Australian Government
Department of Agriculture, Fisheries and Forestry

Kiwifruit from China: biosecurity import requirements draft report

November 2026



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November 2026

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Acknowledgement of Country

We acknowledge the continuous connection of First Nations Traditional Owners and Custodians to the lands, seas and waters of Australia. We recognise their care for and cultivation of Country. We pay respect to Elders past and present, and recognise their knowledge and contribution to the productivity, innovation and sustainability of Australia's agriculture, fisheries and forestry industries.

Stakeholder submissions on draft reports

This draft report has been issued to give all interested parties an opportunity to comment on relevant technical biosecurity issues, with supporting rationale. A final report will then be produced taking into consideration any comments received.

Submissions should be sent to the Department of Agriculture, Fisheries and Forestry following the conditions specified within the related Biosecurity Advice, which is available at: http://www.agriculture.gov.au/biosecurity/risk-analysis/memos.

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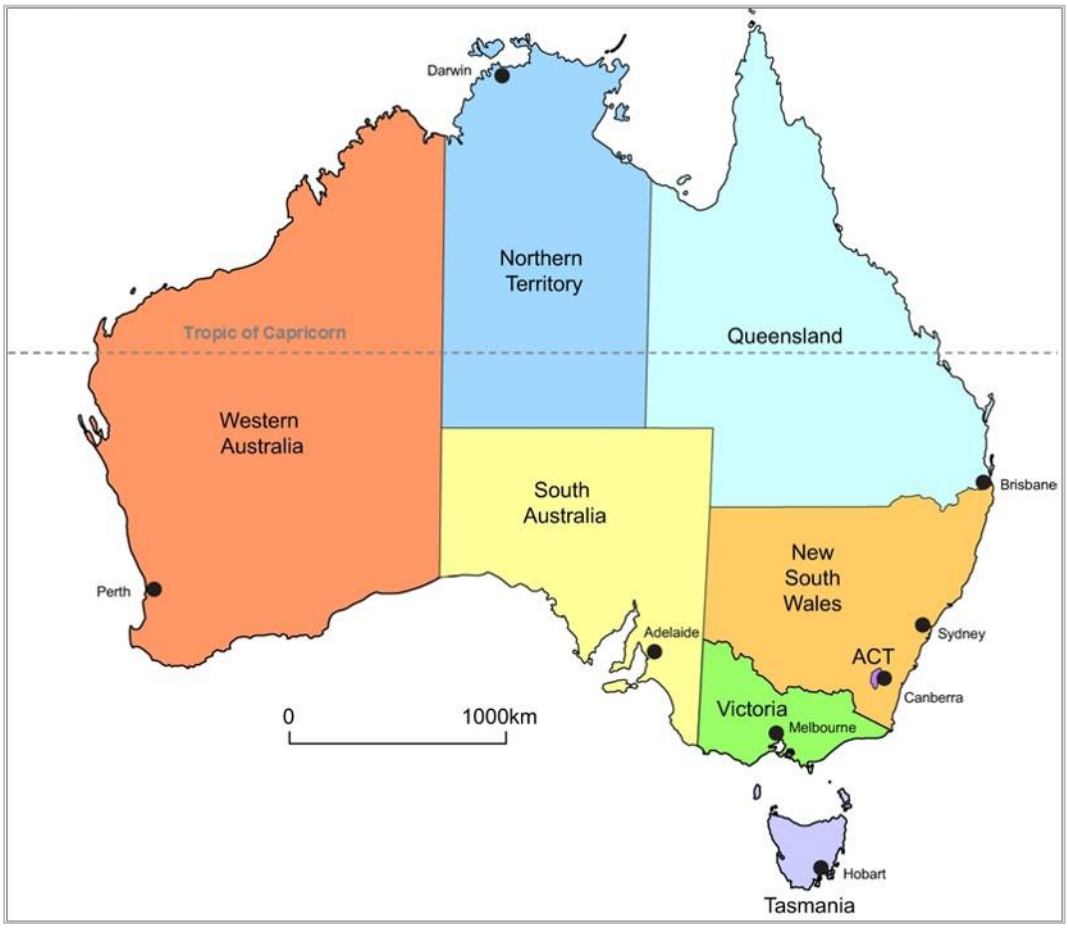
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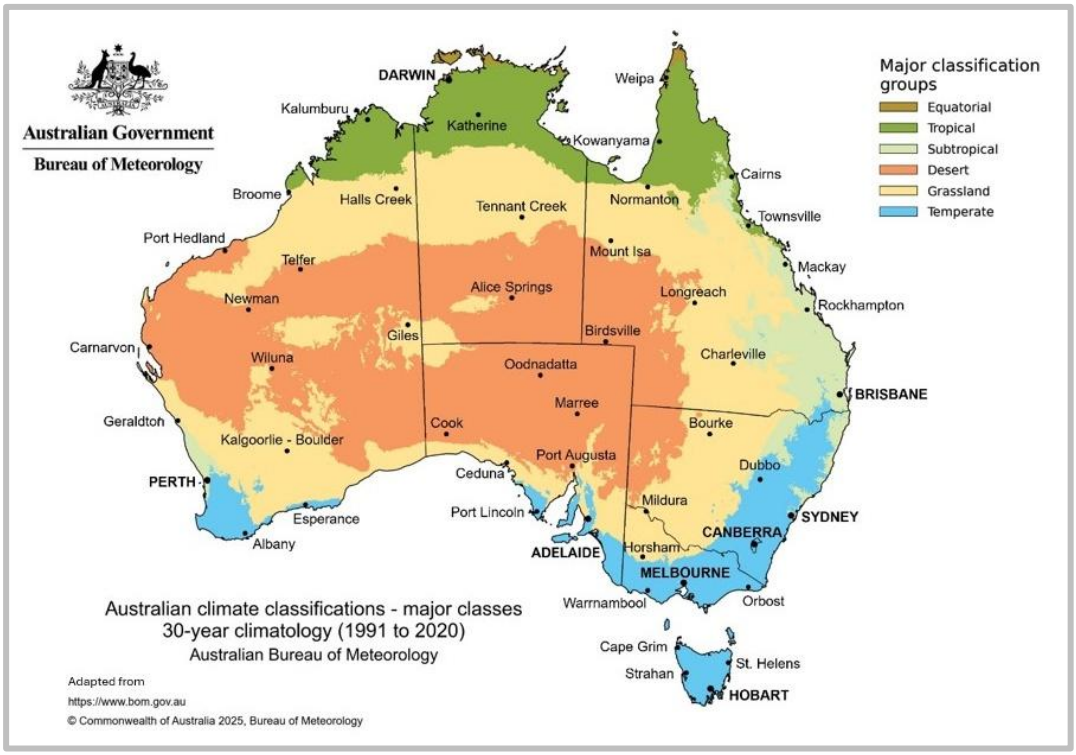
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Map 1 Map of Australia



Map 2 A guide to Australia's bio-climatic zones



Summary

The Australian Government Department of Agriculture, Fisheries and Forestry (the department) has prepared this draft report to assess the proposal by the People's Republic of China (China) for market access to Australia for fresh kiwifruit for human consumption.

Australia currently permits the importation of fresh kiwifruit from France, Italy, Japan, New Zealand and the USA for human consumption, provided Australian biosecurity import conditions are met.

This draft report determines that the importation of commercially produced fresh kiwifruit to Australia from all commercial production areas of China can be permitted, subject to a range of biosecurity requirements.

This draft report contains details of plant pests that are of biosecurity concern to Australia and are potentially associated with the importation of fresh kiwifruit from China. The term 'pests' includes both arthropod pests and pathogens. This report also contains risk assessments for the identified quarantine pests and regulated articles, and, where required, proposed risk management measures to reduce the biosecurity risk to an acceptable level, that is, to achieve the appropriate level of protection (ALOP) for Australia.

