



Kiwifruit Plant Certification Scheme

Standard

(Rootstock and Grafted plants)

Version 6.0

30 April 2021

Nursery Name:

Prepared by:

Date:

**Kiwifruit Vine Health Inc.**

25 Miro Street
Mount Maunganui
PO Box 4246, Mount Maunganui, 3149
New Zealand
KVH general enquiries phone 0800 665 825 or email info@kvh.org.nz
www.kvh.org.nz

Updates

The Kiwifruit Plant Certification Scheme (KPCS) has been set up to reduce the risk of spreading pests and diseases on the movement of kiwifruit plant material. The standards are based on the 2011 Kiwifruit Nursery Standards that were developed in response to the Psa-V incursion and have been revised to embody the knowledge developments in the kiwifruit industry, objectives set out in the National Psa-V Pest Management Plan, and practices to reduce risk of spreading other biosecurity threats.

Revisions will be ongoing with the most recent version of the standard being available from the KVH website (www.kvh.org.nz/kpcs). Users should ensure that they are referring to the most recent version.

Those wishing to provide recommendations for change should send these in writing to KVH or by email to info@kvh.org.nz

Disclaimer

While this standard's objective is to allow certification of plant material that has been produced under a system which aims to produce high health material there remains the possibility a proportion of plants may contain biosecurity pests and diseases including Psa. KVH accepts no liability for claims regarding the presence of biosecurity pests or diseases being present in any certified plants. While the objective of this standard and guidelines is to minimize the potential risk of pest and disease transfer, no party can guarantee that adherence to these standard and guidelines will reduce such risk to zero.

Table of Contents

1. Purpose	5
2. Introduction to the Kiwifruit Plant Certification Scheme	5
2.1 Scope	5
2.2 Kiwifruit Industry Biosecurity Regulations	5
2.3 PPBS equivalence for KPCS nurseries	6
2.4 Target Organisms.....	6
2.5 KPCS Requirements	7
2.6 Nursery Obligations	7
2.7 Labelling & Marketing.....	8
2.8 Nurseries with Multiple sites.....	8
3. Definitions and list of abbreviations	9
4. The KPCS Standard	10
5. Part A – Nursery Essentials	11
5.1 Nursery Details	11
5.1.1 Production System	11
5.1.2 Production Sites	11
5.1.3 Nursery Maps	12
5.2 Staff and management responsibilities.....	12
5.2.1 Nursery Staff Training	12
5.3 Signage	13
5.4 Visitor registration and biosecurity awareness.....	13
6. Part B – Hazard Management	14
Pest Free place of production	14
Hygiene.....	15
Traceability	16
Growing media	16
Site requirements.....	17
Propagation material.....	18
Propagation and plant husbandry.....	19
Crop protection programme	19
Monitoring.....	20
Disposal of waste.....	21
Transport	21
Dispatch.....	22
Internal Audit.....	22

Checklist of records that should be maintained by the nursery	23
7. Audit Requirements	23
7.1 Internal Audits	23
7.2 External audits	23
7.2.1 External Audit Frequency	23
7.3 Audit compliance criteria	24
7.4 Audit non-conformance	26
7.5 Costs	26
8. Independent Monitoring and Diagnostic Testing	26
8.1 Independent monitoring	26
8.2 Diagnostic testing	27
8.2.1 Psa annual end of process testing before dispatch	27
8.2.2 Mother plant testing	27
8.3 Positive test outcome	27
8.3.1. Full certification plants	27
8.3.2. Restricted Certification plants	28
8.3.3 Mother plant testing	28
Appendices	29
Appendix 1 Protocols -Sanitation of kiwifruit seed	29
Appendix 2 Template: Staff training records	30
Appendix 3 Template: List of Suppliers	31
Appendix 4 Template: Spray Diary	32
Appendix 5 Template: Monitoring Record	33
Appendix 6 Template: Sampling and Testing record	34
Appendix 7 Template: Dispatch record	35
Appendix 8 Template: Internal Audit Checklist	36
Appendix 9 Target Organism list	39

1. Purpose

The purpose of this document is to provide guidance for nurseries to achieve certification under the Kiwifruit Plant Certification Scheme (KPCS) and a place for them to document how they will meet the requirements.

2. Introduction to the Kiwifruit Plant Certification Scheme

The goal of the KPCS is:

To enable kiwifruit growers to purchase plants of known health status¹, supporting long term success and future growth of the New Zealand kiwifruit industry.

¹ levels of freedom from specified pests or diseases

This KPCS Standard is to be read in conjunction with the KPCS Overview Paper which provides details on how the scheme operates and the process for a nursery to achieve certification. The overview paper is available on the KVH website (www.kvh.org.nz/kpcs).

Certification under this standard does not guarantee freedom from pests and diseases but when properly developed and implemented will provide a level of confidence that biosecurity threats have been identified and controlled.

2.1. Scope

This biosecurity standard applies to the nursery production of all *Actinidia* (kiwifruit) and shelter belt species destined for kiwifruit orchards within New Zealand.

All plant materials used in and produced by propagation of *Actinidia* and shelter belt species meeting the requirements of this standard will be eligible for certification.

This Standard provides an avenue for nurseries to demonstrate compliance to the National Psa-V Pest Management Plan and the proposed National Pathway Management Plan for the kiwifruit industry. See the KVH Protocol Nursery Stock to determine what movements are permitted for your nursery, available on the KVH website (www.kvh.org.nz/kpcs).

KVH will enforce grower compliance when sourcing plant material for their kiwifruit orchards under the Biosecurity Act 1993 and through kiwifruit industry supply requirements such as GAP (Good Agricultural Practice).

2.2. Kiwifruit Industry Biosecurity Regulations

National Psa-V Pest Management Plan (NPMP)

The NPMP, in place since 2013, supports growers working collectively to minimise the impacts of Psa-V within their orchards and growing regions, as well as doing what is necessary to keep Psa out of areas where it hasn't yet been identified. It also brings together and unites the efforts of key organisations in the kiwifruit industry and associated industries, to take a consistent and coordinated approach to management of Psa. Key elements of the plan involve movement controls, monitoring, reporting, incursion response and managing the disease, along with a continued focus on awareness, education and research.

Pathway Management Plan

KVH is introducing a new regulation framework to better manage biosecurity risk to the kiwifruit industry. Instead of focusing on a single pest, like Psa, the Plan focuses on protection against the full range of biosecurity threats to our industry and provides for a consistent and pragmatic approach to managing pathway risks such as young plants, budwood, pollen, orchard equipment and other items moved by people. The Pathway Management Plan is equivalent to the current Psa-V National Pest Management Plan (NPMP) but is more fit-for-purpose and makes sure all the right settings are in place so that we can detect anything new quickly enough to stop its spread, limit impacts, and aim for eradication.

The Pathway Management Plan will come into effect on 1 April 2022 and it will replace the current Psa-V NPMP (due to expire on 17th May 2023) as it will retain the important elements needed for Psa protection (e.g., controlling movements of high-risk pathways to the South Island) but also provide much wider benefits such as:

- better protection
- more value for money
- increased simplicity around rules and regulations
- right settings for early detection of new threats
- consistent and pragmatic.

2.3. PPBS equivalence for KPCS nurseries supplying other plant species.

The KPCS has been developed specifically to manage biosecurity risk of moving plant material into kiwifruit orchards.

A new voluntary certification scheme has been developed to manage biosecurity risk for all other crops. This scheme has been developed by a wide range of stakeholders and is administered by NZPPI (NZ Plant Producers Incorporated) and is referred to as the Plant Producer Biosecurity Scheme (PPBS).

