

Background

Pollination is one of the most important activities in the orchard calendar. Many kiwifruit orchards rely on artificial pollination, as well as pollination by bees, to ensure effective pollination takes place. The movement of pollen and flowers between orchards and regions must be managed to minimise the risk of Psa-V spread. Our current understanding of the risk associated with artificial pollination is summarised below.

- Fresh pollen appears to have the potential to act as a vector for Psa-V transfer.
- Flowers heavily inoculated with Psa-V in the laboratory resulted in colonisation of anthers and pollen grains. When these contaminated pollen grains were distributed fresh onto new flowers, without drying or heat treatment, they produced a detectable bacterial population inside the flower and surrounding plant tissue. It is unknown if Psa-V transfer could occur naturally, or whether this transfer could result in infected vines.
- It was concluded that vacuum-collected fresh pollen can barely harbour Psa-V. However, the pathogen has been found on floral debris (e.g., anther parts) contaminating the pollen.

Growers should carefully consider all potential risks when deciding whether or not to use artificial pollination, and which source(s) of pollen to accept. Currently there is no guaranteed treatment or process that eliminates the risk of Psa-V contamination through any form of pollination.

Scope

This protocol explains the movement controls for artificial pollination; that is, which movements of flowers, flower parts or pollen are allowed (subject to meeting certain conditions) and which movements are not allowed. All kiwifruit pollen operators – defined as “every person or entity collecting, milling, selling, distributing and/or artificially applying pollen”, must adhere to these protocols.

Requirements

- All pollen mill operators (including growers who mill pollen for their own use) must:
 - Have and operate a Psa-V Risk Management Plan- Pollen (see later in this document)
 - Register with KVH -Phone 0800 665 825 or email info@kvh.org.nz
- Anyone who has sourced pollen from a pollen mill for further distribution must also register with KVH and:
 - Have and operate a Psa-V Risk Management Plan.
- Packhouses could include the requirements in their Psa-V/Biosecurity Risk Management Plan rather than having a separate document.
- Pollen mill operators must record and advise KVH of any distributors that they supply pollen to.
- Growers are advised that they should not source any pollen from a supplier who is not registered with KVH (refer KVH website for list of registered pollen mills and pollen distributors)
- In Recovery regions KVH strongly recommends that, where alternative sources are available, pollen sourced from a Psa-V positive orchard is not used on an orchard which is ‘Not Detected’.
- Flowers for pollen milling **MUST NOT** be collected from an orchard which has had a strain of Psa resistant to control products identified. Refer to [KVH Protocol: Resistance to Psa control products](#)
- In Containment regions pollen sourced from a Psa-V positive orchard **MUST NOT** be used on a Not Detected orchard.
- In Exclusion regions flowers and pollen **MUST NOT** be sourced from orchards or pollen mills in Recovery regions, and can only be sourced from Containment regions with permission from KVH.
- Flowers for pollen milling **MUST NOT** be collected from infected vines that are expressing Psa-V secondary symptoms at the time of flower collection.
- As it is impossible to sanitise a flower mill to prevent cross-contamination between batches pollen from mills processing flowers from both Psa-V positive and ‘Not Detected’ orchards must be considered Psa-V positive.
- If sealed containers of pollen are opened for the purpose of taking samples for pollen viability (or other testing) this must be carried out at the source mill to prevent any possibility of contamination.

- Pollen is to be used on the orchard to which it is delivered- any subsequent pollen movement from that orchard requires authorisation by KVH.
- Pollen applicators must observe best practice hygiene for vehicles and equipment moved between orchards.

Pollen applicators

- Pollen applicator contractors are to be familiar with KVH guidelines including movement controls.
- Application is to be carried out on calm days to reduce drift.
- KVH best practice hygiene to be followed.
- Traceability of pollen maintained.
- Records must be available for each orchard pollinated:
 - Dates pollen applied.
 - Supplier of pollen.
 - Sizes and batch numbers of all packs applied.
 - Records given to owner /manager of orchards to which pollen has been applied.
- Equipment used for applying pollen is to be cleaned and sanitised between orchards.

Movement controls

- For kiwifruit flowers, flower parts and pollen, the following movements controls apply. Allowed movements are subject to the pollen provider also meeting the requirements detailed in the Psa-V Risk Management Plan .

