crowns on the leader in winter

Source: Zespri Canopy

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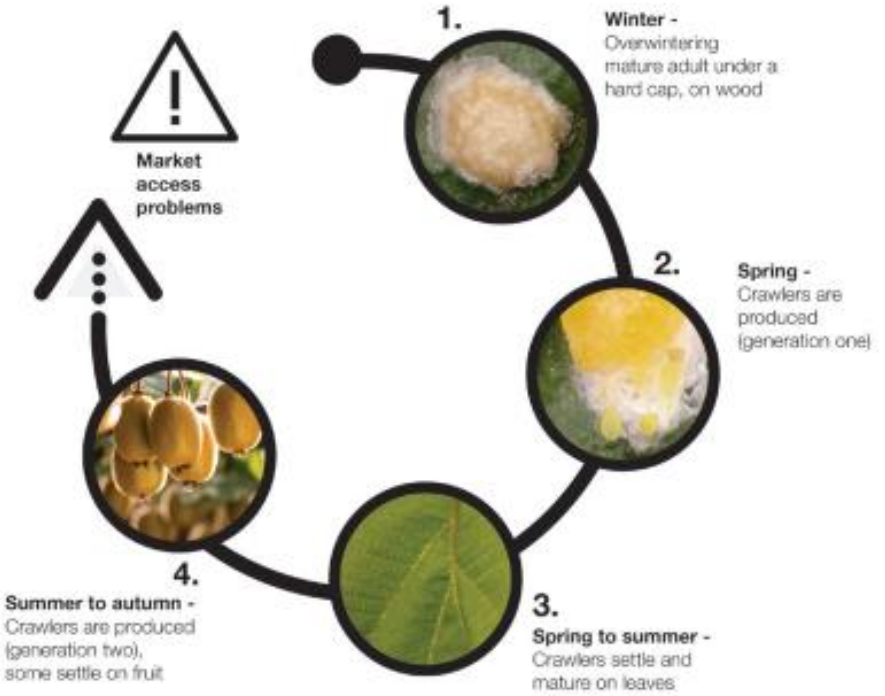
Armoured Scale

Life cycle

Armoured scale insects reside on the bark of kiwifruit vines during the winter.

During the spring, summer and autumn, the mature adults produce crawlers that are able to move onto leaves and fruit. Up to two generations per year can be produced. Once the insect has settled, it secretes a waxy 'scale' shell and becomes permanently fixed to that spot. Scale populations build up slowly, and most life stages can only live when attached to the host. However, once numbers are high they can be difficult to bring back down.

Scale life cycle over a season



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Cicada

- Adults lay eggs in canes causing weak points
- Remove damaged canes if at all possible

Source: Zespri Canopy

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Cicada

- Cicada excreta (spit) on fruit causes sooty mould = fruit rejects.
- Large cicada populations are a nuisance in the orchard in Summer.

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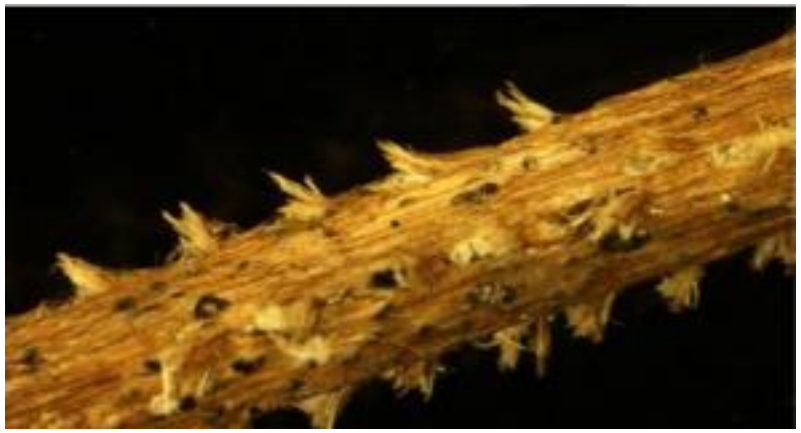
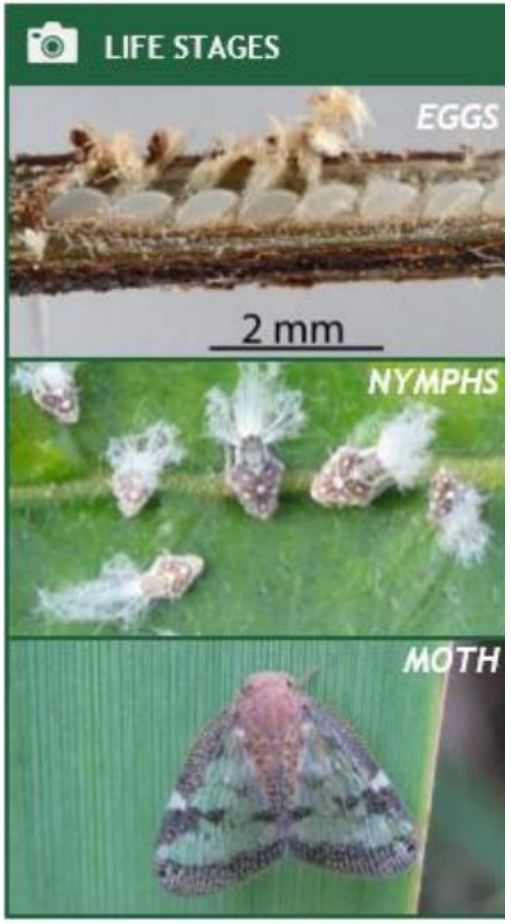
Passion Vine Hopper (PVH)