KVH recognises that many kiwifruit nurseries grow other crops and do not want multiple biosecurity certification schemes, so we have been involved in the development of the PPBS to ensure it achieves a level where we can recognise equivalence between the two schemes. KVH will retain the KPCS for our kiwifruit specific nurseries, however nurseries are welcome to pursue certification through the PPBS for all crops and we will recognise these as equivalent to the KPCS.

If a nursery with KPCS certification for their kiwifruit plants and shelter belt trees wants to achieve PPBS certification for their other crops they will need to ensure that biosecurity practices in the PPBS Core Standard Section 5, 6 and 7 are being applied across their whole production and to all crops.

Contact NZPPI for further information about the PPBS Standard, or if you want to pursue this equivalence, at nzppi.co.nz.

2.4. Target Organisms

“Target organisms” are the specific pests and diseases with targeted measures in the scheme to reduce the likelihood of nursery plants spreading these organisms throughout the industry. The scheme provides growers with a level of confidence that plants certified to the KPCS Standard, are within acceptable limits for these organisms.

The target organisms are a balance of organisms that are present within New Zealand and offshore biosecurity threats to make it as meaningful as possible for growers while improving our preparedness for future biosecurity threats.

The list of target organisms may evolve as our understanding of biosecurity risks to the kiwifruit industry evolves.

2.5. KPCS requirements

2.5.1 Kiwifruit Plants

Kiwifruit Plants are deemed to be KPCS certified if they meet either “Full Certification” or “Restricted Certification” requirements specified below.

KPCS “Full Certification”:



- Meet the requirements of the KPCS Standard.
- Complete a KPCS Nursery Manual documenting how the KPCS Standard requirements are met and have this evaluated by KVH.
- Independently audited to confirm compliance with the KPCS Standard.
- Undergo annual independent monitoring and diagnostic testing for specified target organisms.
- There is a high level of confidence that plants certified to this standard are free of all target organisms.
- Plants certified to this standard can be moved between regions as specified in the KVH Nursery Protocol.

KPCS “Restricted Certification”:



- Meet the requirements of the KPCS Standard.
- Complete a KPCS Nursery Manual documenting how the KPCS Standard requirements are met have this evaluated by KVH.
- Independently audited to confirm compliance with the KPCS Standard.
- Undergo annual independent monitoring and diagnostic testing for specified target organisms.
- Plants certified to this standard are free of all target organisms including non-New Zealand and resistant forms of Psa, but not the “common” New Zealand form of Psa-V.
- Plants certified to this standard can only be moved to Psa-V positive orchards as per the KVH Nursery Protocol.

2.5.2 Shelter belt trees for kiwifruit orchards

Shelter belt trees for kiwifruit orchards are deemed to be KPCS certified if they meet the certification requirements below:



- Meet requirements of the KPCS Standard or the PPBS Core Standard
- Complete a KPCS Nursery Manual documenting how the KPCS Standard requirements are met and have this evaluated by KVH.
- Be independently audited to confirm compliance with the KPCS Standard or PPBS Core Standard.
- Plants certified to this standard can be moved between regions as specified in the KVH Nursery Protocol.

2.6. Nursery obligations

The Nursery Standard also serves as a template for nurseries to complete and use as their Manual demonstrating how they meet the required compliance criteria. The Nursery Standard is designed to make the certification process as simple as possible. It includes prompts that guide the user to identify how relevant compliance criteria are met and provides a simple format to enter this information. To minimise duplication for nurseries, where a nursery maintains documented operating procedures that describe how compliance criteria is met, the Nursery Standard template can simply refer to the relevant section of that document. The KVH website (www.kvh.org.nz) contains information about many of the activities listed below. This can be used to populate the Nursery Standard template.

The nursery shall maintain the integrity of the certification scheme for nursery stock by ensuring its Nursery manual is up-to-date and all inspections, testing and biosecurity measures have been conducted in accordance

with the relevant Standard. Once systems outlined by the nursery have been developed and implemented, and certification approved, they must be maintained; for example, the Nursery manual must be amended when the nursery introduces new products or procedures.

KVH should be notified of any changes that might affect risk management, such as the addition of or modification to production sites or changes in key staff.

2.7. Labelling and marketing

Certified kiwifruit plants may be labelled with the KPCS Full certification logo, or the “Restricted certification” logo if produced using the alternative Psa-V testing option.

Certified Shelter belt plants may be labelled with the KPCS Full Certification label.



KVH will provide the relevant logo in electronic form, and this can be either included on existing physical plant labels or otherwise be physically attached to individual plants, lots, or batches. Kiwifruit Plants can be labelled individually or by lot or batch, provided that the method chosen prevents the possibility of confusion between KPCS Full certification “Restricted” and non-certified plants (e.g. a batch physically contained in wrapping or within a container could be labelled at the batch level).

It is appropriate that the following claim be made for nurseries with Full certification products and Restricted certification products respectively.

‘Certified to the Kiwifruit Plant Certification Scheme Standard’ Full certification “or

‘Certified to the Kiwifruit Plant Certification Scheme “Restricted Certification”

‘Certified to the Kiwifruit Plant Certification Scheme Shelter

Nurseries may use the following claim on promotional materials:

Selected lots/batches of kiwifruit **or shelter plants** are certified to the Kiwifruit Plant Certification Scheme Standard ‘.

Words similar to these may be used providing that:

- there is no doubt that in a reasonable reader’s mind that certification only applies to selected / certified lots or batches; and
- there is no claim or inference that the nursery itself has been approved, certified or endorsed by KVH.

Nurseries are encouraged to check any varied use and/or wording with KVH, and to obtain written approval for the form of words proposed prior to committing to expenditure.

2.8. Nurseries with multiple sites

Nurseries operating multiple sites require only a single external audit at the main production location (where records are held), however external independent monitoring will be conducted at each production site for these nurseries. A nursery must be situated within a single contiguous property to be considered a single site.

Where a nursery has sites in two different kiwifruit growing regions separate independent monitoring, sampling and testing rounds will occur annually.

3. Definitions and list of abbreviations

Batch or lot

Plant material from a single source that is treated as one group for the purposes of production in the nursery.

Biosecurity Act 1993

An Act of Parliament that lists the laws relating to pests and diseases that are capable or potentially capable of causing unwanted harm to any natural and physical resources or human health.

Certified plants

Plants certified under the KPCS.

Cultivar

The classification / name given to a distinct kiwifruit and the resultant plant material.

Effective crop protection product

Effective crop protection products are those with proven efficacy against the target pest or disease. To be an effective crop protection product for Psa-V control, ACVM must have issued a label claim stating the products approved for use in control of Psa-V. KVH maintain a list of 'effective crop protection products' on the KVH website and specific advice on best practice in management guides.

Equivalence

Where nurseries operate using alternative nursery risk management standards (e.g., a quarantine standard issued by MPI, or equivalent biosecurity standard) that achieves the same or greater level of risk management KVH has the discretion to accept that system as being equivalent to the KPCS Standard.

Target organisms

Target pests and diseases specified for the KPCS Standard. This list is likely to evolve as our knowledge of risk organisms evolves.

IVA

Independent Verification Agency.

Kiwifruit plant

A plant or plants of any *Actinidia* species or cultivar.

Kiwifruit seed

Seed extracted from *Actinidia* species or cultivar for the purpose of producing rootstocks. In the broadest sense this definition includes the fruit from which the seed will be extracted.

KPIN

Kiwifruit Property Identification Number used to identify a property on which kiwifruit is produced.

KPCS

Kiwifruit Plant Certification Scheme, of which this Standard is part of.

KVH

Kiwifruit Vine Health.

Mother plants

The plants from which propagation material is taken.

