



KPCS Best Practice Fact Sheet

Nursery Hygiene

Background

Any substrate (plant material or inanimate object) has the potential to be a carrier of biosecurity threats onto a nursery, particularly when propagating material is being introduced from off-site. Good hygiene practices are a critical component of biosecurity best practice for a nursery operator and are instrumental in reducing the likelihood of biosecurity threats entering the nursery and spreading within the nursery.

Scope

Nursery activities should be regularly reviewed to identify and minimise any activities that may present a risk of introducing or transferring pests or diseases. The movement of plant material is known to present the greatest risk of spreading pests and diseases. Plant material brought onto a nursery from an orchard or other nursery site presents an especially high risk of introducing pests or diseases and must be managed accordingly.

Good hygiene practices are an essential component of the biosecurity risk management system; a system that includes avoiding high risk activities like propagation and pruning in unfavourable wet and damp weather conditions.

The guidelines below are divided into two sections:

1. Best practice advice to assist nurseries in managing biosecurity risks
2. Approved sanitisers and recommended areas of use

1. Nursery Hygiene Best Practice Guidelines

Nursery Access

Access to kiwifruit production and propagation areas should be restricted to those people directly involved in the production process. Access to visitors and other staff should be discouraged and managed appropriately.

Signage identifying biosecurity risks and restricted areas should be displayed at all entrances to production areas. Signs should include contact details of the site manager for visitors to request access.

Where practical, access should be limited to one point of entry to reduce the presence of unauthorised personal.

Only essential vehicles, hand carts, trollies and wheelbarrows should be allowed in the production areas. Other non-essential equipment should be routed around or outside the kiwifruit production areas.

Nursery operators should ensure spraying contractors and other personnel are aware of the potential biosecurity risks in kiwifruit production areas, and only enter these areas when necessary.

Nursery personnel

All staff involved in kiwifruit production have a responsibility for maintaining a high standard of biosecurity practice.

This includes:

- Managing personal hygiene and washing hands before and between batches;
- Ensuring footwear and clothing is clean especially when coming from possible areas of infection such as collecting plant material offsite;
- Footbaths should be provided for staff to clean and disinfect footwear prior to entering a growing or propagating area; and
- Staff should be trained in and fully aware of all hygiene requirements before working with kiwifruit plant material.

Equipment cleaning

Vehicles and tools are a common vector of biosecurity threats. Vehicles and tools dedicated to a particular site or task that can be easily cleaned and sterilised will reduce the risk of spreading pests and pathogens between sites.

Pruning equipment, knives, secateurs used for propagation, trimming and shaping should be regularly cleaned and sterilised between batches, and at regular intervals when working on a large batch of plants.

Vehicles and wheeled equipment should remain on concrete or metalled pathways avoiding contact with soil. Equipment that is directly exposed to soil and orchard environments should be cleaned and washed down before re-entering propagation and growing areas.

Plant waste

Trimming, prunings and excess propagation material may present a biosecurity risk and must be removed from plant production areas and disposed of appropriately and in a timely manner.

Such plant material must be dealt with on a very regular basis and not left on site as a potential source of infection. Bins should be provided for the removal of plant debris and disposed of in an approved manner. Further information is provided on the KVH website (www.kvh.org.nz/vinereoval).

Work areas

Areas used for kiwifruit production should be cleaned and pre-pared prior to introducing a new crop.

Unsaleable or rejected plants, empty pots and used potting mix should be removed and disposed of in the approved manner.

Propagation benches should have all kiwifruit material removed and disposed of, then sprayed and sanitised before a new crop is introduced.

Growing areas should also have all kiwifruit material removed and disposed of and beds or benches cleaned and sanitised.

Multiple Sites

Nurseries with multiple sites should consider ways of reducing the transfer of items (including plants, staff and equipment) between sites. Items that are transferred between sites should first be sanitised.

2. Approved sanitisers and recommended use

When using sanitisers there are a number of considerations:

- 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
- When using in footbaths—change the sanitising solution weekly or more frequently if heavily contaminated. A build-up of organic matter may reduce the efficacy of the sanitiser product over time.
- For organic nurseries, ensure any products have BioGro approval prior to use (www.biogro.co.nz)

Approved sanitisers for effectiveness against Psa-V and their recommended areas of use are listed on the following pages. A more detailed list showing application time and working concentrations for efficacy against Psa-V on various substrates can be found in Appendix 1.

Table 1. Approved sanitisers for Psa-V and their recommended areas of use

Product Type or active ingredients	Description & Trade names ¹	Area for use				
		Hands	Facilities & work areas	Equipment	Footbaths	Vehicles (cargo bay)
Broad spectrum disinfectants	Virkon, Sterigene, Environsan, Varicide		✓	✓	✓	✓
Household bleach	e.g. Janola (1:100 dilution) ²		✓	✓	✓	✓
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		✓	✓		✓

¹ 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.

² 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 or contact KVH for assistance.

Appendix 1. Detailed breakdown of sanitiser efficacy against Psa-V

General sanitiser products with tested efficacy against Psa-V.

Summary					Sensitive to		Spray Applied				Dip Applied			
Product tested	Active ingredient	Working Conc*	pH	Likely Residue?	pH	OM	Minimum time required for kill efficacy							
							Wood	Plastic	Tyre	Metal	Wood	Plastic	Tyre	Metal
Citrox	Citrus pulp extract, water (demineralised), citric acid, glycerine	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%	6.8	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	Phosphate buffered lactic acid	1%	4.1	No	S	NS	10s	NE	NE	30s	10s	10s	10s	2min
Extinct pure	Chlorine dioxide	1%	4	No	NS	NS	10s	2min	NE	10s	10s	2min	NE	10s
Citric acid	Citric acid (100%)	3%	2.5	No	S	NS	10s	10s	30s	10s	10s	10s	10s	10s
Aussan L44	Octanoic acid	0.3%	3.4	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%	3.9	No	NS	NS	1 min	1 min	1 min	30s	10s	1 min	1 min	30 sec
BioWash	Chlorine dioxide	1%	8.8	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, didecyldimethylammonium 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 alkyl dimethyl benzyl dimethyl ammonium chloride,	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