NB: Where authorisation from KVH is required the following information must be provided to KVH before any permission can be issued:

- Orchard KPIN or orchard name, contact name, address and region the pollen/flowers are destined for.
- Quantity of flowers/pollen being supplied.

Source orchard or mill is in this region	Flowers, pollen can be moved to a mill or orchard within the same region	Flowers, pollen can be moved to a mill or orchard in another region:		
		Recovery	Containment	Exclusion
Recovery	Allowed	Allowed	<i>Authorisation from KVH required</i>	PROHIBITED
Containment Not Detected Orchards only	Allowed	Allowed	<i>Authorisation from KVH required.</i>	PROHIBITED
Exclusion	Allowed*	Allowed*	Allowed*	<i>Authorisation from KVH required*</i>
Outside a Recovery Containment or Exclusion region	N/A	<i>Authorisation from KVH required.</i>	<i>Authorisation from KVH required.</i>	<i>Authorisation from KVH required.</i>

*Additional Requirements

Controlled area notices:

There are controlled area notices currently in place for: Whangarei.

KVH has defined a controlled area around the centre of Psa-V infection in this region to which movement restrictions apply. Movement controls apply to all risk items that move within or out of this controlled area.

For further information, refer to www.kvh.org.nz/maps_regional

Audits

KVH may complete audits to ensure that the movement controls and conditions for artificial pollination are being followed.

KVH Psa-V Risk Management Plan

Artificial Pollination



Actions required if supplying pollen from a pollen mill—including that milled for a grower's own and moved between KPINs.

1. Pollen Mill Details

Name of pollen mill _____

Address: _____

Region _____

Name of person completing form _____

Contact phone number _____

Email address _____

Registration

- Registered with KVH.
- KVH advised of any distributors pollen supplied to e.g. pollen applicators, merchants, post-harvest companies etc.

Harvesting

- Orchard Psa-V status established and recorded
- KVH movement controls adhered to. KVH permission on file for restricted movements.
- Pollen only collected from vines showing no secondary symptoms of Psa-V.
- Workers are trained in harvest practices -handling and transport of harvested flowers, labelling of flower bags and orchard hygiene.
- Where harvesting is contracted harvesting agreements in place which include training, labelling and sanitising of flower bags on file and available for audit.
 - Signed training records on file for each trainee.
- Flowers, flower parts, and pollen fully contained during transport
- Exclusion and Containment regions - flower bags sanitised before and after use and dried to remove surface moisture.
- Recovery regions - Flower bags sanitised and dried to remove surface moisture before use, at the end of each day and between Recovery regions.
- Sanitisation records maintained.

Milling

- Milling from Psa-V positive orchards Psa-V Not Detected orchards
- Separate mills used for processing flowers from Psa-V positive and Not Detected orchards.
- Footbaths at entrance to mill (Exclusion and Containment regions only)
- Mills are cleaned regularly – floors swept.
- Machinery cleaned daily or between batches or _____
- Cleaning records on file.

Traceability

- Labelling- mill name, source KPIN, orchard Psa-V status, date milled, region
- Traceability maintained to dispatch.

Storage

- Securely packaged – i.e. jars with sealed lids and clear labels
- Psa-V pollen clearly identified and stored separately from other pollen.

Waste Disposal

- Waste material handled to avoid dispersal, transported in covered vehicle and disposed of in a covered pit.

OR

- Waste contained and removed by a recognised waste disposal company.

Viability testing by pollen mill (if completed)

- samples collected at the source mill to prevent contamination

Application

- Contractors familiar with KVH protocols and requirements relating to Artificial Pollination.
- Application carried out on calm days to reduce drift.
- KVH hygiene protocols followed.
- Records available for each orchard pollinated detailing dates, amount applied etc.
- Equipment used for applying pollen, including vehicles, is cleaned and sanitised between orchards.

Records

- Flower collection records on file.
- Harvesting agreements on file.
- KVH permission sought and on file, where required.
- Pollen distribution records on file.
- Records retained for 5 years.
- Records including this plan available for KVH audit on request.

Comments

Kiwifruit Vine Health Incorporated (KVH) makes no warranty or representation as to the accuracy or completeness of the information, photographs or other published material in this publication. KVH shall not be liable to any person for loss, injury or damages arising from a person's reliance on the published material. Published material authored by a person other than KVH reflects the view of the author and not necessarily the view of KVH. The published material may be subject to copyright and shall not be reproduced in any manner without first obtaining the permission of KVH.