National Psa-V Pest Management Plan (NPMP)

A national pest management strategy under the Biosecurity Act 1993.

Nursery

A nursery will be defined as any entity that grows *Actinidia* plant species to any age for sale or movement outside of the property **or grows shelter belt species destined for kiwifruit orchards.**

Nursery block

Any distinct group of *Actinidia* plants either in ground or containers, that is physically separated from another block of plants in a manner that is sufficient to maintain the integrity of that group of plants.

Nursery operator

The person responsible for the day-to-day management of the nursery business.

Nursery owner

The person or entity that pays tax on the income generated by the business.

Nursery stock

Whole plants (including rootstock) intended to be on-grown into vines.

Pathway Management Plan

A regulatory framework under the Biosecurity Act 1993 for managing risk of spreading biosecurity risk organisms across the kiwifruit industry

Pest

Any biosecurity threat to the kiwifruit industry which may be a pathogen (virus, bacteria, fungi or other), insect or weed. Biosecurity pests include the target organisms, but also include all other “regulated pests” as categorised by the Ministry for Primary Industries.

Plant material

All seed, cuttings, scion wood, and rootstock used in the process of producing plants and the finished product.

Plant Production Biosecurity Scheme (PPBS)

A biosecurity scheme for all nursery plants administered by NZPPI (New Zealand Plant Producers Incorporated).

Polymerase Chain Reaction (PCR)

A technique used to amplify pieces of DNA to determine whether a specific DNA sequence of interest is present in a sample.

Propagative material

Includes all seeds, cuttings, scion wood and growing plants used in the propagation process.

Psa-V

A genetically distinct high virulence form of *Pseudomonas syringae* p.v. *actinidiae*.

Quarantine area

An area with physical separation from nursery stock for plant inspection or quarantine.

Sanitiser

A KVH approved antibacterial with proven efficacy against Psa-V. A list of these is maintained on the KVH website (www.kvh.org.nz/hygiene).

Shelter belt plants

Any shelter plant species used in a kiwifruit production area.

Source block

The block of mother plants from which the plant material was taken for propagation.

Testing

For the purposes of this document means to test for target organisms specified in the KPCS Standard and conducted in a KVH approved laboratory.

4. The KPCS Standard

The KPCS Standard is divided into two parts.

Part A – Nursery Essentials.

This section describes the nursery and general operating practices.

Part B – Hazard Management.

This section identifies specific hazards and measures nurseries must implement to mitigate the risk that these hazards present.

5. Part A - Nursery Essentials

5.1. Nursery details

Nursery name	
Address	
Mailing address if different to above	
Phone	
Email	
Person responsible for nursery	

5.1.1. Production system

What is the production system that is used by your nursery (i.e., Containerised undercover, field grown, combination or other)? If plants are grown undercover note the approximate proportion that are undercover and if this is limited to certain stages of the propagation cycle. The description of the production system should be sufficient for the reader to get an understanding of the operational process.

List the types of kiwifruit plants and shelter belt species produced for kiwifruit orchards and specify any other species of plants, apart from these that are also growing in the nursery.

Kiwifruit plant species	Shelter belt species
Other Species	

5.1.2. Production sites

List all production sites (owned and leased) indicating their size, and location if different to address in section 5.1. The size of each production site should be indicated in either m² or Ha.

5.1.3. Nursery maps

For each production site prepare a map locating specific key areas of the nursery such as:

	Mother plants		Production areas (polyhouse, field)
	Quarantine area		Shipping areas for outward and inward movement of plants
	Potting area		Location of neighbouring kiwifruit orchards
	Propagation areas		Disposal area

The map must show the numbers, letters or names that are used at the nursery to designate blocks, fields, rows or buildings. This information will be used in the inventory system to track plant movement at the nursery.

5.2. Staff and management responsibilities

Nursery management are responsible for implementing all aspects of the KPCS. This involves the planning, implementation and maintenance of KPCS procedures and the documentation of these in the Nursery Manual. Nurseries must ensure all staff that work on the nursery have access to this KPCS Standard at all times.

- Managers and staff are to be given specific tasks and responsibilities relating to the KPCS Standard and must be aware of the practises required to produce plants according to the standard. Specific roles that shall be allocated to designated staff include:
 - Certification Manager, responsible for all aspects of the KPCS
 - Crop Protection Manager, responsible for the Crop Protection Programme
 - Internal Auditor, responsible for conducting internal audits to ensure the Nursery Standard is being implemented properly. If possible, the internal auditor should not audit tasks they conduct themselves unless they are the sole employee.

Number of people working in the nursery	Full time:	Part time:
Designated Nursery Certification Manager		
Crop Protection Manager		
Designated Nursery Internal Auditor		

5.2.1. Nursery Staff Training

Describe here or in a separate attachment the nursery training process. Include a statement of experience for the nursery manager in lieu of training records. The Crop Protection Manager, or person applying sprays must be Growsafe registered or under the supervision of a Growsafe registered person (www.growsafe.co.nz) if applying sprays that require this registration. For long term staff competence in tasks and need for any retraining should be verified at least every 2 years.

Training records are to be provided during audits (for template see Appendix 2).

5.3. Signage

Signs inform visitors that biosecurity is important, and they share a responsibility in maintaining it. Nurseries must display prominent signs at the main gate and other entrances to the property. Signs must:

- highlight the importance of biosecurity within the nursery.
- indicate that entry is restricted to permitted persons only.
- show visitors where to park; and
- direct visitors to the office or provide contact details for a visitor to register presence.

KVH has orchard signs for growers fulfilling these requirements that can be provided to nurseries. Please contact KVH to obtain these.

Do all entrances to the property have signs highlighting biosecurity risks and restricting entry to permitted persons?	Yes	No
Is there signage to indicate the designated parking area?		

5.4. Visitor registration and biosecurity awareness information

People moving between different nurseries, orchards, and regions can unknowingly spread pests and diseases and mitigation measures should be implemented to reduce this threat. All visitors (contractors, customers etc.) entering the nursery must be made aware that the nursery is implementing the Kiwifruit Plant Certification Scheme. All visitors moving around the production areas of the nursery must sign the visitor’s register (apart from visitors that only visit the nursery office, administration building, or owner’s house, if it is on the nursery property). The register must also detail all regular movements of contractors on and off site.

KVH documentation/brochures are considered acceptable to raise awareness to new employees or contractors. These can be tailored to the site.

Visitors must adhere to access procedures and where possible be accompanied by a staff member while on site.

Great care should be taken with people who have recently been overseas to ensure that shoes and clothes are clean before entering the operation.

Describe how visitors are made aware of biosecurity requirements and the risks they present are mitigated.

A visitor register should be maintained and made available for audits. Describe where this register is located and how it is maintained.

6. Part B – Hazard Management

The Nursery Manual must include risk management principles which are designed to reduce biosecurity risks.

Pest Free Place of Production (PF)

Nurseries must demonstrate that appropriate measures are in place to prevent incursions from target organisms. For nurseries in close proximity to orchards this is likely to include an enhanced crop protection programme and physical protection such as cover.

Nurseries must demonstrate control over plant weed species.

For field production nurseries consider a cover crop such as mustard after winter dispatch and before replanting. This helps suppress soil borne pathogens (e.g. verticillium wilt) and improves overall soil health.

