NEW ZEALAND KIWIFRUIT'S MOST UNWANTED

Pest ID Guide

CATCH IT SNAP IT REPORT IT

KVH.ORG.NZ

PEST ID GUIDE

These cards identify some of the kiwifruit industry's biosecurity risks. Should any of them get across our border they would be disruptive to our industry, our businesses and orchards, the economy, our environment and even our way of life.

You can use these simple visuals to easily identify possible pests and what to do if you find them.

If you suspect you've found one of the pests on these cards, catch it (if you can), take a good photo of it (use the ruler on each card if it helps with scale), and report it immediately.

REPORT TO KVH

0800 665 825

Report online at **kvg.org.nz**

REPORT TO BIOSECURITY NZ

0800 80 99 66

Report online at **report.mpi.govt.nz**

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm

BMSB are around 20mm in length

KVH
KIWIFRUITVINEHEALTH

BROWN MARMORATED STINK BUG (BMSB)

BROWN MARMORATED STINK BUG (BMSB)

The BMSB is one of our most unwanted pest threats because of its significant production and lifestyle impacts.

These bugs are about the size of a 10c coin, with a brown shield shape and black and white bands on their antennae.

IMPACTS

- 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.

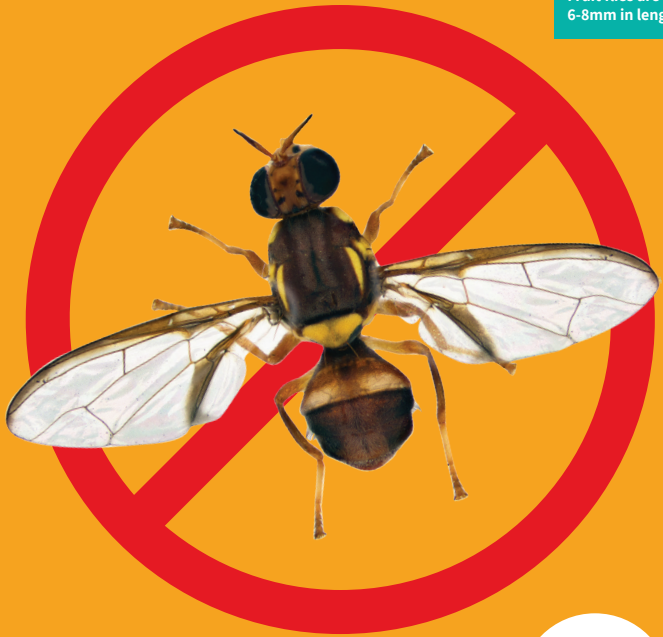
HOW IT SPREADS

- High likelihood of entry as a hitchhiker in shipping containers, cars, machinery and luggage.
- Adults show strong dispersal abilities; if needed, they are able to fly over 5km in search of food.
- They seek shelter in peoples homes/protected areas in autumn and winter.

Risk months: Sep – Apr
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm 8mm

Fruit flies are around 6-8mm in length



KVH
KIWIFRUITVINEHEALTH

FRUIT FLIES

FRUIT FLIES

Fruit flies are one of our greatest biosecurity threats as incursions can severely impact where we sell our fruit, which significantly affects growers' OGR.

It can be difficult to spot these tiny flies on fruit trees; look out for any larvae inside fruit - they look like grains of rice.

IMPACTS

- Severe market access restrictions, particularly for Queensland Fruit Fly which is not present in most major kiwifruit markets.
- Production impacts for a range of horticultural crops, but considered low for kiwifruit.
- The financial impact of an incursion to our kiwifruit industry is estimated to be up to $695 million.

HOW IT SPREADS

- High likelihood of entry – have crossed our borders many times in fresh fruit.
- Although they can fly more than 50km they normally don't disperse beyond 200m when host fruit is present.
- Larvae in fruit is the greatest risk of long distance spread. Infested fruit may show sting marks on the skin.

Risk months: Sep – Jun
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm **23mm** 20mm 10mm

YSSB reach up to 23mm in length

KVH
KIWIFRUITVINEHEALTH

YELLOW SPOTTED STINK BUG (YSSB)

YELLOW SPOTTED STINK BUG (YSSB)

This bug is a new addition to our list of biggest threats because it is considered a pest of kiwifruit in China, and has recently invaded countries outside its current native range.

It is a large stink bug, covered entirely with yellow spots. Adults are about the size of a 20c coin.

IMPACTS

- Attacks more than 50 host species, including kiwifruit.
- Feeding damage can result in significant fruit loss, similar to BMSB.
- Plant damage results in discolouration, yellow-brown spots, and withering.