- Adults lay eggs in fruiting canes
- Remove damaged canes if possible





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Passion Vine Hopper (PVH)

- PVH excreta (spit) on fruit causes sooty mould = fruit rejects (Larger problem than cicada).
- PVH often migrate from surrounding host plants e.g. Shelter.

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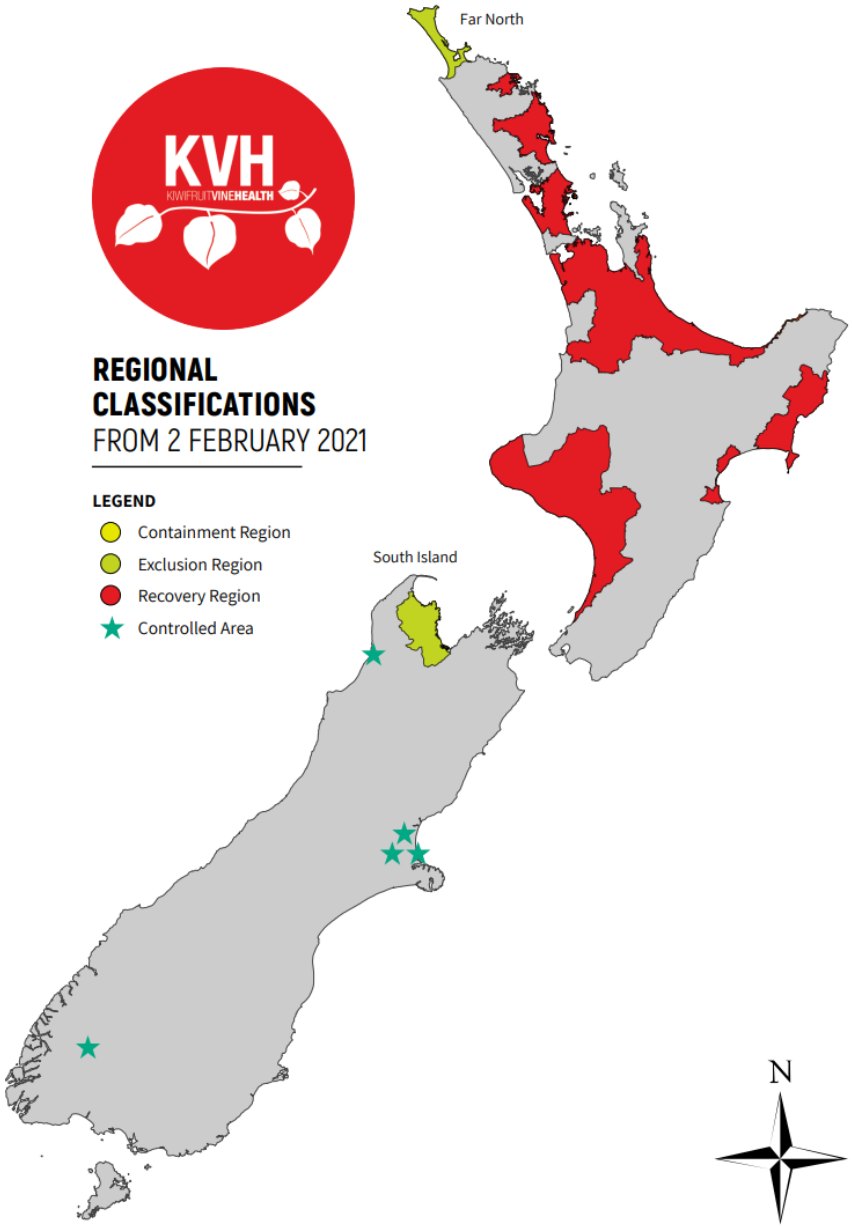
Psa-V