The nursery shall implement mitigation measures during production including:

- Suitable buffer zone and barriers maintained between nursery stock and *Actinidia* and other species of unknown origin or disease status;
- Mixing of other plants including:
 - Nursery stock of other certification status
 - Orchard plants
 - Other species.
- Ensuring growing fields are suitably protected from known water courses and not sited in areas prone to flooding.
- Managing the risks of irrigation water – consider annual testing for pathogens if at risk supplies used e.g. rivers, ponds, dams.
- Avoiding overhead watering
- Keeping irrigation lines well maintained.
- Maintaining hygiene standards (ref HG.1) for staff when working between different blocks of plants;
- Visitor biosecurity awareness maintained (ref 5.4) and all contractors on site are made fully aware of biosecurity risks and procedures; and
- Sanitizing all bins/equipment used for storing and handling *Actinidia* and shelter belt species plant material with a KVH approved sanitizer (www.kvh.org.nz/hygiene).

KPCS Standard Reference	How Nursery meets requirements
<p>PF.1 Describe measures in place to prevent incursions from target organisms. (Psa).</p>	
<p>Irrigation Provide evidence of the source of water used in the nursery and what is being done to reduce risks of pests being introduced and spread through irrigation. State method of irrigation and methods to ensure runoff doesn't re-enter growing areas.</p>	

<p>Field Production Describe measures in place to prevent exposure to pests/disease during field production.</p>	
<p>Weed control Describe how weed species in the nursery are controlled.</p>	
Hygiene (HG)	
<p>Nurseries must have hygiene protocols in place to prevent the spread of biosecurity pests and diseases within parts of the nursery or to other sites or operations. All staff must be aware of and follow these protocols when working with <i>Actinidia</i> and shelter belt species See the Hygiene section of the KVH website for guidance on what constitutes best practice for hygiene (www.kvh.org.nz/hygiene). At a minimum nursery hygiene protocols shall include:</p> <ul style="list-style-type: none"> • Hands, shoes, and equipment in contact with nursery stock shall be sanitized prior to leaving the property. • Locations where plants are housed shall be sanitised between batches. • All equipment shall be sanitised between batches. • Footbaths shall be located at the nursery entry points and contain a KVH approved sanitiser (www.kvh.org.nz/hygiene); • Work / propagation areas shall be regularly cleaned and sanitized. • Containers shall be sanitised if reused. <p>There shall be a designated wash down area for all vehicles that enter the nursery production area. Vehicles should be sanitized following the best practice guidelines on the KVH website.</p>	
<p>HG.1 Describe protocols in place or reference to where this information is recorded.</p>	

Traceability (TR)

A KPCS nursery shall be able to trace production plants, regardless of source, through its production system back to the plant supplier or the time of propagation. The timeframe for trace back and trace forward can be a few hours to a few days. However, the faster that these traces can be done with accuracy, the lower the probability that shipping from your nursery is disrupted if there is a serious pest find.

Plant Identification - All plants must be batched. Nursery specifies how each batch of propagation material is labelled (bar code or otherwise).

Plant Traceability

- All plants able to be traced to budwood and rootstock and/ or seed origin.
- Where plant material has come from an external source, supplier details must be present (see further supplier requirements PM1);
- Describe how plant materials are traced through the propagation process, and
- How sales and shipments can be traced (records must include purchaser details such as orchard KPIN).

Reconciliation records for each batch showing the amounts of propagative material gathered, propagated (as cuttings or grafted), lost in process, sold, disposed of and numbers remaining in stock. **Contact KVH if you require a template to use for this.**

TR.1
Determination of batches and how plants are identified.

TR.2
Describe system of traceability from supplier through the nursery system to the final purchaser. Indicate where reconciliation records are held.

Growing Media (GM)

Growing media (i.e., Potting mix compost, **and fertiliser**) has the potential to introduce pathogens to a nursery operation. Nurseries should obtain growing media, compost, **and fertiliser** from trusted suppliers that have measures in place to prevent the spread of pests and diseases. Growing media and compost shall not contain kiwifruit plant material and shall be inspected to verify that no leafy kiwifruit plant material is present. **Storage areas must be free of pests and any water ingress should be prevented.** The Nursery shall record supplier information and details of any pest or disease assurance programme. Growing media is not to be reused.

GM.1
List suppliers here and provide statements of assurance that any potting mix, **fertiliser**, or compost used does not contain kiwifruit plant material and assurance of freedom from pest and diseases (if available.)

Site Requirements (SR)

All production sites and facilities shall be secured in a manner sufficient to prevent unauthorised entry outside of operating hours which could result in spread of pests /diseases and plant material.

Multiple Nursery sites

Nursery operators with multiple production sites need to show how the level of protection will be maintained across and between the sites and accommodate the movement of machinery, people, and plant material between sites to avoid transfer of pests/disease.

KVH movement controls for the target pest/disease must not be contravened.

SR.1

Describe how the production sites and facilities are secured to prevent unauthorised entry outside operating hours.

SR.2

Multiple nursery sites

Explain the measures in place to cover the risks in moving machinery, people, and plant material between sites.

Propagation Material (PM)

The nursery operator must take steps to ensure that incoming plant material is free from known pests and diseases. Early detection of target organisms prior to introduction of new stock is essential to prevent spread and infestation of nursery stock.

Documentation of starting material - The origin, pest, and disease status of all *Actinidia* and shelter tree plant material brought onto the site must be documented.

Nurseries must keep supplier details for traceability purposes (TR.2) (see Appendix 3 for a suitable template)

Systems to ensure material is pest and disease free.

The nursery must have systems in place to verify propagation material is clean. Measures may include a combination of the following:

- Visual inspections.
- Lab testing.
- Quarantine or isolation period upon arrival; and
- Application of crop protection product (plants) or surface sterilants (seed).

Shipments with target pests or diseases should be rejected and care taken not to contaminate the nursery. **New containers must be visually checked for contamination and stored in an area free from weeds/pests.**

The nursery must demonstrate how transmission of disease by fruit, seed, or other plant material brought into the nursery is mitigated. This should include the following measures where applicable:

- **Kiwifruit** propagation material shall only be sourced from certified mother plants.
- Seed, **kiwifruit fruit** and associated materials (containers, bags) shall be visually clean and free from plant material and soil.
- **Kiwifruit fruit** shall be surface sterilised before the extraction process commences.
- **Kiwifruit** material that remains after seed extraction shall be disposed of into a quarantine bin.
- All **kiwifruit** seed must be surface sterilized following the protocol in Appendix 1; and
- Ensure all resulting seedlings are visually healthy and have no obvious signs of disease.

<p>PM.1 Record origin, (KPIN etc for kiwifruit) pest and disease status of all plant material brought on site - including seeds, plants, and graft wood.</p> <p>The supplier record template (appendix 3) is recommended as the appropriate place to record any incoming material and associated inspections.</p> <p>Testing records must be on file to verify mother plants are certified "virus free".</p>	<p>List mother plant source if growing from seed/cuttings: address (and KPIN for kiwifruit plants)</p>
	<p>List Nurseries your seedlings are sourced from if not producing your own plants from seed</p>
	<p>List budwood sources (KPINs and regions for kiwifruit) for all grafting material.</p>
<p>PM.2 Specify your system for verifying all incoming material is pest and disease free and</p>	

