



Kiwifruit Plant Certification Scheme

Standard

**Version 3
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Updates

The Kiwifruit Plant Certification Scheme 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 on-going 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 Kiwifruit Vine Health 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-V. 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).

2. Introduction to the Kiwifruit Plant Certification Scheme

The goal of the Kiwifruit Plant Certification Scheme 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.

A feature of the Kiwifruit Plant Certification Scheme is, 'the higher the level of certification achieved, the greater the freedom to move plants around New Zealand'. This is achieved through movement controls, which 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)
- 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 “Within Region Only” 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 “Within Region Only”:



- 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.
- 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 orchards within the same KVH Biosecurity region as the nursery, as per the KVH Nursery Protocol.

2.4. Nursery obligations

A Nursery Manual is provided to accompany the Standard, which serves as a template for nurseries to complete, demonstrating how they meet the required compliance criteria. The Nursery Manual is designed to make the certification process as simple as possible; is fully aligned with the Standard, 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, a Nursery Manual can simply refer to the relevant section of that document. The KVH web site (www.kvh.org.nz) contains information about many of the activities listed below this can be used to populate the Nursery Manual.

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 in a Nursery Manual 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’ or

‘Certified to the Kiwifruit Plant Certification Scheme for movement within region only’.

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.

3. Definitions and list of abbreviations

Accredited nursery

A nursery accredited under the previous KVH Nursery Standard and Guidelines (2011).

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 specifies the requirements to achieve certification. The nursery is to document how it meets these requirements in a Nursery Manual. If the nursery already has existing operating manuals these do not need to be rewritten but instead can simply be referred to where appropriate within the Nursery Manual.

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

The Nursery Manual must contain general information about the operation including the following:

- The nursery name, address, contact information and name of the person responsible for the nursery must be clearly stated.

5.1.1. – Production system

Describe the type of production that your nursery employs (field, containerised), and the main types of plants produced. If plants are grown undercover describe the proportion of the operation that is undercover and if cover is limited to certain stages of the production cycle. The description of the production system should be sufficient for the reader to get an understanding of the operational process.

5.1.2 – Size and location of production sites

The size of the properties that are used for production (owned and leased), as well as the location of these properties if they are located in different areas must be described.

5.1.3 – Nursery maps

For each nursery property a map shall be provided detailing specific areas of the nursery including the following:

- Motherplants;
- Quarantine area;
- Potting area;
- Propagation areas;
- Production areas (polyhouse, field)
- Shipping areas for outward and inward movement of plants; and
- Location of neighbouring kiwifruit orchards.

The map must show the numbers, letters or names that are used at the nursery to designate blocks, fields, rows or buildings.

Maps must be accurate and kept up-to-date as they may be used to determine sampling patterns for external monitoring rounds.

5.2. Staff and management responsibilities

Nursery management are responsible for implementing all aspects of the Kiwifruit Plant Certification Scheme. This involves the planning, implementation and maintenance of Kiwifruit Plant Certification Scheme procedures and the documentation of these in the Nursery Manual.

- The Nursery Manual shall indicate the number of employees that work full and part time and provide a list of the key positions related to the implementation of the Kiwifruit Plant Certification Scheme.
- 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 Kiwifruit Plant Certification Scheme
 - Crop Protection Manager, responsible for the Crop Protection Programme
 - Internal Auditor, responsible for conducting internal audits to ensure the Nursery Manual is being implemented properly. If possible the internal auditor should not audit tasks they conduct themselves unless they are the sole employee.

5.2.1 Staff training

Adequate training for these tasks is to be arranged and conducted as necessary.

Crop Protection Manager, of person applying sprays must be Growsafe registered or under the supervision of a Growsafe registered person (www.growsafe.co.nz)

- 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

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; 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 or print your own from the KVH website (www.kvh.org.nz/KVH_resources).

5.4. Visitor registration and Biosecurity awareness information

People moving between different nurseries, orchards, regions can unknowingly spread pests and diseases and mitigation measures should be implemented to reduce this threat. All visitors (contractor, 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 or administration building). 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.

6. Part B – Hazard Management

The Nursery Manual must include risk management principles designed to reduce biosecurity risks. The compliance criteria in the following table must be met and sufficiently documented. Records shall be kept for a minimum of seven years and be accessible to all relevant nursery employees, KVH staff and auditors (both internal and external).

No.	Hazard Control Point	Compliance criteria
<p>Pest Free Place of production PF.1</p>	<p>To produce plants within acceptable limits of target organisms it is necessary that plants are grown in a pest free place of production.</p>	<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>Hygiene HG.1</p>	<p>Good hygiene measures are extremely important to prevent the spread of biosecurity pests and diseases within parts of the nursery or to other sites or operations.</p>	<p>Nurseries must have hygiene protocols in place and all staff must be aware of and follow these protocols when working with <i>Actinidia</i>. See the Hygiene section of the KVH website for guidance on what constitutes best practice for hygiene (www.kvh.org.nz/hygiene).</p> <p>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 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 except those that are restricted to the office car park. Vehicles should be sanitized following the best practice guidelines on the KVH website.