Fourteen pests have been identified in this risk analysis as requiring risk management measures to reduce the biosecurity risk to an acceptable level. These pests are:

- fruit fly: Oriental fruit fly (*Bactrocera dorsalis*)
- mealybugs: Pacific mealybug (*Planococcus minor*), citrophilus mealybug (*Pseudococcus calceolariae*) and American grape mealybug (*Pseudococcus maritimus*)
- moths: summer fruit tortrix (*Adoxophyes orana*) and European grapevine moth (*Lobesia botrana*)
- scales: black parlatoria scale (*Parlatoria pergandii*), European fruit lecanium (*Parthenolecanium corni*) and mulberry scale (*Pseudaulacaspis pentagona*)
- spider mites: Hawthorn spider mite (*Amphitetranychus viennensis*) and spider mite (*Eotetranychus kankitus*)
- thrips: European flower thrips (*Frankliniella intonsa*), Western flower thrips (*Frankliniella occidentalis*) and chilli thrips (*Scirtothrips dorsalis*).

Of these 14 pests:

- 12 are quarantine pests, including European flower thrips, which was also identified as a regulated article as it is capable of harbouring and spreading orthotospoviruses that are quarantine pests for Australia
- 2 are non-quarantine pests (Western flower thrips and chilli thrips) but are identified as regulated articles as they are capable of harbouring and spreading orthotospoviruses that are quarantine pests for Australia. The URE for quarantine orthotospoviruses transmitted by thrips was assessed in the thrips Group PRA (DAWR 2017b) as not achieving the ALOP for Australia, and thus specific risk management measures are required for these regulated articles on this pathway.

The identified pests are the same, or of the same pest groups, as those associated with other horticultural commodities that have been analysed previously by the department.

The proposed risk management measures take account of regional differences in pest distribution within Australia. Five pests requiring risk management measures, *Planococcus minor*, *Pseudococcus calceolariae*, *Parlatoria pergandii*, *Parthenolecanium corni* and *Pseudaulacaspis pentagona*, have been identified as regional quarantine pests for Western Australia because interstate quarantine regulations and enforcement are in place for these species.

In this draft report the department proposes a range of risk management measures, combined with operational systems, to reduce the risks posed by the 14 identified species to achieve the ALOP for Australia. The proposed measures are:

- for Oriental fruit fly
  - pest free areas, pest free places of production or pest free production sites, or
  - fruit treatment considered to be effective against Oriental fruit fly such as cold treatment or irradiation
- for European grapevine moth
  - pest free areas, pest free places of production or pest free production sites, or
  - pre-export visual inspection and, if detected, remedial action
- for summer fruit tortrix moth, mealybugs, scale insects, spider mites and thrips
  - pre-export visual inspection and, if detected, remedial action.

This draft report has been published on the department's website to allow interested parties to provide comments and submissions within the consultation period.

1 Introduction

1.1 Australia's biosecurity policy framework

Australia's biosecurity policies aim to protect Australia against the risks that may arise from exotic pests entering, establishing and spreading in Australia, thereby threatening Australia's unique flora and fauna, as well as Australia's agricultural industries that are relatively free from serious pests.

The risk analysis process is an important part of Australia's biosecurity policy development. It enables the Australian Government to formally consider the level of biosecurity risk that may be associated with proposals to import goods into Australia. If the biosecurity risks do not achieve the appropriate level of protection (ALOP) for Australia, risk management measures are proposed to reduce the risks to an acceptable level. If the risks cannot be reduced to an acceptable level, the goods will not be imported into Australia until suitable measures are identified or developed.

Successive Australian governments have maintained a stringent, but not a zero risk, approach to the management of biosecurity risks. This approach is expressed in terms of the ALOP for Australia, which is defined in the *Biosecurity Act 2015* as providing a high level of protection aimed at reducing risk to a very low level, but not to zero.