HOW IT SPREADS

- Known hitchhiker pest which can arrive on shipping containers, cars, and machinery.
- Overwinters in sheltered areas in autumn and winter, in small numbers - usually found in the 10's.
- Strong fliers, capable of travelling up to 3km a day between food sources.

Risk months: Sep – Apr
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm **25mm** 20mm 10mm

Adult are up to 25mm long and 12mm wide.

KVH
KIWIFRUITVINEHEALTH

SPOTTED LANTERNFLY

SPOTTED LANTERNFLY

The Spotted Lanternfly is an emerging biosecurity threat to kiwifruit and many horticultural industries.

This beauty of a beast is hard to control, and is a proven invader that is capable of flying and hitchhiking on inanimate objects. You won't see the red underwing if it's flying so look for the white translucent wings with black spots.

IMPACTS

- Attacks over 70 host species including kiwifruit. Hard to control - eradication efforts overseas have been unsuccessful.
- Production impacts from extensive feeding resulting in oozing wounds, wilting, and sooty mould growth, which can be prolific.
- Preferred host is Tree of Heaven, which is present throughout New Zealand.

HOW IT SPREADS

- Eggs are laid in clusters on smooth vertical surfaces, that are then covered in a protective wax and look like putty.
- These eggs easily hitchhike on all sorts of imported commodities - paving stones, vehicles, machinery and garden furniture.
- Adults are not strong or frequent fliers, but are excellent hitchhikers that spread long distances.

Risk months: Sep – May
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm 2.5mm

Scale reach up to 2.5 mm long

KVH
KIWIFRUITVINEHEALTH

WHITE PEACH SCALE

WHITE PEACH SCALE

Imported kiwifruit is a potential entry point for this unwanted pest that could easily make itself at home in New Zealand and threaten production.

The adult female scale is immobile and covered with a protective shell that is dull white/yellowish and oval. Severe cases look white and cottony.

IMPACTS

- Up to 20% production losses reported on Italian orchards.
- Infects bark, fruit, and leaves of plants. Scale insect feeding can cause early leaf and fruit drop.
- Young plants can die very quickly after infestation.

HOW IT SPREADS

- Has been intercepted on imported fruit regularly in the past. As a precaution, no imported fruit should be taken on to New Zealand orchards.
- Has easily adapted to a range of climatic conditions around the world and could easily establish in New Zealand if introduced to a host here.

Risk months: Nov – Mar
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm **50mm** 40mm 30mm 20mm 10mm

Queens can be bigger than 50mm

KVH
KIWIFRUITVINEHEALTH

ASIAN HORNETS

ASIAN HORNETS

Asian Hornets are an invasive and predatory pest of bees, and a significant problem for beekeepers and pollination efforts.

Two species, the Northern Giant Hornet and Yellow-Legged Hornet, are of greatest concern. They can have brightly colored heads or legs, and are much larger than honeybees.

IMPACTS

- Kiwifruit not a known host so likely little to no trade impacts, but production could be affected by disrupted pollination.
- Bees have been known to represent 1/3 of a hornets diet and there have been reports of up to 80% hive loss.
- Opportunistic predator - will find a year-round food source and suitable host for establishment.

HOW IT SPREADS

- Hitchhiker on inanimate commodities, however will need a queen to establish a colony.
- Can spread up to 80km naturally and could hitchhike further.
- A single nest can potentially disperse many mated queens over a large area.

Risk months: Jan – Mar
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm **30mm** 20mm 10mm

Adults have a wing span up to 30mm

KVH
KIWIFRUITVINEHEALTH

YELLOW PEACH MOTH

YELLOW PEACH MOTH

The Yellow Peach Moth feeds on over 40 host species, including kiwifruit and other commercially important crops, and loves them all.

Moths have pale yellow wings with black spots. Larvae are beige/light brown in colour with a dark head, and about 2cm.

IMPACTS

- Intense feeding on fruit can render it unfit for commercial sale.
- Boring by larvae causes damage to fruit, leaves and stems.
- Excretions have a high sugar content which covers the fruit surface, attracting secondary insect pests and diseases that further damage fruit.

HOW IT SPREADS

- Found throughout Asia and Australia and likely to be intercepted on fresh fruit.
- Eggs, larvae and pupae are spread through infested fruit movement.
- Adults are active fliers and can fly long distances.

Risk months: Year round
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm

Adults have a wing span up to 100mm

KVH
KIWIFRUITVINEHEALTH

FRUIT PIERCING MOTH

FRUIT PIERCING MOTH

Present in Australia and has previously been detected in New Zealand but hasn't established here. It is a significant economic pest of ripening fruit, and attacks over 40 different types.