Traceability	The nursery must have a system in place that allows plants to be traced back to the last growing location and traced forward to the buyer or final destination. 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.	
TR.1	<u>Plant Identification</u> – the nursery must be able to identify each batch of plant material throughout the propagation process	All plants must be batched Nursery specifies how each batch of propagation material is labelled (bar code or otherwise)
TR.2	<u>Plant Traceability</u> – a record system must document the movement of plants through the propagation process. All plant material shall be traceable from supplier, through the nursery system, to the final purchaser	Visual inspection of nursery records. Records must include the following details: <ul style="list-style-type: none"> • 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.
Growing Media GM.1	Growing media 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 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 details and details of any pest or disease assurance programme. Growing media is not to be reused

Site requirements	Nursery production site(s) shall meet the following requirements:	
SR.1	Unauthorised entry of persons can result in spread of pests /diseases and plant material	All production sites and facilities shall be secured in a manner sufficient to prevent unauthorised entry outside of operating hours.
SR.2	<p><u>Multiple Nursery sites</u></p> <p>Movement of machinery, people and plant material between nursery production sites can result in transfer of pests / diseases and must be managed appropriately.</p> <p>Additional measures need to be considered by these operators when developing the Nursery Manual.</p>	<p>Details of all nursery production sites shall be included in the Nursery Details section of the Nursery Manual.</p> <p>Nursery operators with multiple production sites need a section in the Nursery Manual that shows 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.</p> <p>KVH movement controls for the target pest/disease must not be contravened.</p>
Propagation material	<p>The nursery operator must take steps to ensure that incoming plant material is free from known pests and diseases, including not sourcing <i>Actinidia</i> plants of any age can from an area where the target pest/ disease has been identified by KVH on the date of purchase. Early detection of target organisms prior to introduction of new stock is essential to prevent spread and infestation of nursery stock.</p> <p>The nursery must be able to demonstrate what systems are in place to verify propagation material is clean.</p>	
PM.1	<p><u>Documentation of starting material</u></p> <p>Documentation of supplier</p> <p>The origin, pest and disease status of all <i>Actinidia</i> plant material brought onto the site must be documented.</p>	Nurseries must keep supplier details for traceability purposes (TR.2), and must also keep documentation to verify that material has been sourced from a disease free location.
PM.2	<p><u>Systems to ensure material is pest and disease free</u></p> <p>The nursery must have systems in place to verify propagation material is clean. This must include visual inspection and application of crop protection products but may require further measures depending on the perceived level of risk.</p> <p>Visual inspections should be conducted in a quarantine area isolated from nursery stock.</p>	<p>Measures may include a combination of the following:</p> <ul style="list-style-type: none"> • Visual inspections; • Lab testing; • Quarantine or isolation period upon arrival; and • Application of crop protection product (plants) or surface sterilants (seed and budwood). <p>Shipments with target pests or diseases should be rejected and care taken not to contaminate the nursery.</p>

PM.3	<p><u>Fruit collection and seed extraction.</u></p> <p>Seed, and the fruit it was collected from, are potential pathways for pathogens to enter a nursery operation. The following measures will mitigate the likelihood of introducing seed transmissible viruses or fungi.</p>	<p>The nursery must demonstrate how transmission by fruit, seed, or other plant material brought into the nursery is mitigated. This should include the following measures where applicable:</p> <ul style="list-style-type: none"> • 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 sterilised following the protocol in Appendix 1; and • Ensure all resulting seedlings are visually healthy and have no obvious signs of disease.
<p>Field Production</p> <p>FP.1</p>	<p>Field production of <i>Actinidia</i> can expose plants to potential pest / disease infection from a variety of sources including:</p> <p>Windborne from neighbouring sites;</p> <p>Flood transferred from neighbouring sites;</p> <p>Contractors and employees using contaminated equipment; and</p> <p>Mixing of tested and non-tested plants.</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; • Ensure growing fields are suitably protected from known water courses and shall not be 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 • Sanitise all bins/equipment used for storing and handling <i>Actinidia</i> plant material with a KVH approved sanitiser (www.kvh.org.nz/hygiene).