Australia's risk analyses are undertaken by the department using technical and scientific experts in relevant fields and involve consultation with stakeholders at various stages during the process.

Risk analyses may take the form of a biosecurity import risk analysis (BIRA) or a review of biosecurity import requirements (such as scientific review of existing policy and import conditions, pest-specific assessments, weed risk assessments, biological control agent assessments or scientific advice).

Further information about Australia's biosecurity framework is provided in the *Biosecurity Import Risk Analysis Guidelines 2026* located on the department's website at agriculture.gov.au/biosecurity-trade/policy/risk-analysis/guidelines.

1.2 This risk analysis

1.2.1 Background

The Department of Animal and Plant Quarantine and Inspection, General Administration of Customs of the People's Republic of China (GACC), formally requested market access to Australia for fresh kiwifruit for human consumption in a submission received by Australia in May 2024. This submission provided information on the pests associated with kiwifruit in China, including the plant parts affected. Information was also provided on the standard commercial production practices for kiwifruit in China.

On 10 December 2024, the department notified stakeholders of the decision to progress a request for market access for kiwifruit from China as a review of biosecurity import requirements. This analysis is conducted in accordance with the *Biosecurity Act 2015*.

In September 2024, officers from the department visited major kiwifruit production areas in Shaanxi and Sichuan provinces in China. The objective of this visit was to observe commercial production, pest management and other export practices.

1.2.2 Scope

The scope of this risk analysis is to consider the biosecurity risk that may be associated with the pathway of imported fresh kiwifruit (*Actinidia chinensis* and *A. deliciosa*) from China, produced using standard commercial production practices as described in Chapter 2, for human consumption in Australia.

In this risk analysis, kiwifruit is defined as the entire fruit comprising skin, flesh and seeds, with the calyx and a very small portion of pedicel attached (Figure 1.1). This risk analysis covers all kiwifruit cultivars commercially grown in China.

Figure 1.1 Morphology of fruit of *Actinidia chinensis* (a) and *A. deliciosa* (b)



1.2.3 Existing policy

International policy

Fresh kiwifruit for human consumption has not previously been assessed for import into Australia. However, Australia has historical import conditions for fresh kiwifruit from France, Italy, Japan, New Zealand, South Africa and the USA (DAFF 2026). Australia has import policies for the following horticultural commodities from China: Chinese jujubes (Department of Agriculture 2020), peaches, plums and apricots (DAWR 2017a), nectarines (DAWR 2016a), table grapes (Biosecurity Australia 2011a), apples (Biosecurity Australia 2010), longans and lychees (DAFF 2004a), and pears (AQIS 1998; Biosecurity Australia 2005a).

The biosecurity import conditions for these commodity pathways can be found on the Biosecurity Import Conditions (BICON) database on the department website at bicon.agriculture.gov.au/BiconWeb4.0.

The biosecurity risk posed by thrips and the emerging orthotospoviruses they transmit was previously assessed for all countries in the *Final group pest risk analysis for thrips and*

orthotospoviruses on fresh fruit, vegetable, cut-flower and foliage imports (thrips Group PRA) (DAWR 2017b).

The biosecurity risk posed by mealybugs and the viruses they transmit was previously assessed for all countries in the *Final group pest risk analysis for mealybugs and the viruses they transmit on fresh fruit, vegetable, cut-flower and foliage imports* (mealybugs Group PRA) (DAWR 2019).

The biosecurity risk posed by soft and hard scale insects was previously assessed for all countries in the *Final group pest risk analysis for soft and hard scale insects on fresh fruit, vegetable, cut-flower and foliage imports* (scales Group PRA) (DAWE 2021a).

The biosecurity risk posed by spider mites was re-assessed by the department in the *Final report for a review of pest risk assessments for spider mites (Acari: Trombidiformes: Tetranychidae)* (spider mites Group PRA) (DAFF 2024a). The approach used in the spider mites Group PRA is consistent with that applied to the Group PRAs for thrips (DAWR 2017b), mealybugs (DAWR 2019) and scale insects (DAWE 2021a).

