



Kiwifruit Plant Certification Scheme

Standard

Version 5.0

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Date:

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Updates

The Kiwifruit Plant Certification Scheme (KPCS) has been set up to produce plant material free from high-risk biosecurity pests and diseases. 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 Strategy, and incorporate a high health that is much wider than Psa-V.

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. In future, kiwifruit industry quality standards may require this standard to include physical specifications and trueness to type, along with a traceability system to link all risk management practices together.

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 minimise the potential risk pest and disease transfer, no party can guarantee that adherence to these standard and guidelines will reduce such risk to zero.

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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 growers to purchase kiwifruit plants of known plant 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* species in nurseries using the KPCS Standard to produce certified plants within New Zealand.

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

Movement controls establish the rules around plant movements, under the National Psa-V Pest Management Plan (NPMP). 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).

Grower compliance when purchasing propagating materials will also be enforced through the NPMP and as a GAP (Good Agricultural Practice) supply requirement.

2.2. Target organisms

“Target organisms” are the specific pests and diseases with targeted measures in the scheme to reduce the likelihood 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.

- 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)

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

2.3. KPCS requirements

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 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 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.

2.4. 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.

2.5. Labelling and marketing

Certified plants are to be labelled with the KPCS logo, or the “Within Region Only” logo if produced using the alternative Psa-V testing option.

KVH will provide the relevant logo in electronic form, and this must be either included on existing physical plant labels or otherwise be physically attached to individual plants, lots or batches.



Plants can be labelled individually or by lot or batch, provided that the method chosen prevents the possibility of confusion between KPCS certified, “Within Region Only” 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 certified products and within region products respectively; ‘Certified to the Kiwifruit Plant Certification Scheme Standard’ **Full certification** “or ‘Certified to the Kiwifruit Plant Certification Scheme **“Restricted Certification”**

This statement may be made on labels, packing slips, invoices, or similar documents. The wording shall be legible, in any font or colour, up to a maximum height of 10 millimetres.

Nurseries may use the following claim on promotional materials:

‘Selected lots/batches of kiwifruit 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.

2.6. 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 Kiwifruit Plant Certification Scheme.

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 set by the nursery and garden industry) that achieves the same or greater level of risk management KVH has the discretion to accept that system as being equivalent to the Kiwifruit Plant Certification Scheme 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.

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.

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.

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).

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 produced, and specify any other species of plants, apart from kiwifruit that are also growing in the nursery.

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 task 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 that can be provided to nurseries fulfilling these requirements. 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.

KPCS Standard Reference	How Nursery meets requirements
Pest Free Place of Production (PF)	
<p>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.</p> <p>Nurseries must demonstrate control over plant weed species.</p> <p>The nursery shall implement mitigation measures during field production including:</p> <ul style="list-style-type: none"> • Suitable buffer zone and barriers maintained between nursery stock and <i>Actinidia</i> species of unknown origin or disease status; • Mixing of other plants including: <ul style="list-style-type: none"> ○ Nursery stock of other certification status ○ Orchard plants ○ Other species. • Ensure growing fields are suitably protected from known water courses and not sited in areas prone to flooding; • Hygiene standards (ref HG.1) are maintained by 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 • Sanitize all bins/equipment used for storing and handling <i>Actinidia</i> plant material with a KVH approved sanitiser (www.kvh.org.nz/hygiene). 	
<p>PF.1</p> <p>Describe measures in place to prevent incursions from target organisms (not only Psa).</p>	
<p>Field Production</p> <p>Describe measures in place to prevent exposure to pests/disease during field production.</p>	
<p>Weed control</p> <p>Describe how weed species in the nursery are controlled.</p>	

Hygiene (HG)

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 *Actinidia*. 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:

- Hands, shoes and equipment in contact with nursery stock shall be sanitized prior to leaving the property;
- Locations where plants are housed shall be sanitized between batches;
- All equipment shall be sterilised 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;

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.

HG.1

Describe protocols in place or reference to where this information is recorded.

Traceability (TR)

A certified 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);
- How plant materials are traced through the propagation process;
- 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.

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

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

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Growing Media (GM)

Growing media (i.e. Potting mix and compost) has the potential to introduce pathogens to a nursery operation. Nurseries should obtain growing media 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.

The Nursery shall record supplier information and details of any pest or disease assurance programme.

Growing media is not to be reused.

GM.1
Provide statements of assurance that any potting mix or compost used does not contain kiwifruit plant material and assurance of freedom from pest and diseases (if available.)

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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* 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 and budwood).

Shipments with target pests or diseases should be rejected and care taken not to contaminate the nursery.

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:

- Propagation material shall only be sourced from certified mother plants.
- Seed, fruit and associated materials (containers, bags) shall be visually clean and free from plant material and soil;
- Fruit shall be surface sterilised before the extraction process commences;
- Fruit material that remains after seed extraction shall be disposed of into a quarantine bin;
- All 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) pest and disease status of all <i>Actinidia</i> plant material brought on site -including seeds, plants and graft wood. Testing records must be on file to verify mother plants are certified "virus free".</p>	
<p>PM.2 Specify your system for verifying all incoming material is pest and disease free and where this is recorded.</p>	
<p>PM.3 Fruit collection and seed extraction Describe this process including seed sterilisation.</p>	

Propagation and plant husbandry (PP)

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.