The moth is nocturnal and has a large, reddish-brown head. Their hindwings are yellow-orange and have a distinctive comma-shaped mark.

IMPACTS

- The adult is most damaging, so movement on fruit is low-risk and market access implications minimal.
- As well as causing damage through feeding holes and discolouration of skin, also causes secondary fungal or bacterial infections.
- If population density is too high and optimal food resource is not available, moths also attack immature green and acidic fruits.

HOW IT SPREADS

- Can travel long distances as adults and could enter on wind currents from Australia.
- Adults are strong fliers.
- No available trapping systems so visual detection is essential for early detection.

Risk months: Year round
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm

See symptom photos at **kvh.org.nz**

KVH
KIWIFRUITVINEHEALTH

CERATOCYSTIS WILT

CERATOCYSTIS WILT

This soil-borne pathogen is causing significant damage to kiwifruit orchards in Brazil, and there are several more strains globally that could impact kiwifruit.

Symptoms can include leaf wilt and curl, cane shrivelling and vine discolouration.

IMPACTS

- Significant vine loss reported in affected kiwifruit growing regions, with some orchards losing up to 50% of vines.
- Vine death can occur extremely rapidly after expression of symptoms. Hayward and Gold3 known to be susceptible.
- Once soil is contaminated, the replanting or re-grafting of new kiwifruit is not sustainable as the new vine will become infected.

HOW IT SPREADS

- Distributed globally and other strains may be of concern to kiwifruit.
- Spread through movement of infected plant material, soil, and contaminated orchard equipment so hygiene and sourcing clean plant material are key.
- If detected early and reported, could be eradicated with good biosecurity practices.

Risk months: Year round
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm

See symptom photos at **kvh.org.nz**

KVH
KIWIFRUITVINEHEALTH

NON-NZ STRAINS OF PSA

NON NZ STRAINS OF PSA

New Zealand has one strain of Psa. Others exist internationally and could cause severe impacts if they get here.

Psa bacteria outside/inside kiwifruit vines can result in leaf spotting, cane/leader dieback and, in extreme cases, vine death accompanied by the production of exudates.

IMPACTS

- A bacteria that can result in death of vines if infection is severe.
- Psa strains in Japan and Korea appear to be more virulent to Hayward than the New Zealand strain of Psa.
- New strains could cause much more infection to the "Psa tolerant" cultivars of kiwifruit we currently have.

HOW IT SPREADS

- New strains may evolve/arrive and could be difficult to distinguish from the one we already have.
- Can transfer via plant material, soil, humans, and orchard equipment so hygiene and sourcing clean plant material are key.
- Thrives when plants are damaged by high winds, hail, frost and vine cuts/wounds that it can enter.

Risk months: Year round
I can enter NZ on:

100mm 90mm 80mm 70mm 60mm 50mm 40mm 30mm 20mm 10mm

See symptom photos at **kvh.org.nz**

KVH
KIWIFRUITVINEHEALTH

INVASIVE PHYTOPHTHORAS

INVASIVE PHYTOPHTHORAS

Present around the world, in a wide range of hosts, these pathogens are known as plant killers that have major impacts on long-term production.

Many different *Phytophthora* damage kiwifruit vines in different regions globally, and can lay dormant for long periods before showing severe symptoms.

IMPACTS

- Difficult to detect with variable symptoms that are not expressed until very late stages when plants and vines are near death.
- Usually infects kiwifruit from root wounds or root tips early in spring. In warm summers vines may then rapidly decline.
- Reduced shoot growth; small, chlorotic leaves; and an open canopy. Infected/feeder roots become dark, decayed and few in number.

HOW IT SPREADS

- Easily spread, particularly with plant material movement, so sourcing clean plant material movements and traceability records are key.
- Wet, soggy soils are an ideal environment so low-lying land, poorly drained orchards and additional irrigation are more susceptible to infection.
- Vines with the graft union below ground level or mechanically wounded trees are easily infected.

Risk months: Year round
I can enter NZ on:

STOP THE SPREAD

We all have a role in preventing pests and diseases from getting into New Zealand or helping stop their spread if they do get here.

These cards are designed for you, your team members, and workplace to build awareness about what to look out for and how to make a report.

To find out more go to kvh.org.nz or scan this QR code.

CATCH IT **SNAP IT** **REPORT IT**

TO REPORT UNUSUAL PESTS OR DISEASES

KVH: 0800 665 825. Report online at **kvg.org.nz**

Biosecurity New Zealand: 0800 80 99 66
Report online at **report.mpi.govt.nz**

KVH
KIWIFRUITVINEHEALTH

KVH.ORG.NZ