<p>Propagation and plant husbandry</p> <p>PP.1</p>	<p>The act of propagation or pruning may spread pests and especially diseases from one plant to another.</p> <p>Growing plants may be infected by air borne biosecurity pests / diseases.</p>	<p>Clean tools with an approved sanitiser between batches (www.kvh.org.nz/hygiene).</p> <p>Man-made wounds must be protected with a sealant containing a bactericide.</p>
<p>Crop Protection Programme</p> <p>CP.1</p>	<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.</p> <p><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.</i></p> <p><i>Any changes will be communicated through the KVH website and Bulletin which nurseries are expected to stay current with.</i></p>	<p>The nursery must nominate a crop protection manager who is responsible for the crop protection programme. This person shall be specified in the staff and management section (5.2) and be suitably trained for the role.</p> <p>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).</p> <p>An annual spray plan shall be prepared prior to spring each year.</p> <p>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 on all spray applications and weather conditions at time of application</p> <p>Spray practices must be in accordance with associated agrichemical regulations such as</p>

		<p>Growsafe, Approved Handler and Regional Council Regulations.</p> <p>An inventory shall be maintained of all agrichemicals</p>
Nursery Monitoring	<p>Monitoring and laboratory testing provide the highest level of confidence that plants are within acceptable limits for target organisms.</p> <p><i>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.</i></p> <p>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.</p> <p>Suspected presence of a biosecurity pest or disease must be immediately reported to KVH on 0800 665 82. KVH will then assist and advise on the best course of action.</p>	
MN.1	<p><u>Monitoring frequency</u></p> <p>All plants and mother plants shall be monitored monthly.</p>	<p>The nursery operator must undertake regular monitoring for the pest or for symptoms of the disease on all blocks of plants. (For Psa refer: Psa-V symptom guide on KVH website www.kvh.org.nz/monitoring)</p> <p>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.</p>
MN.2	<p><u>Monitoring records</u></p> <p>Monitoring records are required to verify the pest and disease status of the nursery.</p>	<p>The nursery must maintain inspection records that include the following (a template is provided in the Nursery Manual):</p> <ul style="list-style-type: none"> • Date of monitoring; • Block(s) monitored; • Name of monitor; • Presence of any symptoms; and • Details of any sampling for lab testing if required (see below).
MN.3	<p><u>Sampling and lab testing</u></p> <p>Symptomatic plants observed during routine monitoring must be reported</p>	<p>Detailed records of all sampling and testing must be held and made available for audits. Records must include:</p>

	<p>to KVH by the next working day, or prior to any plants being dispatched (whichever comes first). Further testing of these may be required depending on the nature of the symptoms.</p> <p>KVH will advise if these plants need to be sampled and sent for diagnostic testing to determine their status (and/or destroyed). The nursery operator should isolate them from other stock immediately to prevent contamination.</p> <p>If sampling is required this can be performed by the nursery operator. KVH can advise on the best approach for the situation. Details of approved PCR testing laboratories are available on the KVH website (www.kvh.org.nz/kpcs)</p>	<ul style="list-style-type: none"> • The date of the sampling; • The location of plant sampled; • Batch or other identifier; and • The outcome of the testing <p>Records (sampling and laboratory reports) must be maintained for a minimum of seven years. (A template for sampling and testing can be found in the Nursery Manual).</p>
<p>Disposal of waste DW.1</p>	<p>Contaminated waste material must be disposed of properly to reduce the risk of spreading pests or diseases from the nursery elsewhere.</p>	<p>Any <i>Actinidia</i> 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)</p> <p>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>
<p>Transport TT.1</p>	<p>Transport to and from the nursery, and between sites, must be conducted in a manner to prevent risk of contamination.</p>	<p><u>Plants</u>: All plant material shall be contained during transport in a manner that prevents confusion with other plants of different batch or certification status.</p> <p>Plants must be labelled as KPCS certified plants and contain batch/traceability information.</p> <p><u>Transport Vehicles</u>: 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.</p> <p>If the truck has visited any other kiwifruit property / kiwifruit growing</p>

		<p>nursery in the previous 24 hours then:</p> <ul style="list-style-type: none"> • 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.
<p>Dispatch D.1</p>	<p>A final inspection at dispatch is an important step to verify that products for shipment are pest and disease free.</p> <p>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.</p> <p>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)</p>	<p>All plants must be inspected for pests and diseases prior to shipping. A crop protectant product effective against Psa-V shall be applied within one week of dispatch.</p> <p>The nursery must provide a dispatch record that includes:</p> <ul style="list-style-type: none"> • 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.

Checklist of Records that shall be maintained by the Nursery:

- Staff training records (ref 5.2.1)
- Visitor register stating visitor and contractor movements (ref 5.4)
- Plant traceability records, including suppliers, buyers and records that can trace the entire chain of custody (ref TR.2)
- Growing media suppliers (ref GM.1)
- Documentation of propagation material (ref PM.1)
- Annual Crop Protection Spray Plan and spray records (ref CP.1)
- Monitoring records (ref MN.2)
- Records for sampling and testing (ref MN.3)
- Dispatch inspection and treatment records (D.1)
- Internal Audit records

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.

