

















# 2020/21 SPRAY PROGRAMME – CONVENTIONAL





STAGE	TIMING	TARGET	PRODUCT	RATE/100 L	WATER/HA	pH	COMMENTS
 FLUFFY BUD	5–7 days pre-budbreak	Psa-V	Kocide Opti, ChamplON OR Nordox 75WG	70–90 g	600–800 L	6.5 - 7	Protective layer over wounds from frost damage, lower inoculum. Use of a super-spreader is industry best practice.
				37.5 g		6 - 7	
 Vegetative growth showing	When damage observed	Birds	Flock Off	150–300 ml	600–1000 L		Apply at first sign of damage. Reapply after 7–10 days if bird pressure continues. Max 3 sprays. Not compatible with Aureogold.
	Vegetative growth showing	Psa-V	Kocide Opti, ChamplON OR Nordox 75WG	70–90 g	600–800 L	6.5 - 7	<b>Protect new vegetative growth</b> Aim to apply before significant weather events. Where Psa-V has been an issue ensure new growth is protected. Use of a super is industry best practice.
37.5 g				6 - 7			
 SHOOT EXTENSION	<b>REFER TO FOLIAR NUTRITION – SPRING GROWTH</b>						
	Shoot extension (1–2 weeks post budbreak)	Psa-V	Kasumin (AI Nozzles)	500 ml	700 –1000 L Tank mix		Maximum 1 application in bud phase. Must complete an OPIS form and register an Intent to Spray. Refer to Kasumin User Guide on canopy website. A second application can be made under JA. Use AI nozzles and drift retardant.
			Kocide Opti, ChamplON OR Nordox 75WG	70-90 g 37.5 g			<b>Do not tank mix Copper and Aureogold.</b> Aim to apply before significant weather events. Where Psa-V has been an issue ensure new growth is protected. Use a non-ionic spreader.
	Shoot extension (4–5 weeks post budbreak)	Psa-V	Actigard	20 g (200 g/ha MAX)	1000 L Tank mix	5 - 8.5	Aim for use when leaves are 25 mm in diameter. It takes 4–7 days to activate a plant response. Don't use on stressed vines e.g. young vines, wet roots, frost damaged.
Kocide Opti, ChamplON OR Nordox 75WG			70–90 g 37.5 g	6.5 - 7 6 - 7		Aim to apply before significant weather events. Where Psa-V has been an issue, ensure new growth is protected. Use a non-ionic spreader.	
<b>PRE-FLOWER GIRDLE FOR HAYWARD – 30 DAYS BEFORE FLOWERING</b>							

STAGE	TIMING	TARGET	PRODUCT	RATE/100 L	WATER/HA	pH	COMMENTS
	Shoots approx. 150mm long	Psa-V	Ambitious or Gro-tech	50 ml	1000 L		Not permitted on gold varieties. Use AI nozzle and drift retardant. See special notes and refer to CPPU user guide. <b>Please talk to your Grower Services Rep or Technical before using Ambitious..</b>
PRE - FLOWERING 	14 days pre-flowering	Leafroller	Prodigy	15-25 ml (min 300ml/ha)	1000 - 1500 L Tank mix		Refer to Prodigy rate guide on p. 6. <b>5-day interval between Movento and Copper.</b>
		Scale	Movento 100SC	48 ml (min 960ml/ha)		<7.5	To increase the efficacy of Movento use a super-spreader such as Du-Wett at 200 ml/ha. <b>Do not tank mix with Luna Privilege.</b>
<b>FLOWER BUD THINNING – Target misshapen flower buds; if you have excess numbers, reduce by targeting laterals and then king flowers</b>							
	Within 7 days pre-flowering	Sclerotinia	Luna Privilege	30 ml (min 300 ml/ha)	1000 L Tank mix	5 - 8	Both products have restrictions once flowering starts due to residue concerns. Consider cultural controls for <i>Sclerotinia</i> , such as keeping an open canopy and moving from a spray strip to a grass sward. No earlier than a 21-day interval for Actigard. <b>Do not tank mix with Prodigy.</b>
		Psa - V	Actigard	20g (max 200 g/ha)		5 - 8.5	
		Psa - V	Kocide Opti, ChampION OR Nordox 75WG	70 - 90 g 37.5 g		6.5 - 7 6 - 7	
FLOWERING 	Flowering	Psa - V	Aureo Gold	50g	1000 L		Alternate option to a pre-flower Actigard or copper if you couldn't achieve that. Do not apply while bees are foraging. <b>14-day interval between Copper and Aureo Gold.</b> Use a non-ionic spreader. Max 4.5 kg/ha.
<b>POLLINATION – Bees in, supplementary or replacement. ENTER your FRUITSET DATE in your spray diary</b>							
	Flowering to petal fall	Sclerotinia	Timorex Gold	1.5 L/ha	1000-1500 L		Apply up to 2 applications during high disease risk period. Do not apply while bees are foraging.
<b>REFER TO FOLIAR NUTRITION – POST FRUIT SET</b>							