where this is recorded.	
PM.3 Kiwifruit collection and seed extraction Describe this process including seed sterilisation.	
Propagation and plant husbandry (PP)	
<p>Growing plants may be infected by air borne biosecurity pests / diseases. The act of propagation or pruning may spread pests and especially diseases from one plant to another. Clean tools with an approved sanitiser between batches (www.kvh.org.nz/hygiene). Man-made wounds must be protected with a sealant containing a bactericide or sprayed with an effective crop protection product.</p>	
PP.1 Describe what hygiene measure are implemented during propagation and pruning – tool sanitising, wound sealants, protectant sprays etc.	
Crop Protection Programme (CP)	
<p>A routine preventative crop protection programme provides an added level of confidence that <i>Actinidia</i> plants housed within the nursery remain pest / disease free. Guidance on Crop protection programmes for kiwifruit nurseries and a list of effective crop protection products (products with efficacy against target organisms), can be found on the KVH website (www.kvh.org.nz/kpcs). <i>Spray requirements for the KPCS Standard are likely to change over time to reflect developments in product efficacy or registration, and to incorporate additions to the KPCS Standard target organism list which is expected to evolve over time. Any changes will be communicated through the KVH website and Bulletin which nurseries are expected to stay current with.</i> An annual spray plan shall be prepared prior to spring each year. The spray plan shall include application of an effective crop protection product:</p> <ul style="list-style-type: none"> • On arrival for all incoming stock to nursery prior to introduction to areas containing other nursery stock (exception is incoming stock has been treated on dispatch, i.e., certified plants from other nurseries, in which case duplication of treatment is not required); • To provide appropriate protectant and/or remedial control; and • Within one week of plants being dispatched from the nursery, (once treated these plants must be separated from non-treated plants to prevent cross contamination, until dispatch). <p>Records are to be kept of all spray applications and weather conditions at time of application. Spray practices must be in accordance with associated agrichemical regulations such as Growsafe, Approved Handler and Regional Council Regulations. Nurseries wishing to use bactericides (KeyStrepto™ or Kasumin) must contact KVH on 0800 665 825 for approval prior to each application as required by ACVM.</p>	
CP.1 Detail your nursery spray plan and indicate where	

<p>spray diary records are maintained. Include copies of authorisations from KVH to apply bactericides to kiwifruit plants</p>	
---	--

Monitoring (MN)

Monitoring and laboratory testing provide the highest level of confidence that plants are within acceptable limits for target organisms.

The target organisms for monitoring and testing are likely to evolve over time. Initially Psa-V is the target organism of the KPCS Standard for Actinidia and other pests and diseases will be added over time. Any additions will be well communicated to all KPCS nurseries.

The Nursery Manual must describe how monitoring for the presence of pests or diseases is conducted in the nursery. Independent monitoring and diagnostic testing for Actinidia will occur on an annual basis (see Section 8); however, the nursery must undertake its own routine monitoring rounds to provide early detection of target pests and diseases. Early detection may enable a nursery operator to take appropriate action, isolating or destroying infected plants and protecting remaining stock through good hygiene practices.

Monitoring frequency

All **kiwifruit shelter** plants, kiwifruit plants and kiwifruit mother plants (if on the nursery site) shall be monitored monthly. Mother plants not on the nursery site shall be monitored annually, before fruit or cutting collection takes place, Monitoring shall be undertaken by a designated person and follow a routine procedure. Monitoring involves walking the entire perimeter of the block and as much as practically possible within individual rows of plants.

Monitoring records

The nursery must maintain inspection records that include the following (see Appendix 5 for a monitoring template)

- Date of monitoring;
- Block(s) monitored;
- Name of monitor;
- Presence of any symptoms; and

Details of any sampling for lab testing if required.

Sampling and lab testing

Suspected presence of a biosecurity pest or disease must be reported to **KVH on 0800 665 825** by the next working day, or prior to any plants being dispatched (whichever comes first). KVH will then assist and advise on the best course of action. Further testing may be required depending on the nature of the symptoms.

Detailed records of all sampling and testing must be held and made available for audits. Records must include:

- The date of the sampling.
- The location of plant sampled;
- Batch or other identifier; and
- The outcome of the testing

Records (sampling and laboratory reports) must be maintained for a minimum of seven years. (A template for recording sampling and testing can be found in Appendix 6).

<p>MN.1 Describe your monitoring process, frequency, and staff responsible.</p>	
<p>MN.2 State where monitoring records are maintained</p>	

<p>MN.3 State what you will do if any symptomatic plants are found and have records available to indicate outcomes. Maintain any testing records and state where these will be kept.</p>	
---	--

Disposal of waste (DW)

All waste material must be disposed of properly to reduce the potential risk of spreading pests or diseases from the nursery elsewhere.
 Any *Actinidia* or shelter belt species plant material with confirmed or suspected pest or disease symptoms shall be disposed of in a KVH approved manner and must not leave the property. Best practice advice for disposal can be found on the KVH website (www.kvh.org.nz/KVH_Protocols)
 Any plant material awaiting treatment or disposal must be held securely (covered and protected from wind dispersal) until a disposal option is agreed upon.

<p>DW.1 Describe how general plant material waste is disposed of. Also indicate your plan for quarantining any symptomatic plants and how you intend to dispose of contaminated material.</p>	
--	--

Transport

Transport to and from the nursery, and between sites, must be conducted in a manner to prevent risk of contamination.
Plants: All plant material shall be contained during transport in a manner that prevents confusion with other plants of different batch or certification status. Where there are multiple batches, clear labelling must contain batch/ traceability information. All plants must travel in covered transport.
Transport Vehicles: Transport vehicles must be free of any plant material and sanitized (cargo bay washed down thoroughly) prior to loading certified plants to ensure there is no cross-contamination between loads.
 If the truck has visited any other kiwifruit property / kiwifruit growing nursery in the previous 24 hours, then:

- All tyres and wheel arches must be sprayed with a high-pressure hose.

 Ensuring tyres are thoroughly washed and nothing is trapped in the tread or in and around windows, bonnet, and doors.
 Any vehicle entering the nursery area must be sanitized as above except those restricted to a designated car park outside the nursery growing area.

<p>TT.1 Indicate packaging and transport arrangements for plants. Indicate if plants are collected by growers or nursery</p>	
---	--

delivers and how possibility of contamination is managed.	
---	--

Dispatch (D)

Providing dispatch inspection and treatment records with each batch to growers purchasing kiwifruit or shelter belt plants provides added confidence in health status of plants at the time of purchase.

Nurseries have a responsibility to ensure that all plant movements are aligned with movement controls under the National Psa-V Pest Management Plan (NPMP), more information can be found in the nursery protocol on the KVH website (www.kvh.org.nz/indnurseries). **Nurseries with Restricted certification plants can only supply Psa positive orchards – contact KVH before dispatch if unsure of orchard status**

All plants must have a final inspection at dispatch to verify products for shipment are pest and disease free.
Field grown plants are to be free from soil (as far as practicable) at time of dispatch.

A crop protectant product effective against Psa shall be applied to kiwifruit plants within one week of dispatch. The nursery must provide a dispatch record that includes:

- Dispatch inspection sign off
- Date of pre-dispatch treatment and product used. Traceability information including the KPIN, address and growing region where the plant is being sent to. (see Appendix 7 and 8 for dispatch templates).

Nurseries can only dispatch plants to another KPCS nursery, or a KPIN unless written permission to supply otherwise has been given by KVH and kept on file for audit. KVH must be contacted before supplying any plants to a home gardener. If a new development orchard does not yet have a KPIN, KVH must be contacted so that the orchard can be recorded, and a Greenfields number issued.

<p>D1 Describe your nursery dispatch process -what records are maintained and where these are kept.</p>	
--	--

Specify the regions your nursery can supply.	
--	--

Internal Audit

The nursery must undertake internal audits (at least one per year) to ensure that the procedures documented in the Nursery Manual are being followed, reducing risk, and improving the likelihood of a successful external audit. The internal audit needs to cover the same criteria as the external audit, and therefore **follow the Internal Audit Checklist (Appendix 8)**. Non-conformances and potential non-conformances must be documented, root causes of problems identified, and suitable corrective and preventive actions taken. The effectiveness of corrective actions shall be verified.

