



Psa good practice

Linda Peacock - 9 September 2020



Good practice

“A good practice is not only a practice that is good, but a practice that has been proven to work well and produce good results, and is therefore recommended as a model”

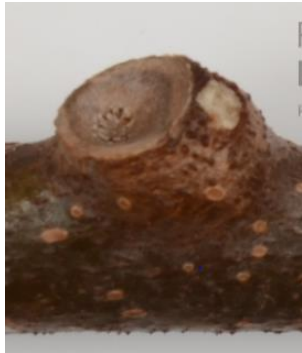
Good science, and measured trial results.

How did that happen?



The story so far...

- Psa can be present on the outside and inside of expanding buds in Spring.
- At budbreak - Psa under bud scales adds to inoculum load.
- Spring rains support Psa multiplication and spread.
- **Good practice - have a good coverage with winter rate copper in place as Spring buds emerge.**





New tissue needs protection

- Young leaf tissue is vulnerable to Psa (highest risk is 1-3 weeks after budbreak)
- Leafspot typically takes 14 days to develop
- It remains an inoculum source
- **Good practice - maintain a strong early season spray program to reduce risk of leaf spot developing.**



When is Psa infecting Hayward flower buds?



- very early (1-2 weeks after budbreak)
- with rain
- from the outside in
- “more inoculum = more risk”

DORMANCY				
	Dormant	Budswell	Woolly bud <i>also known as 'fluffy bud'</i>	Budbreak <i>also known as 'new growth'</i>
BUD PHASE				
	Shoot visible 1-2 weeks post budbreak	Shoot extending 3 weeks post budbreak	Leaves open 4 weeks post budbreak	Leaves expanding 5 weeks post budbreak
BUD PHASE				
	Calyx split-flower 3-5 days preflower	Popcorn <i>immediately preflower</i>	Open flower <i>5% of your canopy = flowering</i>	Petal browning

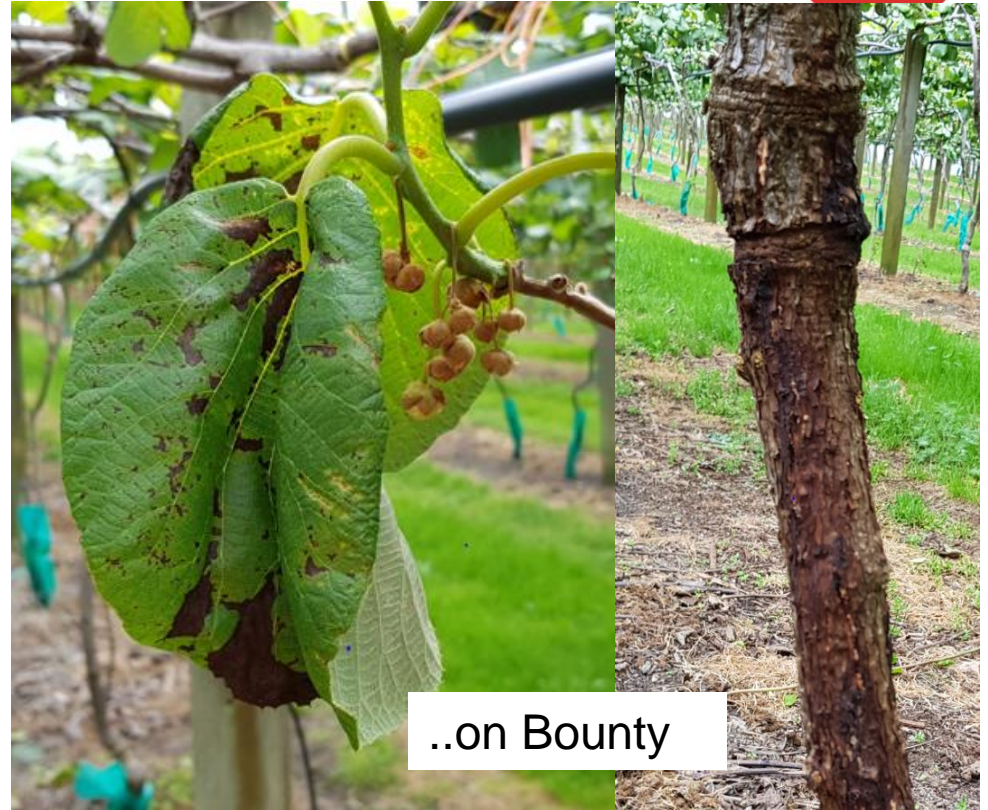
What about Gold3?