- A serious bacterial vine disease, no risk to humans, other animals or plants other than kiwifruit



consultancy

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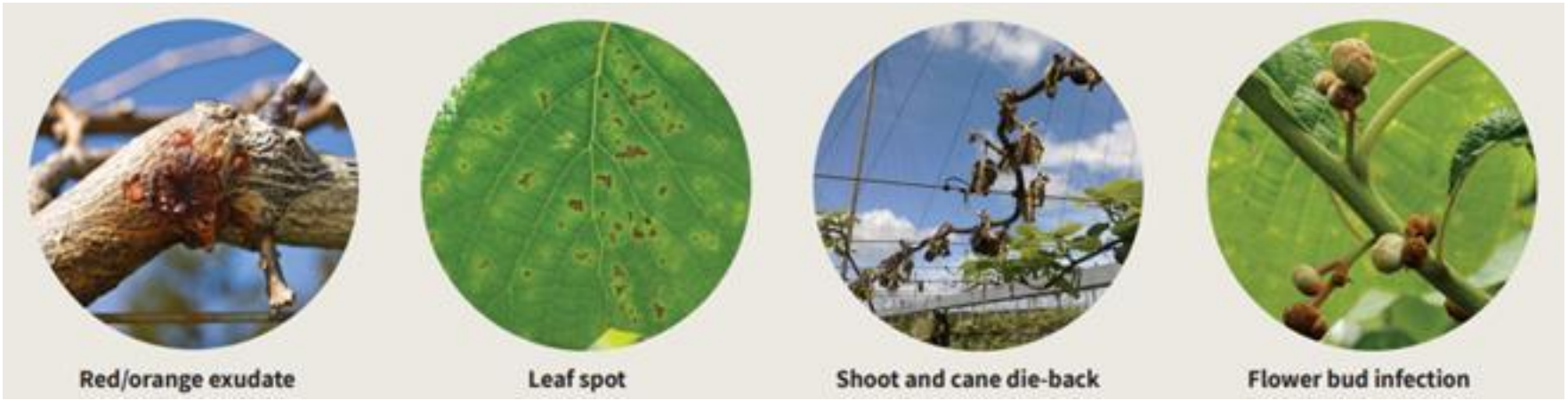
Psa-V Signs

- Look out for: cane die-back, red/orange exudate or cankers – report to your supervisor



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Psa-V Control

- Remove infected material where possible, and dispose of carefully (e.g. bury or burn)
- Treat open wounds and sanitise tools
- Check with your supervisor if you are cutting into the leader or the trunk

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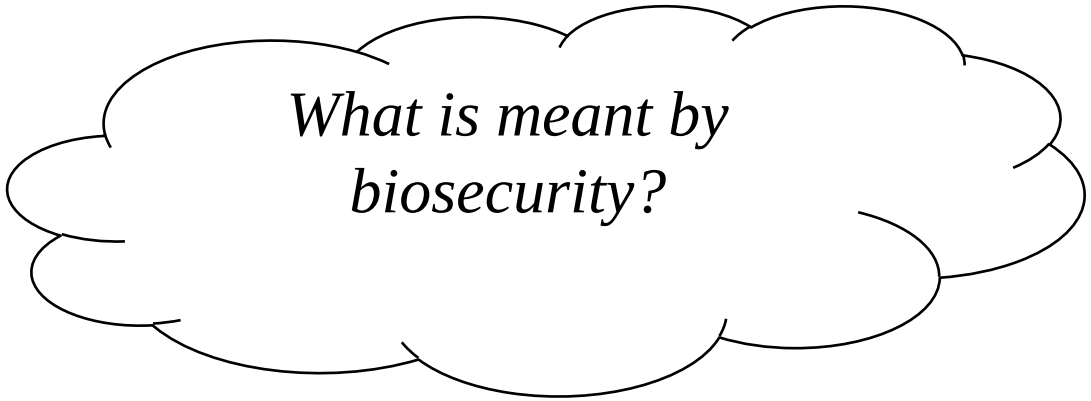
Biosecurity