PP.1

Describe what hygiene measure are implemented during propagation and pruning – tool sanitising, wound sealants, protectant sprays etc.

Crop Protection Programme (CP)

A routine preventative crop protection programme provides an added level of confidence that *Actinidia* 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).

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.

An annual spray plan shall be prepared prior to spring each year.

The spray plan shall include application of an effective crop protection product:

- 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).

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 must contact KVH on 0800 665 825 to register use as required by ACVM.

CP.1

Detail your nursery spray plan and indicate where spray diary records are maintained. Include copies of authorisations from KVH to apply bactericides.

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 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 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 plants and mother plants (if on the nursery site) shall be monitored monthly. Mother plants not on the nursery site shall be monitored annually, before fruit 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 82** 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* 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.

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.

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.

TT.1

Indicate packaging and transport arrangements for plants. Indicate if plants are collected by growers or nursery delivers and how possibility of contamination is managed.

Dispatch (D)

Providing dispatch inspection and treatment records with each batch to growers purchasing 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)

All plants must have a final inspection at dispatch to verify products for shipment are pest and disease free.

A crop protectant product effective against Psa-V shall be applied 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).

D1

Describe your nursery dispatch process -what records are maintained and where these are kept.

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 External Audit Checklist (available on the KVH website www.kvh.org.nz/kpcs). 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.

At least annually complete an internal audit. Use the External Audit Checklist -document any non-compliances identified - corrective actions carried out and verification of effectiveness for these.

Internal Audit Date	Internal auditor name and signature	Location of internal audit report

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 5 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 7,8
- Internal audit records (use External Audit Checklist on KVH website)

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.

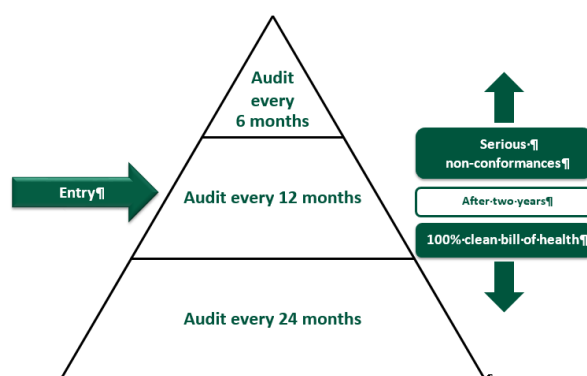
7.2.1 External Audit Frequency

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** after the first two years of annual audits they may then shift to **less frequent audits** on a performance basis. 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	Major
PM.1	Supplier documentation	The nursery has records that document the origin and pest and disease status of all <i>Actinidia</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 to verify it is pest and disease free and have supporting records.	Major
DW.1	Disposal of waste	<i>Actinidia</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 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

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.

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 before dispatch on an annual basis.
- Virus – testing of mother plants and neighbouring pollinators (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 or streptomycin 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 Betaflexiviridae). Both the mother plant and the adjacent male pollinator must be tested.

Testing will take place in late February each year and will be coordinated by KVH, so all samples can be tested together.

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 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 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.

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 3: Template: List of Suppliers

Nursery Name: _____

Date	Supplier Name	Address	Phone	Contact Name	Product Supplied	Quantity	Inspected Signed and dated

Appendix 4: Template: Spray Diary

KIWIFRUIT 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 information	Batch: Traceability #: Variety Quantity
Pre-dispatch treatment	Date: Product Used
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: (Orchard name, address & KPIN or nursery name and address)	KPIN:
	Address:
Region status (i.e. Exclusion, Containment, Recovery)	
I have collected the plants and destination details as recorded above are correct:	Name: _____ Signature: _____

Note: The Kiwifruit Plant Certification Scheme Logo can be included on this template once nurseries have passed external audit and monitoring requirements. Use of the KPCS logo for non-certified plants is strictly prohibited.



Template: Dispatch Record – Restricted Certification

Nursery name:

Region status:

Nursery address:

Nursery information	
Date of Dispatch	
Batch information	Batch: Traceability #: Variety Quantity
Pre-dispatch treatment	Date: Product Used
Pre-dispatch inspection	Date: Signed:
<i>“At time of dispatch product is free of target organisms including non-New Zealand and resistant forms of Psa, but not the “common” New Zealand form of Psa-V.”</i>	
The above information is correct at time of dispatch from nursery	Name: _____ Signature: _____
Purchaser details	
These plants are destined for: (Orchard name, KPIN & address or nursery name and address)	KPIN:
	Address:
Region status (i.e.: Exclusion, Containment, Recovery)	
I have collected the plants and destination details as recorded above are correct:	Name: _____ Signature: _____

Note: The Kiwifruit Plant Certification Scheme Logo can be included on this template once nurseries have passed external audit and monitoring requirements. Use of the KPCS logo for non-certified plants is strictly prohibited.