- Infection shows 4-5 weeks after budbreak (as sepals separate)
- Psa can be on sepals much earlier (despite no visual symptoms)
- Likely infection period is 2-3 weeks after budbreak
- Psa moves from outside the flower-bud into internal flower parts and disease development continues even after flowering



Gold3 – varietal impacts



Infection risk starts early

- Consider male timing
- Gold3 on Bounty will be ahead of Gold3 on Bruno
- Red19 will be ahead of Gold3
- Young plants also need protection
- **Good practice - know when and where your earliest buds break. This is your trigger point to start protection.**



What about Red19?

- Likely the same rules apply – protect early
- Budbreak is earlier than Gold3
- Budbreak to flowering is very similar to Gold3 (around 45 days)





New developments need care

- Young plants are more susceptible to Psa
- Start Psa free – keep it that way!
- **Good practice - choose KPCS full certification plants, monitor for Psa symptoms regularly, apply a sound crop protection programme and maintain good hygiene.**



Strategies



Build your plan

- Region
- Vine age and variety
- Psa inoculum levels
- Local weather
- Spray practices

Cultural control alongside a spray programme











PSA-V SEASONAL MANAGEMENT WALL CHART 2020-2021

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BUILD A PLAN THAT MATCHES YOUR ORCHARD

- Consider variety, region, orchard environment, management practices and seasonal conditions when creating your plan.
- Use cultural methods to reduce Psa risk.
- Maintain a protective spray programme year-round.
- Use the Psa Risk Model (www.kvh.org.nz) to help plan spray timings and orchard work.

CULTURAL METHODS	SPRAY PLAN
<p>Monitor regularly to identify presence of Psa symptoms</p>    	<p>Develop a plan that considers orchard Psa risk and weather risk, and be sure to protect wounds</p>
<p>Prune out infected material and remove from the block to reduce risk of Psa</p>    	<p>Pre-flower girdle (Hayward only) to reduce flower-bud infection</p> <ul style="list-style-type: none"> • Girdle 30 days pre-flower on high-risk Hayward sites • Avoid stressed vines • Check girdle depth
<p>Spring (very high-risk)</p> <p>Summer (lower risk)</p> <p>Autumn (risk increases)</p> <p>Winter (risk continues)</p>	<p>Maintain protective copper cover from budbreak through to flowering. Include products with different modes of action – Amco Gold, Actigard and consider CPPU (for Hayward). Re-activate mid-high-risk sites.</p> <p>Apply copper prior to significant high-risk weather events.</p> <p>Use copper and Actigard immediately post-harvest. Maintain copper cover throughout leaf fall.</p> <p>Apply winter copper before and after winter pruning and immediately prior to budbreak.</p>

	Bud break	Green fly	Shoot growth	Flower/high risk	Post growth	Post harvest	Leaf fall	Overwinter
Bestra™ 15 WG	30-40g/100L (summer)				30-40g/100L (summer)		30-40g/100L (winter)	
Ad-Copy™ 75	30-40g/100L (summer)				30-40g/100L (summer)		30-40g/100L (winter)	
Nucleo™ Copper	30-40g/100L				30-40g/100L		30-40g/100L	
Chemp™ CH+	30-40g/100L				30-40g/100L		30-40g/100L	
Hortolan™ Copper	30-40g/100L (summer)			DO NOT APPLY	30-40g/100L (summer)		30-40g/100L (winter)	
Hydrasol™ 30	150-220g/100L (spring)				150-220g/100L (summer)		150-220g/100L (winter)	
Chemp™ DP	30-40g/100L (summer)				DO NOT APPLY		100-140g/100L (winter)	
34-case Blue™	150g/100L (summer)				150g/100L (summer)		150g/100L (winter)	
<p>BACTICIDES: Apply to high-risk orchards to reduce inoculum prior to, or immediately after, high-risk weather events. Leaf area is sufficient when leaves reach 25-30cm in diameter (200 cm²). Use if residues and debris not being removed. Do NOT spray any flowers (male or female) or fruit. One pre-flower Kaunimite™ is allowed. Additional bactericide applications (Kaunimite or BaySepta) require a JA. Follow user guides.</p>								
Kasador™	50L/100L	30 EARLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY
KeySeptor™	80g/100L (JA ONLY)	1 EARLY EAR	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY
<p>BIO-BACTICIDES: Can be applied when early leaves reach 25-30cm diameter (200 cm²), and up until 8 weeks after flowering. Apply before high risk weather to protect against leaf spot and flower bud infection. Do not apply closer than 30 days after budbreak or 30 days before harvest. DO NOT USE MIX with copper. Adipose™ DO NOT USE with copper. Adipose™ DO NOT USE with copper.</p>								
Ampo™	50g/100L		DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY
<p>ACTIGARD™: Apply when early leaves reach 25-30cm diameter (200 cm²) to protect against leaf spot and flower bud infection. Apply prior to flowering. Requires 4-7 days for full effect. Do NOT apply to stressed plants. Do NOT spray flowers or fruit. Use immediately after harvest to protect fruit status and leaf areas. Foliage must be actively photosynthesising. Maximum 4 applications per season.</p>								
Actigard™	30g/100L. DO NOT exceed 100g/ha		NON PRODUCE VINES ONLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY
<p>CPPU: Apply when shoots reach 15-25cm long, to protect against leaf spot. It requires 5-7 days for full effect. One pre-flower Kaunimite™ is allowed. Additional use requires a JA. Do NOT spray female flowers or fruit. Not permitted on fruit as a growth regulator. Follow CPPU user guide.</p>								
Amibios™ 200	150g/100L	1 EARLY EAR	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY
<p>BIOLOGICALS: Use in a programme. Move subject to lower risk situations. For BCTN™ use sufficient water to achieve run-off. Apply to the soil in deep conditions when temperatures are above 10°C.</p>								
BOTRY™ 200	50g/100L		DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY	DO NOT APPLY
Kaunimite™	20g/100L - minimum 20g/ha		30g/100L - minimum 20g/ha (JA only)	30g/100L - minimum 20g/ha	30g/100L - minimum 20g/ha	30g/100L - minimum 20g/ha	30g/100L - minimum 20g/ha	DO NOT APPLY