STAGE	TIMING	TARGET	PRODUCT	RATE/100 L	WATER/HA	pH	COMMENTS	
POST FRUITSET 	<b>REFER TO FOLIAR NUTRITION</b>							
	7 days post fruitset	Psa-V	Kocide Opti, ChamplON OR Nordox 75WG	70–90 g  37.5 g	1000 – 1500 L	6.5 - 7  6 - 7	Pay extra attention, making sure any pruned males are covered. Use a non-ionic spreader.	
	10–14 days post fruitset	Leafroller	Bt OR Proclaim	50 g  2 g	1000–1500L		Use if leafroller is present. Do not spray while bees are in the orchard. Bt – minimum of 1 kg/ha. Ensure no less than 40 g/ha . 42 days PHI	
	<b>SIZE GIRDLE 28 – 35 Days after MID BLOOM</b>							
	Skin sensitivity	Psa-V	Aureo Gold	50g	1000 L		Use during skin sensitivity period at 7–14-day intervals as Psa-V risk warrants it. Leave 14 days between Copper and Aureo Gold. Use a non-ionic spreader.	
MONITORING   	December	Passion Vine Hopper (PVH)	Zetapy OR Pylon  Wetcit	50–250 ml  200 ml	1000–1500 L Tank mix		Spray shelterbelts if high numbers of nymphs are noticed.  Aids spreading and knockdown effect. Leave 7 days between Wetcit and Copper	
	December – Harvest	Sooty Mould	Triple X	300 ml	1000 L		Use as a preventative at 10 to 14 day intervals with a super wetter. Maximum of 9 sprays per period. <b>Only apply in the presence of honeydew.</b>	
	January to March	Psa-V	Kocide Opti, ChamplON or Nordox 75WG	70–90 g  37.5 g	1000–1500 L	6.5 - 7  6 - 7	Target spraying to weather events. Use a non-ionic spreader.	
	January to March	Leafroller	Bt OR Proclaim	50g  2g	2000 L Tank mix			Do not spray while bees are foraging in the grass sward (Proclaim <b>42-day</b> withholding, <b>2 days</b> for BioBit). No more than 3 applications.
		Scale	Mineral Oil	1 L				Oil has a 14-day withholding period. See additional notes for fruit skin sensitivity periods.
	<b>INFORMAL PEST MONITORING – Follow KiwiGreen Guidelines for PVH.</b>							
<b>DRY MATTER GIRDLE</b>								

STAGE	TIMING	TARGET	PRODUCT	RATE/100 L	WATER/HA	pH	COMMENTS
	March/April	Psa-V	Kocide Opti, ChamplON OR Nordox 75WG	70-90 g 37.5 g	1000-1500 L	6.5 - 7 6 - 7	Target spraying to weather events (7 day withholding period). Use a non-ionic spreader.
	April to June	Stain	Kiwilustre LF, Jewel LF OR CP Cleaner	500ml	3000L		Spray 6-24 hours before harvest. Clearance samples will not be collected if fruit is wet or adjacent blocks are being sprayed.
<b>HARVEST</b>							
POST HARVEST 	Immediately after harvest	Psa-V	Kocide Opti ChamplON OR Nordox 75WG	70-90 g 55-70 g	1000-1500 L	6.5 - 7 6 - 7	Use of a super-spreader is industry best practice.
	Immediately after harvest while leaves still active	Psa-V	Actigard	20 g (200 g/ha)	1000 L	5 - 8.5	Can be used while leaves are still actively photosynthesizing, generally excludes the later part of the harvest window. Takes 3-7 days to activate the plant response. Do not use on stressed vines e.g., young vines, wet roots, frost damaged. Take care to avoid spray drift onto unharvested areas.
Scale		Movento 100SC	96 ml (960 ml/ha)	1000 L	< 7.5	JA required (under following year). Only use if over 20% at previous monitoring, a high level found at packing or increase over seasons.	
	After harvest	Cicada / PVH	Venom or Assail (under review by EPA)	100 ml	1000 L Tank Mix		Use once leaf drop allows good cane coverage. Apply pre-pruning if targeting cicada, post-pruning if targeting PVH. Double mulch canes after pruning to reduce cicada eggs.
			Engulf	100 ml			
	Winter	Psa-V	Kocide Opti ChamplON or Nordox 75WG	55-70 g 70-90 g	600-800 L	6.5 - 7 6 - 7	Winter rates on dormant vines. Use of a super-spreader is industry best practice.