The internal audit will review the effectiveness of the nurseries current practices to meet the requirements of the KPCS Standard and shall result in documented outputs that will lead to continual improvement of outcomes.

Complete an internal audit at least annually .Use the Nursery Internal Audit Checklist (see Appendix 8).Document any non-compliances identified - corrective actions carried out and verification of effectiveness for these.

Checklist of Records that should be maintained by the Nursery:

- Staff Training records (ref 5.2.1) see Appendix 2
- Visitor register stating visitor and contractors' movements (ref 5.4.3)
- Plant Traceability records, including suppliers, buyers and records that can trace the entire chain of custody (ref TR.2).
- Growing media suppliers (GM.1) see Appendix 3
- Documentation of starting material (PM.1) see Appendix 3
- Annual Crop Protection Spray Plan and spray records (CP.1) see Appendix 4 for Spray Diary template.
- Monitoring records (MN.2) see Appendix 5
- Sampling records for testing (MN.3) see Appendix 6
- Dispatch inspection and treatment records (D.1) see Appendix 7
- Internal audit records - use Nursery Internal Audit Checklist (Appendix 8)

7 Audit requirements

7.1 Internal Audits

The nursery must undertake internal audits (at least one per year) to ensure that the procedures documented in the Nursery Manual are being followed, reducing risk and improving the likelihood of a successful external audit.

7.2 External audits

External audits are done by a KVH approved Independent Verification Agency (IVA).

External audits to certify that the operator complies with the KPCS Standard and that required measures documented in the Nursery's Manual are implemented in the nursery operation.

Contact details of approved KPCS Independent Verification Agencies (IVAs) are available on the KVH website (www.kvh.org.nz/kpcs). The cost of all audits, and their associated corrective actions, will be borne by the audited party.

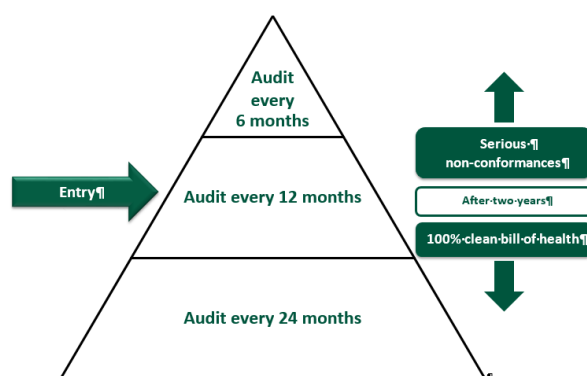
Audits will typically be on an annual basis, although KVH reserves the right to audit at any time.

7.2.1 External Audit Frequency

External audits for the KPCS Standard will be on a 12-month basis.

Nurseries that have critical non-conformances (i.e. 1 critical or 3 or more Major non-conformances) identified in their external audit may move to an increased audit frequency of 6 months.

For "full certification" nurseries only, after the first two years of annual audits they may then shift to less frequent audits on a performance basis. This does not include the first audit which takes place before any dispatches have been made. Nurseries that receive a clean bill of health over the preceding two years (100% pass with no critical, major, or minor non-conformances) may be rewarded for their high standard of practice and move to a reduced audit frequency of up to 24 months.



7.3 Audit compliance criteria

A nursery may still pass an external audit with a small number of non-conformances provided these do not create significant biosecurity risk.

To guide auditors and nurseries on the measures most important in mitigating biosecurity risk, each compliance criterion has been assigned either a Minor, Major or Critical audit level, described in the table below and on the following page.

Compliance criteria that are labelled as Critical are extremely important in mitigating biosecurity risk and nurseries that completely lack all the required measures for these criteria (i.e. hygiene) will receive a Critical non-conformance. Nurseries that do have some but not all the required measures for these criteria may receive a Minor, Major or Critical non-conformance depending on the nature of the failure and the risk it presents.

Minor	<p>A Minor non-conformance does not put the health status of plants in immediate jeopardy, but if left unattended could lead to more serious non-conformance(s).</p> <p>Corrective actions for Minor non-conformances are required to be completed within 30 days. More than five Minor non-conformances will result in a Major non-conformance being issued; in which case all five Minor non-conformances must be rectified within 30 days.</p>
Major	<p>A Major non-conformance may cause a biosecurity risk and jeopardize the health status of plants.</p> <p>Corrective actions for a Major non-conformance must be completed within 30 days and will require sign off by the external auditor to ensure effectiveness of the corrective action. A follow up site visit by the auditor may be required (at the applicant's expense).</p> <p>Nurseries are <u>unable</u> to sell KPCS certified plants until corrective actions for Major non-conformances are addressed and signed off by the external auditor.</p> <p>A critical non-conformance can result if a nursery has serious failure in any of the Critical compliance criteria, or serious failures in 3 or more Major level criteria.</p>
Critical	<p>A Critical non-conformance is a serious failure that is likely to cause biosecurity risk and seriously undermines the health status of plants.</p> <p>Corrective actions for a Critical non-conformance must be completed within 30 days and will require sign off by the external auditor. A follow up site visit by the auditor may be required (at the applicant's expense).</p> <p>Critical failures will result in an increase of audit frequency and in some cases, may result in suspension or cancellation of a nurseries ability to sell certified plants.</p> <p>Nurseries are <u>unable</u> to sell KPCS certified plants until corrective actions for Critical non-conformances are addressed and signed off by the external auditor.</p>

Audit compliance criteria

Audit levels indicated are for total non-compliance. Auditors may give a lesser non-compliance depending on circumstances.

Section	Checklist	Guidance notes	Audit level
Part A – Nursery Essentials			
5.1	Nursery details	All nursery details must be correct	Major
5.1.1	Nursery description	Nursery description provides sufficient overview of the operation	Minor
5.1.2	Production sites	An accurate list of all production sites is provided	Major
5.1.3	Nursery maps	Accurate maps of each production site are provided	Minor
5.2	Staff and Management Responsibilities	A staff member must be assigned to each of the three key roles	Major
5.2.1	Staff Training	Records must be available demonstrating key staff have sufficient training for roles	Major
5.3	Signage	Orchard gate signs are displayed at all entrances	Major
5.4	Visitor Registration	A visitor register is maintained that accurately reflects visitor movements	Minor
Part B – Hazard Management			
PF.1	Pest free place of production	The nursery must demonstrate what criteria it meets to be a pest free place of production being <i>either</i> within a pest free area or having sufficient protected conditions	Major
HG.1	Hygiene	Nursery has hygiene protocols in place	Critical
TR.1&2	Traceability	Nursery has traceability system with records showing movements from suppliers, through production system to final purchaser	Critical
GM.1	Growing media	Nursery has records showing where growing media comes from and level of assurance that product is pest / disease free and free of kiwifruit plant material	Minor
SR.1	Site Requirements	All production sites and facilities are secure	Minor
SR.2	Multiple Nursery Sites	If applicable, nurseries with multiple sites have a plan that demonstrates how movements between sites are managed to avoid contamination. All sites (particularly those with full certification) must meet requirements for pest free place of production.	Major
PM.1	Supplier documentation	The nursery has records that document the origin and pest and disease status of all <i>Actinidia and kiwifruit shelter</i> plant material brought on site	Major
PM.2&3	Propagation material	The nursery has appropriate systems and records to ensure propagation material is pest / disease free	Major
PP.1	Propagation and plant husbandry	The nursery has systems in place to avoid contamination during this process	Major
CP.1	Crop protection programme	The nursery must have a designated crop protection manager, crop protection plan and records	Major
MN.2&3	Nursery Monitoring	The nursery must be able to demonstrate that monitoring is being conducted as specified in the Standard and have supporting records.	Critical
LT.1&4	Laboratory testing	The nursery must have a laboratory testing regime for kiwifruit to verify it is pest and disease free and have supporting records.	Major
DW.1	Disposal of waste	<i>Plant</i> waste must be disposed of in an appropriate manner	Major

TT.1	Transport	Contamination risk during transport must be appropriately managed	Minor
D.1	Dispatch	Process and records for dispatch inspection and treatment. Critical non-conformance may apply when kiwifruit and shelter tree plant movements have breached movement controls.	Critical
7.1	Internal audit	Nursery to have completed at least one internal audit in past 12 months and documented non-conformances and actions for improvement.	Major

7.4 Audit non-conformance

Non-conformances identified during an audit must be documented by the auditing body. Nurseries shall identify root causes of problems and implement suitable corrective and preventive actions. The effectiveness of corrective actions must be verified by the auditor either with a follow up audit or by the applicant submitting outstanding documents. If corrective action has not been completed within the specified time as a result of a major non-conformance the nursery will be suspended from obtaining KPCS certification until the corrective action has been completed. Any nurseries which have on-going major non-conformances that are not corrected will have their certification status withdrawn.