KVH RECOMMENDED PRODUCT LIST

Product name (COPU application for the control). Spray rates for 1000 volume spray. Do not exceed the peak rate only. All of product rate per 100L of concentrate spray. The water rates appropriate for the use of the canopy to give complete coverage. This table is subject to change - refer to the KVH website for updates.

Monitor to identify Psa risk areas



Reduce risk using cultural controls



Prune out infected material and remove from the block to reduce risk of Psa



Check for staining



Cut back to clean wood



Treat wounds



Always sanitise tools

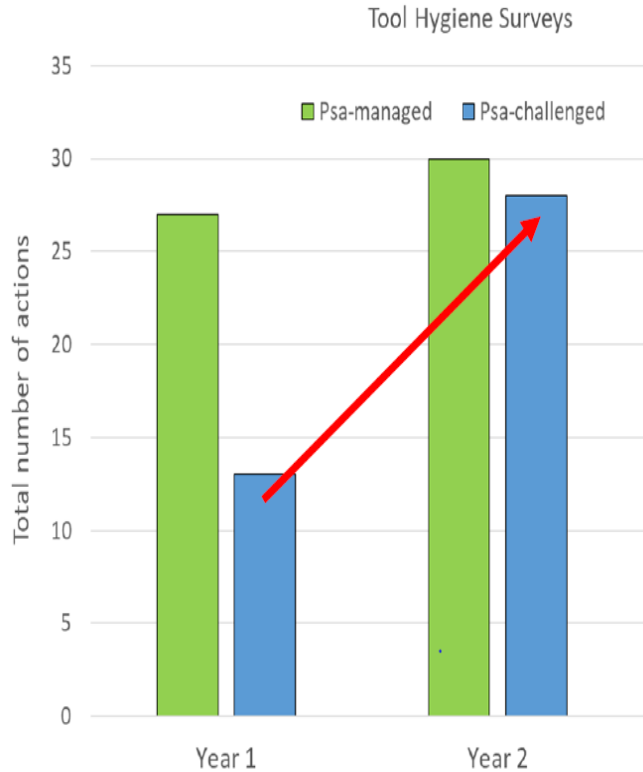
Pre-flower girdle (Hayward only) to reduce flower-bud infection

- Girdle 30 days pre-flower on high-risk Hayward sites
- Avoid stressed vines
- Check girdle depth



- Girdle in dry weather only
- Sanitise tools between plants
- Apply summer rate copper to protect girdles

Make keeping Psa out a priority!



Understand your toolbox – use products wisely




	Why	Timing/Growth stage	When
Copper	Backbone - protects plant surfaces from Psa.	Throughout Spring - cover new growth, expanding leaves and flower-buds.	Frequency to match risk. Cover growth before high risk weather.
Bactericides	Big hitter – to reduce inoculum in high risk orchards.	Kasumin (1) - from 25-30 mm leaf size to 21 days pre-flower. Keystrepto (JA) – to 7 days pre-flower.	High risk weather events (pre or post).
Bio-bactericide (Aureo Gold)	Reduces leaf spot and flower bud loss. Add within a copper program option. Safe close to flowering.	Bud break to 6 weeks after fruit set.	Frequency to match risk – not closer than 10 days after Kocide; or 14 days after Nordox.
Actigard	Elicits plant defence - reduces leaf spot and flower bud loss.	25mm leaf to 7 days pre-flower.	Before infection and high risk periods (eg flowering).
CPPU	Preventative to reduce leaf spot (not on Gold).	When shoots reach 15-25 cm long (4-5 weeks after bud break).	Before leaf spot occurs – a preventative.
Biologicals (Botryzen and Kiwivax)	Additional mode of action.	Throughout Spring.	OK with copper.