STAGE	TIMING	TARGET	PRODUCT	RATE/100 L	WATER/HA	pH	COMMENTS	
 PRE- PRUNING	Winter	Psa-V	Kocide Opti ChamplON or Nordox 75WG	55-70 g	600-800 L	6.5 - 7	Winter rates on dormant vines. Use of a super-sprayer is industry best practice.	
				70-90 g		6 - 7		
<b>SOIL TEST</b> Submit sample for analysis of nutrient levels and request a fertiliser recommendation								
 POST PRUNING	Winter	Psa-V	Kocide Opti ChamplON OR Nordox 75WG	55-70 g	600-800 L	6.5 - 7	Winter rates on dormant vines in response to weather events. Use of a super-sprayer is industry best practice.	
				70-90 g		6 - 7		
	Winter	Vine	Hydrogen cyanamide (HC)	6 L	600-700 L			AI nozzles and a drift reducing adjuvant must be used. Application can be made prior to pruning, 5-day re-entry interval.
			Drift retardant	200 ml				
Winter	Psa-V	Kocide Opti ChamplON OR Nordox 75WG	55-70 g	600-800 L	6.5 - 7	Use winter rates on dormant vines. Use of a super-sprayer is industry best practice.		
			70-90 g		6 - 7			
<b>APPLY BASE FERTILISER</b> Follow rates suggested in your fertiliser recommendation. Enter into spray diary.								

Cultural control is an important part of responsible growing and cultural control methods should be used as part of any complete integrated pest management (IPM) programme.

Any tank mixes suggested above (indicated by bold borders and shaded grey) are based on manufacturer compatibility information and feedback from spray diary information.

## INSECT PEST CONTROL

PEST MONITORING PERIODS:

TIMING AFTER FRUITSET		
	SCALE	LEAFROLLER
HW, G14	8-weeks	5-weeks
GA	8-weeks	7-weeks

Please provide us with your fruitset date so we can monitor at the correct time.

PEST THRESHOLDS:

LEAFROLLER THRESHOLDS		SPRAY ALLOWANCE
NORMAL MONITORING	>0.5%	1 application before next monitor result
4 WEEKS PRE-HARVEST	>0.1%	1 application before next monitor result (consider re-entry interval)

SCALE THRESHOLDS		SPRAY ALLOWANCE
MONITORING	4-20%	1 application before next monitor result
	>20%	2 applications before next monitor result

During the monitoring period spray controls must be in response to pest levels meeting or exceeding monitoring thresholds.

### PYRETHRUM APPLICATION FOR THRIP CONTROL - JA ONLY

Greenhouse Thrips are a minor pest for damage to kiwifruit but can create market access issues. If you are seeing higher than usual levels, follow the Zespri recommendations below. Pyrethrum can be combined with an oil along with an adjuvant such as Wetcit, OroBoost or Du-wett. Contact Zespri Crop Protection before submitting your Spray Diary for final audit, so this can be cleared.

If you have a neighbour with a different crop, discuss control options together to come to the best solution.

### PYRETHRUM APPLICATION TIMING FOR THRIP CONTROL - JA ONLY

	SPRAY ALLOWANCE
JAN/FEB	If higher than usual numbers detected
DAYS PRE HARVEST	If higher than usual numbers detected — Knockdown but not control
DAYS PRE HARVEST	If higher than usual numbers detected — Knockdown of any new generations

## RE-ENTRY AND PRE-HARVEST INTERVALS

PRODUCT	PRE-HARVEST INTERVAL (PHI)
<i>Bacillus thuringiensis (Bt)</i>	2-days
Copper	7-days
Wuxal Ascofol	7-days
Pyrethrum	14-days
Aureogold	14-days
Timorex Gold	14-days
Mineral Oil	14-days
Acadian Seaweed	14-days
Stimplex	14-days
Emamectin (Proclaim)	42-days
Foliar Urea (All)	50-days
RE-ENTRY INTERVAL (REI)	
Copper	When Fully Dry (WFD)
Prodigy	WFD
Emamectin (Proclaim)	WFD
<i>Bt</i>	WFD
Pyrethrum	WFD
Mineral Oil	WFD
Timorex Gold	WFD
Clean-up spray	WFD

Ambitious	WFD	Luna Privilege	1-day
Flock Off	WFD	Bifenthrin	2-days
Aureogold	4-hours	Kasumin	2-days
Movento	12-hours	Hydrogen cyanamide	5-days
Actigard	12-hours		

## SPRAY TIMING

### FRUIT SKIN SENSITIVITY PERIODS:

DAYS AFTER FRUIT SET														
	0	7	14	21	28	35	42	49	56	63	70	77	80	
HW				Risk										
GA			Risk											

Avoid damaging fruit during the risk periods above by minimising activity in the orchard during this time. Plan spraying and canopy work such as pruning or thinning for before or after the risk period. What looks like a small amount of damage at the time can worsen as the fruit expands in size.