The Group policies for thrips, mealybugs, scale insects and spider mites are applicable for the fresh kiwifruit from China pathway. The department has determined that the information in these Group policies can be adopted for the species under consideration in this risk analysis.

The department has reviewed all the pests and pest groups previously identified in existing policies and, where relevant, the information in those assessments has been considered in this risk analysis. The department has also reviewed the latest scientific literature and other information and, where relevant, the department has included this new information in this risk analysis. All the pests and pest groups have been assessed and risk management measures are established.

Domestic arrangements

The Australian Government is responsible for regulating the movement of goods such as plants and plant products into and out of Australia. The state and territory governments are responsible for plant health controls within their individual jurisdictions. Legislation relating to resource management or plant health may be used by state and territory government agencies to control interstate movement of plants and plant products. After imported plants and plant products have been cleared by Australian Government biosecurity officers, they may be subject to interstate movement regulations/arrangements. It is the importer's responsibility to identify and ensure compliance with all requirements.

1.2.4 Contaminating pests

In addition to the pests of kiwifruit from China that are assessed in this risk analysis, other organisms may arrive with the imported commodity. These organisms may include pests considered not to be associated with the fruit pathway, pests of other crops, or predators and parasitoids of arthropods. The department considers these organisms to be contaminating pests ('contaminants') that could pose sanitary (to human or animal life or health) or phytosanitary (to plant life or health) risks. These risks are identified and addressed using existing operational procedures that require an inspection of all consignments during processing and preparation for export. Consignments will also undergo a verification process on arrival in Australia. The department will investigate whether any pest

identified through import verification processes may be of biosecurity concern to Australia and may thus require remedial action.

1.2.5 Consultation

On 10 December 2024, the department notified stakeholders, in Biosecurity Advice 2024-P06, of the commencement of a review of biosecurity import requirements to assess a proposal by China for market access to Australia for fresh kiwifruit for human consumption.

Prior to, and following the announcement of this decision, the department engaged with Australian kiwifruit growers through relevant state and territory government agencies, and industry bodies.

The department has also consulted with the government of China and Australian state and territory governments during the preparation of this draft report.

