

Background

Appropriate hygiene measures must be taken to minimise the risk of transferring Psa-V from vine to vine or between orchards. Psa-V is easily spread through infected plant material. The disease can also be transferred through orchard machinery, pruning tools, equipment, harvest bins, clothes and vehicles which are not cleaned. Therefore orchard-hygiene practices are very important to help prevent the disease spreading.

The use of sanitisers after the removal of plant material is effective in killing any Psa-V present.

Sanitiser use and effectiveness

When using sanitisers there are a number of considerations:

- Will the item to be sanitised come into contact with picked fruit? (i.e. picking bags, bins, fruit grading equipment)
- Ensure the product is food safe. Refer to www.foodsafety.govt.nz/registers-lists/maintenance-compounds/index.htm

NB: DDAC-based compounds and other quaternary ammonium compounds – such as benzalkonium chloride (BAC) are not permitted for use on surfaces that come into contact with fruit as these products can create residue issues within markets. It is recommended that suppliers are asked for an analysis certificate prior to purchasing sanitisers for use on surfaces which will come into contact with fruit.

For a list of sanitisers that are permitted on surfaces that contact fruit (picking bags, bins and fruit grading equipment) please contact your marketer (e.g. Zespri, Turners & Growers etc.). Do not use any sanitisers that do not have your marketer's prior approval.

- With all sanitising solution options, consider the corrosiveness of the solution.
- Check compatibility with other chemicals used on the equipment e.g. detergent
- Ensure safety for humans. (Check the *Material Safety Data Sheet* (MSDS) for this information—available from the product supplier.)
- When spraying sanitisers, ensure all surfaces are free of debris, e.g. soil and plant material
- If using in footbaths—change the sanitising solution daily or more frequently if heavily contaminated. A build-up of organic matter may reduce the efficacy of the sanitiser product over time.

Approved sanitisers and their recommended areas of use used on surfaces visually free of contamination are listed below. A more detailed list showing application time and working concentrations for efficacy against Psa-V on various substrates can be found at the end of this document.

Product Type &/ or active ingredients	Description & Trade names	Area for use					
		Hands	Facilities & work areas	Tools, Equipment and Machinery	Footbaths	Vehicles	Bins and picking bags
Broad spectrum disinfectants - use label rates	Virkon, Sterigene, Environsan, Varicide Extinct Pure*		✓	✓	✓	✓	
Household bleach ¹	e.g. Janola (1:100 dilution)		✓	✓	✓	✓	✓
Methylated spirits*	>70% alcohol solutions			✓			
Disinfectant sprays*	e.g. Dettol use label rates	✓	✓			✓	
Hand sanitiser*	Gel, foam or liquid antiseptic solutions	✓					
Octanoic acid	Aussan L44*		✓	✓		✓	✓
Bromo-chloro-dimethylhydantoin	Harvestcide gel		✓	✓		✓	✓
Sodium hypochlorite	Nuron BioSafe*		✓	✓		✓	
Natural botanical oils	ActiveClean B*		✓	✓		✓	✓
Weak organic acid – use label rates	Citric acid*		✓	✓		✓	✓

¹ Bleach solutions must contain 0.042% hypochlorite to be effective against Psa-V. For Janola, this means a 1% working concentration (a dilution of 1:100). For other bleach solutions check the label to determine the dilution required.

*Sanitisers suitable for use on organic orchards. Ensure any products have Biogro approval prior to use. Refer to Biogro website www.biogro.co.nz

Trade names other than those listed above may be approved if they have the same active ingredients. To check if a specific trade name is an approved sanitiser please contact KVH on 0800 665 825 or email info@kvh.org.nz

Efficacy of various sanitisers against Psa-V. The reports of this testing by VLS is available on the following links:

- www.kvh.org.nz/vdb/document/91553 (2013 VLS Disinfectant efficacy testing report)
- www.kvh.org.nz/vdb/document/91123 (2012 VLS Disinfectant efficacy testing report)
- www.kvh.org.nz/vdb/document/91565 VLS efficacy testing report for Aussan L44