### SPRAY INTERVALS:

Intervals between certain chemicals are necessary to avoid a reduction in efficacy and/or phytotoxicity. These are the minimum intervals recommended between applications. For example, if you apply Movento, 5 days is needed before a copper product is applied. If trying a new product, check with your merchant for information on the interaction with other chemicals, especially copper.

DAYS BEFORE														DAY OF SPRAYING	DAYS AFTER															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Copper											Bifenthrin	Copper																		
Budbreak Enhancer												Budbreak Enhancer																		
Flock Off														Aureogold	Flock Off															
Copper Hydroxide															Cu Hydroxide															
Nordox														HC	Nordox															
Copper															Wetcit/Oroboost	Copper							Copper							
Copper											Movento	Copper																		
Copper (Sum)														Oil	Copper (Sum)							Copper (Sum)								
Copper (Win)											Copper (Win)																			

## ADDITIONAL INFORMATION

### PRODIGY RATE GUIDE:

PRODUCT	PEST PRESSURE	RATE / 100	WATER RATE	RATE / HECTARE
PRODIGY	Moderate	30 ml	1000 L	300 ml
		40 ml		400 ml
	Severe	50 ml		500 ml

Use the above table to determine prodigy use rates. We have adjusted for 1000 L use, which is recommended. The product label states 15-25 ml/100 L for use at 2000 L, which is 300-500 ml/ha.



**ADDITIONAL SPRAYS:** Growers concerned about their holistic orchard environment may like to consider spraying beneficial biological sprays regularly to replenish some of the beneficial non-target organisms that are also being affected by the copper and bactericide sprays. Additional foliar fertilisers may be used over summer to help with plant health, such as heavy crop loading or high copper use programmes.

**TRIPLE X:**

Spray once honeydew is present, with repeated applications every 10 days until harvest. Ensure good spray coverage.

**AMBITIOUS:**

For use on Hayward vines only. Use AI nozzles and a drift retardant required. Helps alleviate leaf spotting from Psa and improve overall canopy health. Talk to your Grower Services Rep to notify packhouse.

**FOLIAR FERTILISERS/BIOSTIMULANTS:** Product labels often advise first use from budbreak stage. However, the number of applications and when to cease use for the season is not always clear with different products. Caution is advised for use after fruitlet stage as it is uncertain whether the increase in vine health and growth is at the expense of fruit dry matter accumulation.

Nitrogen: Power new growth early in the season

Calcium: Build fruit cell wall strength at cell division stage

Potassium: Assist in fruit maturity

The below table is a guide only; please seek advice from trusted advisors if you're unsure about timing and number of applications.

FOLIAR APPLICATION STAGES	
1	Pre-flower
2	Pre-flower
3	Early fruit formation
4	1-2 weeks later
Optional	1-2 weeks later

**AGRICHEMICAL USE AND NOTIFICATION:** Responsible use means the ongoing availability of products which assist in growing a successful crop. Communicate with your neighbours and work together to devise a satisfactory plan. We recommend requiring your spray contractor to use an automated notification system to protect you and the spray contractor against prosecution. Ensure contact details are up to date.

It is vital to comply with legislation. Notify neighbours within 50 m of your property when spraying (needs to be within 72 hours to 12 hours before). Prominently display signage at property entrances to indicate spraying is taking place (signs must be in place no less than 24 hours before spraying). Many products have different use requirements – sprayer set up, weather conditions, compatibility etc. Be certain the applicator is fully aware of these and responding accordingly.

Agrichemical use rules are governed by your regional council, make sure you are aware of the specifics for your region.

While only low levels of copper resistant Psa have been found it's always important to use agrichemicals correctly to avoid resistance occurring. Resistance can occur in disease, weeds and insects. Follow these guidelines:

1. Use full label rates (use of lower rates assists survival of resistant individuals that then start to dominate the population leading to control failure over time).
2. Ensure adequate coverage.
3. Alternate products with different modes of action

**GENERAL/GUIDELINES:** Some labels stipulate a rate per hectare, in these cases a rate per 100 L has been calculated to match the suggested water rate given here, please check the product label and recalculate the rate per 100 L if using water rates different from those listed in this programme, refer to the Zespri Spray Techbox for assistance <https://goo.gl/k48TI7>.

This isn't a list of every spray you could use, but a guideline. The complete list of products is updated each season in the Zespri Crop Protection Standard, and the allowed other compounds (AOC) list.