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.

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.

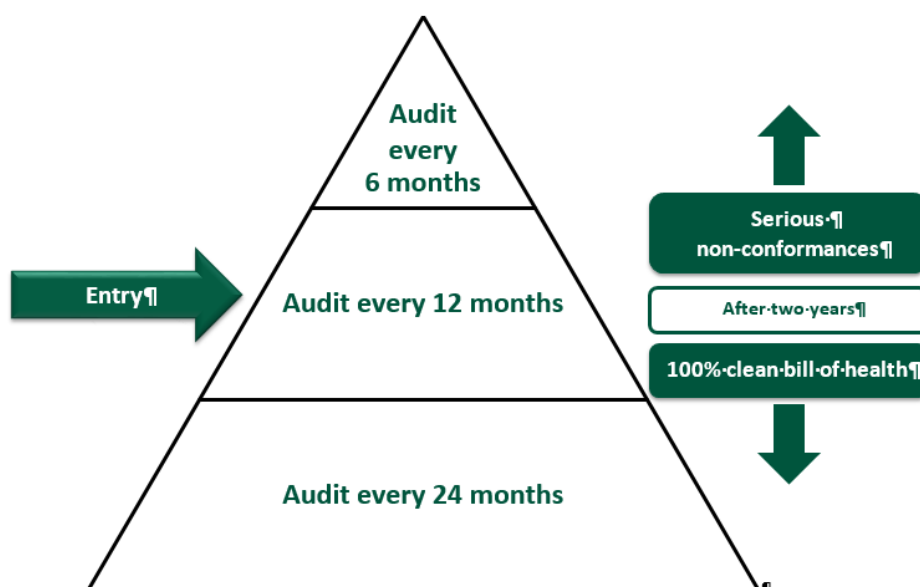
Contact details of approved KPCS Independent Verification Agencies (IVAs) are available on the KVH website (www.kvh.org.nz/kpcs). The cost of all audits, and their associated corrective actions, will be borne by the audited party.

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 for at least the first two years, but then may shift to between 6 – 24 months 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) will be rewarded for their high standard of practice and move to a reduced audit frequency of up to 24 months.

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. This will also only take effect after the first two years of auditing.



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 as 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 this criteria (I.e. hygiene) will receive a Critical non-conformance. Nurseries that do have some but not all of the required measures for this 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 by the next external audit. 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 jeopardise 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

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	Major
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
FP.1	Field Production	The nursery has systems in place to avoid contamination during this process	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 immediately 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 nurseries to conduct their own monitoring of plants on a regular basis. In addition, 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. Details are provided in the KPCS Standard.

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.

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.

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 and is available on the KVH website (www.kvh.org.nz/kpcs)

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).

8.3.Positive Test Outcome

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 positive test protocols (Appendix 1) must be followed. These protocols specify the following:

- 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 pest free status of remaining plants.

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

Appendix 1 - Protocols

1. 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.
3. 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.

2. Positive test Protocols

If a biosecurity pest/ disease is detected in the place of production, plants are no longer considered pest free. Eradication measures are to be implemented as soon as possible and all infected plants eliminated. The origin of the infection is to be investigated.

The nursery must immediately inform KVH of any positive test results. A positive test result will result in the immediate quarantine of the nursery's *Actinidia* stock. Plant material may not be removed until KVH has conducted further tests and investigation. Reinstatement of certification can occur when KVH believe sufficient measures have been taken to restore confidence in the pest free status of remaining plants. The degree, to which the nursery implements measures to restore confidence in pest free plants, will influence how quickly reinstatement can occur.

Mitigation measures shall include at least the following:

- All infested plants shall be eradicated including those in immediate contact with the infected plants;
 - Non- infected plants shall be sufficiently isolated to prevent contamination;
 - The nursery shall conduct an internal investigation into how the incursion occurred and implement mitigation measures to prevent future infections if possible
- a) **Further actions.** A positive test for a biosecurity pest / disease may require further tests to be conducted under KVH direction by an International Accreditation New Zealand (IANZ) accredited testing laboratory at the direction of KVH. (Refer list of approved laboratories Table 1 above).
 - b) **Additional controls.** Once all testing is complete and depending on any additional investigation by KVH further biosecurity controls on the nursery and neighbouring properties may be imposed to ensure any biosecurity pest incursion is effectively managed.
 - c) **Sale of plants.** Once KVH investigations have been completed and permission is granted the sale of asymptomatic plants may resume. Depending on the level of confidence in the pest free status of the nursery, a transition period may be imposed where plants can only be sold to orchards of the same or lesser pest status. This allows time for further monitoring for symptoms. Resumption of full certification may occur after any such transition period.

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