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Biosecurity

"procedures or measures designed to protect the population against harmful biological or biochemical substances"

https://www.facebook.com/KiwifruitVineHealth/videos/1335136593313798

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Biosecurity

- https://www.youtube.com/watch?v=NIilCmj12Jc

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Biosecurity

- Kiwifruit diseases can be spread by workers on the orchard
- Some of these diseases kill vines
- Follow instructions from your supervisor regarding tool hygiene, pruning paints and working in wet conditions

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Kiwifruit's Most Unwanted

SPOTTED LANTERNFLY

- Attacks over 70 host species, including kiwifruit - eradication efforts overseas have been unsuccessful.
- Production impacts from extensive feeding resulting in oozing wounds, wilting, and sooty mould growth, which can be prolific.
- Hitchhiker pest that is hard to control – tends to fly out of ochards when sprayed and return later.

Risk Months: Sep – May
Look out for my eggs on:

FRUIT FLIES

Queensland, Oriental, Mediterranean

- High likelihood of entry – have crossed our borders many times.
- Production impacts for a range of horticultural crops, but considered low for kiwifruit.
- Severe market access restrictions, particularly for Queensland Fruit Fly which is not present in most major kiwifruit markets.

Risk Months: Sep – June
I can enter NZ hiding on:

PSA NON NZ STRAINS

- NZ has one form of Psa – others exist internationally and could cause severe impacts if they get here.
- Psa in Japan and Korea appears to be more virulent to Hayward than the NZ form of Psa.
- New Psa strains could be more virulent to 'Psa tolerant' cultivars.
- May be difficult to distinguish from "common" Psa so best practice is not to spread any form.

Risk Months: Year Round
I can enter NZ hiding on:

BRAZILIAN WILT

Ceratocystis fimbriata

- Soil-borne pathogen causing damage to kiwifruit in Brazil – reports of up to 50% vine loss.
- Vine death can occur extremely rapidly after expression of symptoms. Hayward on Bruno rootstock also affected.
- No known effective treatments.
- May be eradicable with good biosecurity practices and if detected early.

Risk Months: Year Round
I can enter NZ hiding on:

BROWN MARMORATED STINK BUG

- Pierces kiwifruit resulting in fruit drop and rot. Fruit loss is typically 5-10% but up to 30% on worst blocks.
- Extremely difficult to eradicate – early detection is essential.
- Major nuisance pest overwintering inside houses in huge numbers.
- High likelihood of entry as a hitchhiker on shipping containers, cars, machinery and luggage.

Risk Months: Sep – Apr
I can enter NZ hiding on:

INVASIVE PHYTOPHTHORAS

- Known as the plant killers – a group of significant plant pathogens and a major threat to all plant sectors.
- Species have caused significant impacts to kiwifruit offshore. Many other known and unknown species could also cause impacts under certain conditions.
- Easily spread, particularly with plant material movements.
- Can spread in plants showing no symptoms.

Risk Months: Year Round
I can enter NZ hiding on:

VERTICILLIUM WILT

- In susceptible kiwifruit cultivars infection always leads to plant death, which occurs suddenly.
- Many strains worldwide – only Chile has reported a strain virulent against kiwifruit.
- Good biosecurity hygiene practices are essential to manage spread of this soil-borne pathogen.

Risk Months: Year Round
I can enter NZ hiding on:

WHITE PEACH SCALE

- Regularly intercepted on imported fruit. Therefore no imported fruit should be taken on to orchards as a precaution.
- Up to 20% production losses reported on Italian orchards.
- NZ envrionment considered favourable for establishment.

Risk Months: Nov – Mar
I can enter NZ hiding on:

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What can you do?

- Ensure you don't spread any pest or disease
  - Clean tools, clothes and footwear between orchards
  - Clean tools between vines
  - Apply pruning protectants
- Observe – look out for anything unusual and report it to your supervisor

TO REPORT UNUSUAL PESTS OR DISEASES

CALL THE MPI HOTLINE 0800 80 99 66
OR KVH 0800 665 825

CATCH IT

SNAP IT

REPORT IT

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Tool Hygiene

https://www.facebook.com/2222119964471166/videos/505845833406808

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On Orchard

- Health and Safety Briefing/Pruning Specifications
- Opportunity to view Psa cankers in the orchard and discuss strategy for managing them