General sanitiser products with KVH approval for tested efficacy against Psa-V

Summary					Sensitive to		Spray Applied				Dip Applied			
							Minimum time required for kill efficacy							
Product tested	Active ingredient	Working Conc*	pH	Likely Residue?	pH	OM	Wood	Plastic	Tyre	Metal	Wood	Plastic	Tyre	Metal
Citrox	Citrus pulp extract, water (demineralised), citric acid,	1%	6.4	No	NS	NS	10s	10s	NE	2 min	10s	1min	NE	2min
Janola	Sodium hypochlorite, sodium hydroxide	1%	8.4	No	NS	S	10s	10s	10s	10s	10s	10s	10s	10s
H₂O₂	Hydrogen peroxide	3%	6.	No	NS	NS	10s	NE	2min	10s	10s	2min	NE	10s
Teracep	Paracetic acid (peroxyacetic acid), hydrogen peroxide	1%	4.8	No	NS	S	10s	10s	10s	10s	10s	30s	3s	10s
Kiwilustre Extinct	Phosphate buffered lactic acid Chlorine dioxide	1%	4.	No	S	NS	10s	NE	NE	30s	10s	10s	10s	2min
Citric acid	Citric acid (100%)	3%	2.	No	S	NS	10s	10s	30s	10s	10s	10s	10s	10s
Aussan	Octanoic acid	0.3%	3.	No	-	NS	10s	10s	10s	30s	30s	30s	30s	1 min
Harvestcide gel	Bromo-chloro-dimethyl-hydantoin	0.1%	5.5	No	NS	NS	10s	10s	10s	10s	10s	10s	10s	10s
Citrox 14T	Citrus extract	1%	3.	No	NS	NS	1 min	1 min	1	30s	10s	1 min	1	30
BioWash	Chlorine dioxide	1%	8.	No	NS	S	1 min	2 min	NE	NE	2 min	2 min	NE	1 min
Nuron BioSafe	Sodium hypochlorite	0.1%	7.2	No	NS	NS	10s	10s	10s	10s	10s	30s	10s	10s
ActiveClean B	Natural botanical oils	5%	4.5	No	NS	NS	10s	10s	10s	10s	10s	10s	10s	30s

NE= Not Effective, NS = Not Sensitive, S=Sensitive, B=Sensitive to basic conditions, OM = Organic matter

Sanitiser products for use on non-fruit contact surfaces only – HIGH RESIDUE RISK

Summary					Sensitive to		Spray Applied				Dip Applied			
							Minimum time required for kill efficacy							
Product tested	Active ingredient	Working Conc*	pH	Likely Residue?	pH	OM	Wood	Plastic	Tyre	Metal	Wood	Plastic	Tyre	Metal
Envirosan	Glutaral, didecylmethylammonium chloride, propan-2-ol, methanol	1%	6.9	Yes	B	NS	10s	1 min	NE	10s	10s	10s	NE	10s
SteriGene	Polymeric (Hexamethylene) biguanide hydrochloride alkyldimethyl benzyl dimethyl ammonium chloride, dodecylamine sulphamate	1%	7.3	Yes	NS	NS	30s	NE	NE	10s	10s	NE	NE	10s
Virkon	Potassium peroxomonosulphate, sodium dodecylbenzene sulphonate, sulfamic acid	1%	4	Yes	NS	S	10s	10s	10s	10s	10s	30s	10s	10s
Byotrol	Polyhexmethylene biguanide hydrochloride, dodecyl dimethylammonium chloride, benzalkonium chloride	0.5	6.9	Yes	NS	NS	10s	10s	10s	10s	10s	10s	10s	10s

NE= Not Effective, NS = Not Sensitive, S=Sensitive, B=Sensitive to basic conditions, OM = Organic matter

*The working concentration listed in the tables above is the minimum concentration shown to have efficacy against Psa-V

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