Psa Risk Model - supporting orchard decisions

Protecting our orchards, our jobs, and our communities

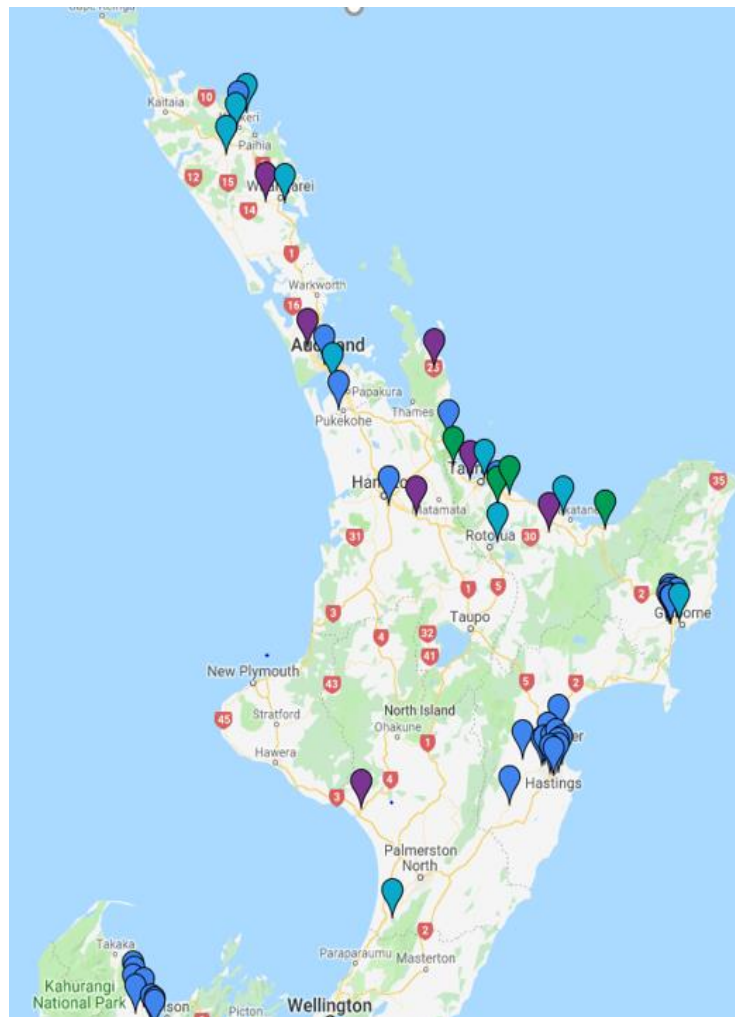
WATCH OUR VIDEO



CLICK HERE TO USE THE PSA RISK MODEL

WHAT ARE KIWIFRUIT'S MOST UNW THREATS?

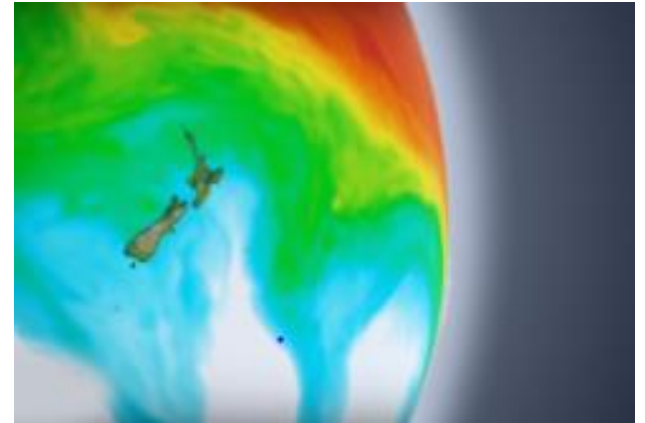
The image shows a video player interface. The top part is a video frame showing an orchard with blue irrigation pipes and informational signs. The bottom part is a dark navigation bar with two buttons. A red arrow points from the 'WATCH OUR VIDEO' button to the 'CLICK HERE TO USE THE PSA RISK MODEL' button. A progress bar with five dots is visible above the navigation bar.





Seasonal Outlook - Sept to Nov

- Winter 2020 was warm and generally rainfall was lower than normal – some exceptions.
NE winds and warm seas prevailed.
- Through Spring - more **North Easterlies** are expected.
- Temps are likely to be above average
and rainfall normal (warmish and wet)



Final word

- Leave nothing to chance
- Start early...stay on track