Critical non-conformances will result in an increase of audit frequency and in some cases, may result in suspension or cancellation of a nurseries ability to sell certified plants.

IVAs must report any regulatory non-compliance issues identified during audit to KVH on 0800 665 825.

7.5 Costs

All sampling, laboratory tests and external audits that are a requirement of this standard will be the responsibility of the audited party (nursery). Any repeat audits as a result of Critical or Major non-conformances will also be the responsibility of the nursery.

8 Independent Monitoring and Diagnostic Testing for kiwifruit plants

All nurseries are required to maintain a place of production free of all target organisms. Monitoring is an essential component of the scheme as it provides the operator with verification that controls are effective or if not an early indicator of a systems failure. For many organisms, early detection is critical to the likelihood of a successful eradication.

In addition to conducting their own monitoring rounds, all nurseries will undergo annual independent monitoring that includes visual inspection (and in most circumstances diagnostic testing) to verify freedom from target organisms and associated symptoms. The list of target organisms for the Standard will be dynamic and evolve in parallel with our understanding of risk organisms. KVH will co-ordinate the independent monitoring and diagnostic testing components of the Scheme for kiwifruit plants.

8.1 Independent monitoring

All nurseries must undergo annual independent monitoring that will include:

- Visual inspection for target organisms (and associated symptoms).
- Monitoring for unusual organisms or symptoms within nursery operations; and
- Sampling for diagnostic testing where required (for specified target organisms).

This monitoring is separate to the external audit and will be co-ordinated by KVH. Independent monitoring will occur before the nursery begins plant dispatch for the season. Typically, this will be in March each year but may occur at other times to account for nurseries that do not dispatch over the usual winter period. All nurseries entering the scheme will undergo independent monitoring and testing to achieve KPCS certification regardless of the month of application.

8.2 Diagnostic testing

Diagnostic testing for the KPCS is primarily symptom-based. Unusual symptoms, such as those associated with target organisms, are to be reported to KVH in the first instance. KVH will then arrange sampling and diagnostic testing if a target organism is suspected. In most cases there will be no charge to the nursery for this testing and we encourage nurseries to report as early as possible to minimise the impact to their operation.

A summary of target organisms, rationale for their inclusion in the scheme, symptom guide, associated controls, monitoring and testing requirements is available on the KVH website (www.kvh.org.nz/indnurseries).

There are also some routine diagnostic testing requirements as follows.

- Psa- end of process testing for kiwifruit plants before dispatch on an annual basis.
- Virus – testing of kiwifruit mother plants (for seedling production). Testing frequency will initially be on an annual basis, however after two consecutive non-detected results, testing will be reduced to every 5 years.

NB: Nurseries will be responsible for costs associated with routine diagnostic testing. They will be invoiced directly by the testing laboratory.

Sampling for diagnostic testing of target organisms will be completed during the annual independent monitoring rounds in accordance with the Independent Monitoring and Diagnostic Protocol. The Independent Monitoring and Diagnostic Protocol has been developed by Plant and Food Research to give appropriate confidence of detecting target organisms, where present in the nursery operation.

8.2.1 Psa annual end of process testing before dispatch.

6 x 100 leaf samples are collected annually from across the plants to be dispatched and submitted to Hill Laboratories for testing.

Testing currently is to determine the presence /absence of Psa. Each sample will be tested separately. Timing of collection may vary depending on dispatch timing for individual nurseries but for most with winter dispatches samples will be collected in March.

Full certification plants

For fully certified nursery plants, tests **must** have Not Detected results- if any samples test positive then additional testing will be carried out on those samples as for “restricted certification” plants below and the positive test outcome protocol at 8.3 will apply.

Restricted Certification plants

If any sample tests positive for Psa then further testing will be completed, at additional cost, to determine the strain (i.e. non- NZ or copper resistant strains). The positive test protocol at 8.3.2 applies if anything other than Psa-V is detected.

8.2.2 Mother plant testing

All mother plants from which starting material is derived **must** be tested (at nursery cost) for specified viruses (Cherry leafroll and Actinidia Seed Borne Latent Virus)

Testing will take place in late February each year and will be coordinated by KVH, so all samples can be tested together. Once two years of testing with virus free results have been confirmed, testing frequency can be reduced to every five years.

2 leaves (one old, one new) will be taken from each of 4 quadrants of the vines and sent to the lab for testing. This sampling process is detailed on the [KVH website](#).

8.3 Psa Positive Test Outcome

8.3.1 Full certification plants

If a biosecurity pest or disease is detected in the place of production (plants are no longer considered pest free and immediate quarantine of all *Actinidia* stock will result as a precaution until the matter is resolved. This will

include nurseries with multiple sites and grow on-line supply issues (i.e. detection within a grow-on-line nursery may result in temporary suspension of operators that have sourced plants from this nursery while an investigation is undertaken). Following a positive Psa test result, the following will be considered:

- Eradication of infected plants.
- Isolation of non-infected product lines;
- Restriction of sales; and
- Requirement for further testing.
- Nursery has Restricted certification for Psa positive plants

8.3.2 Restricted Certification plants

No action is required if Psa-V is identified in samples tested but nurseries must ensure that only plants showing no symptoms at time of dispatch will be moved. Plants shall only be moved to orchards which are already Psa-V positive.

If a strain of Psa other than Psa-V is identified, including resistant strains, or another biosecurity pest or disease, immediate quarantine of all *Actinidia* stock will result as a precaution until the matter is resolved.

The following actions will be considered:

- Eradication of infected plants.
- Isolation of non-infected product lines.
- Restriction of sales; and
- Requirement for further testing.

Reinstatement of a pest free place of production can be allowed once KVH is confident that no symptomatic plants remain and that sufficient measures have been implemented to restore confidence in the status of remaining plants.

KVH is committed to working through this process with nurseries in a timely manner to minimise business impacts.

8.3.3 Mother plant testing

The presence of a virus is different to an air borne bacterial such as Psa as they typically spread through propagation material or unclean tools. If your mother plants test positive, it is possible that the nursery will no longer be able to source starting material from this plant for KPCS plant production, but that would likely be the extent of impacts. KVH would recommend hygiene practices to prevent spread, and nurseries/growers may wish to remove the plant for their own piece of mind, however there would not be wider implications on the nursery or orchard operations.

Appendix 1 - Protocols

Sanitation of kiwifruit seed

The risk of surface infection of seed samples can be minimised by:

1. Extracting seed from healthy fruit.
2. Surface sterilising the seed immediately after extraction.
3. Drying and packaging the seed in a clean environment.

Seed sterilisation protocol

Key points:

- Although some pathogens can be found inside seeds, it is the outer seed coat that is most likely to be infected which can subsequently infect germinating seedlings in the nursery.
- Treatment with sodium hypochlorite is recommended to inactivate pathogens that may be present.
- Fresh Janola® bleach solution is to be sourced at the beginning of the season (as the active ingredient degrades over time).

Steps:

1. Soak seeds in a 20% solution of Bleach for 30 minutes (Janola® or Gilmour's Bleach)
2. Rinse with fresh water. A 20% solution of fresh household bleach contains 0.84% NaOCl.

Treated seed is to be then handled on clean surfaces, e.g. a clean fresh sheet of paper and stored in clean containers to prevent contamination.

Appendix 2: Template: Staff Training Records

Nursery Name: _____

Date of Training	Employee Name	KPCS Responsibility	Training Taken	Signature Trainee	Signature Trainer

Note that confidential personnel files should be kept separate from this form.

Appendix 4: Template: Spray Diary

NURSERY SPRAY DIARY RECORD											
Nursery Name			Nursery Location				Year				
DATE (DD/MM/YYYY)	TIME (24 HR)	WEATHER CONDITIONS	WINDSPEED/ DIRECTION	APPLICATOR (A)	SPRAYER (B)	WATER SOURCE (C)	PRODUCTION AREAS	PRODUCT NAME	REASON	RATE/100L	WATER APPLIED (Total L)
A. NAME OF PERSON APPLYING AGRICHEMICALS		GROWSAFE CERTIFICATE NUMBER		B. SPRAYER (Make and Type)			CALIBRATION DATE		C. WATER SOURCE		
1.				1.					1.		
2.				2.					2.		
3.				3.					3.		
4.				4.					4.		

Appendix 6: Template: Sampling/Testing Record

SAMPLING / TESTING RECORD

Nursery name							
Date of sampling:	Sampling body or samplers name:	Location of sample: Block/row/position	Batch number	Variety	Pest detected in laboratory test.	Name of Pest or disease detected	Hard copy laboratory result held?
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO
					YES / NO		YES / NO



Nursery name:

Region status:

Nursery address:

Nursery information		
Date of Dispatch		
Batch and species information		
Kiwifruit Plants		Shelter species
Full certification	Restricted certification	
Batch:	Batch:	Batch:
Traceability #:	Traceability #:	Traceability #:
Variety:	Variety:	Variety:
Quantity:	Quantity:	Quantity:
Pre-dispatch treatment		Product Used:
		Date:
Pre-dispatch inspection <i>“Product is free of target organisms at time of dispatch”.</i>		Date:
		Signed:
The above information is correct at time of dispatch from nursery.		Name: _____
		Signature: _____
Purchaser details		
These plants are for use on:		KPIN:
Orchard name, address & KPIN (or if dispatching to another KPCS nursery, record the nursery name and address)		Address:
Region:		
I have collected the plants and confirm that the destination details as recorded above are correct:		Name: _____
		Signature: _____



KPCS Standard – Internal Audit Checklist

KPCS “Full Certification” KPCS “Restricted Certification” KPCS “Shelter”

Internal Audit Date: _____

Nursery Details
Name: _____
Sites included in audit: _____
Address: _____
Phone: _____
Email: _____

Internal audit completed by: _____

Outcomes:

Record any actions taken as a result of internal audit findings:

Signed: _____ (Internal auditor)

Std. Ref.	Audit level	Checklist	Information Required	Complete (Y/N)	Verification Details
Part A – Nursery Essentials					
5.1	Major	Nursery details	Are nursery details complete and correct?		
5.1.1	Minor	Production system	Has the production system been described -i.e. container grown, field grown etc.?		

			Have the kiwifruit and shelter varieties/types been recorded – i.e.G3 grafted, Bruno rootstock, cryptomeria etc. Have all other species of plants on site been listed here.		
5.1.2	Major	Production sites	List all production sites		
5.1.3	Minor	Nursery maps	Does the map contain all the feature required at 5.1.3		
5.2	Major	Staff and management responsibilities	Is there a staff member is assigned to each of the three key roles specified in the Standard		
5.2.1	Major (if no records minor if incomplete)	Staff training	Has the nursery included a statement of experience for nursery manager in lieu of training records? Are there staff training records for other staff?		
5.3	Major (if no signage otherwise minor)	Signage	Do all nursery entrances have appropriate signage highlighting biosecurity risks, restricting entry to permitted persons, indicating parking and directions for visitors to register presence?		
5.4	Minor	Visitor registration	Is there a clear procedure for visitors and a visitor register that is maintained and up to date?		

Part B – Hazard Management

PF.1	Major	Pest free place of production	The nursery must demonstrate that measures are in place to prevent incursions from target high organisms. The nursery operator should have a good understanding of what the risks are to their operation and how they intend to maintain their status as a pest free place of production. For covered nurseries check there are no holes/gaps in covers, and there are barriers between field grown plants and adjacent orchards/properties		
HG.1	Critical	Hygiene	Is there a hygiene protocol in place covering all areas- hands, shoes, tools, and equipment? Is there a footbath in place?		
TR.1 &2	Critical	Traceability	Check that you can trace a plant in the nursery back to its inputs and different batches are clearly identified. Has the reconciliation record been completed (plants in and out and plants left)		
GM.1	Minor	Growing media	Does the nursery have a statement of assurance from the supplier stating that potting mix, compost, and fertilizer is pest/disease free and does not contain kiwifruit plant material.		

SR.1	Minor	Site requirements	Verify that all production sites and facilities are secure.		
SR.2	Major	Multiple nursery sites	If the nursery has multiple sites, check hygiene measures and traceability between sites		
PM.1	Major	Supplier documentation	Record KPIN for fruit for seed (mother plant) and budwood. Ensure proof of certification/virus testing available for mother plants. Record incoming material – use Supplier record or similar.		
PM.2 &3	Major	Propagation material	Must have inspected material that arrives on site to verify that it is “clean”. Check inspections and dates have been recorded for arrival of any plant material.		
PP.1	Major	Propagation and plant husbandry	Check there are systems in place to avoid contamination during this process. Tool hygiene, wound protection etc.		
CP.1	Major	Crop protection programme	Check that spray diary has been completed. If bactericides used (i.e. Kasumin, KeyStrepto™) there must be evidence of KVH approval.		
MN.2 &3	Critical (if no monitoring -major if records incomplete or frequency doesn't match nursery manual	Monitoring	Are monitoring records on file for every month? Have dates and person responsible been recorded?		
DW.1	Major	Disposal of waste	All nurseries must have a plan of how waste would be disposed of should infection occur. Disposal site to be indicated on nursery map.		
TT.1	Minor	Transport	If vehicles arrive from kiwifruit orchards – do they come near the production area, and if so, are these appropriately sanitized? If nursery is delivering plants is the transport used cleaned before returning to nursery site.		
D.1	Critical	Dispatch	Are all dispatch records complete – must have KPIN, address and region of destination and been signed by both nursery and receiver? Ensure plants have only moved as per KVH movement controls.		

Appendix 9: Target organisms



The following are the target organism for kiwifruit plants:

- Virus (Cherry leaf roll virus, Actinidia Seed-borne latent virus (ASBLV) (previously known as Betaflexiviridae virus)
- Soil borne pathogens (*Ceratocystis fimbriata*, Verticillium wilt, *Phytophthora* sp.)
- Soil invertebrates (Root knot nematode)
- Bacteria (Psa- all forms)

(refer to [Target Organisms and Associated Controls](#) fact sheet on the KVH website for further information about these