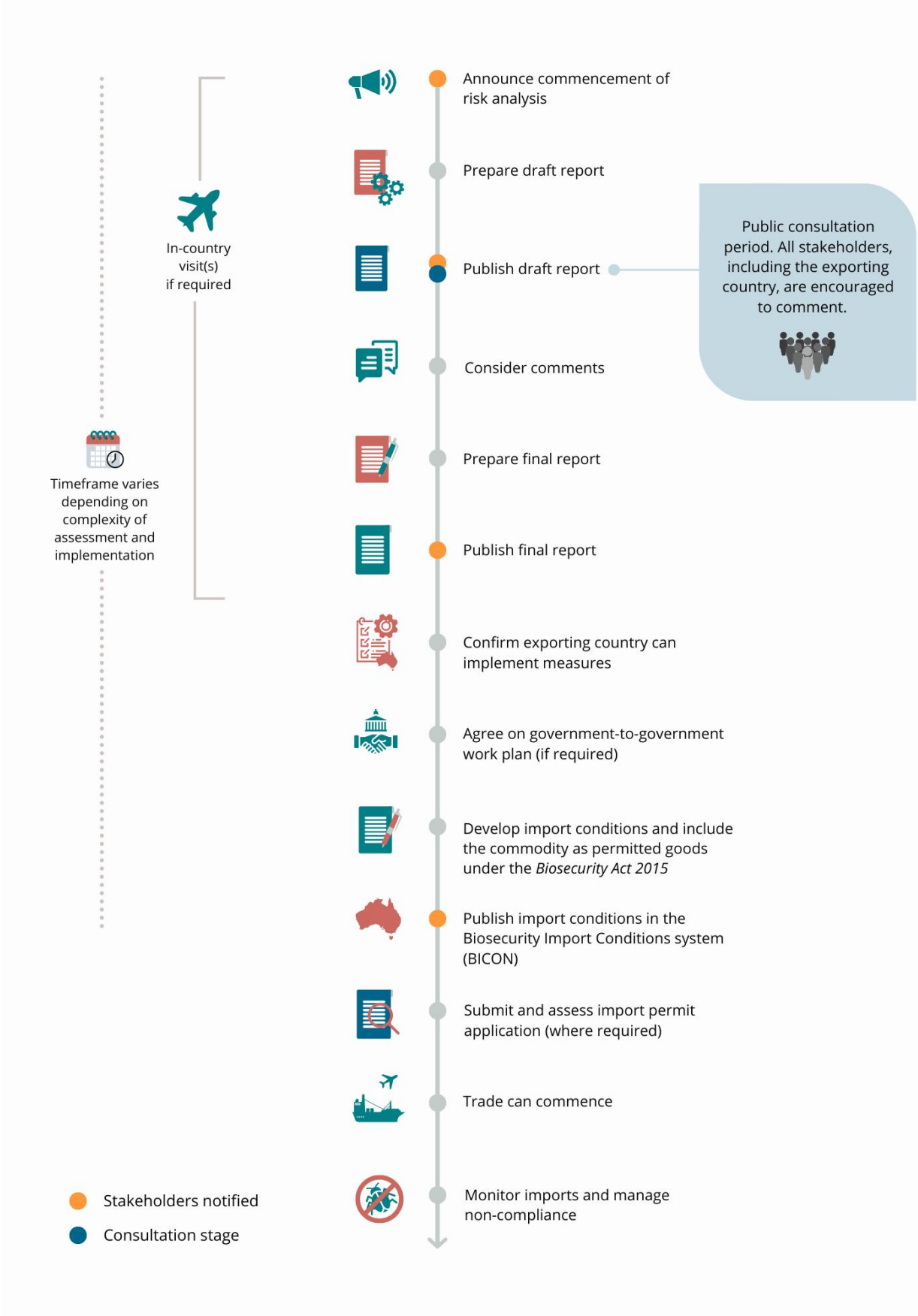
1.2.6 Overview of this pest risk analysis

A pest risk analysis (PRA) is 'the process of evaluating biological or other scientific and economic evidence to determine whether an organism is a pest, whether it should be regulated, and the strength of any phytosanitary measures to be taken against it'. A pest is ‘any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products’ (FAO 2025). This definition is also applied in the *Biosecurity Act 2015*.

The department conducted this PRA in accordance with Australia’s method for pest risk analysis (Appendix A), which is consistent with the International Standards for Phytosanitary Measures (ISPMs), including ISPM 2: *Framework for pest risk analysis* (IPPC Secretariat 2019a) and ISPM 11: *Pest risk analysis for quarantine pests* (IPPC Secretariat 2019c), and the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) (WTO 1995).

A summary of the process used by the department to conduct a risk analysis is provided in Figure 1.2.

Figure 1.2 Process flow diagram for conducting a risk analysis and implementing trade



The PRA was conducted in the following 3 consecutive stages:

1) Initiation—identification of:
   - the pathway being assessed in the risk analysis
   - the pest(s) that have potential to be associated with the pathway and are of biosecurity concern and should be considered for analysis in relation to the identified PRA area.
2) Pest risk assessment—this was conducted in 2 sequential steps:

   2a. Pest categorisation: examination of each pest identified in stage 1 to determine whether it is a quarantine pest and requires further pest risk assessment.

   2b. Further pest risk assessment: evaluation of the likelihoods of the introduction (entry and establishment) and spread, and the magnitude of the potential consequences of the quarantine pest(s). The combination of the likelihoods and consequences gives an overall estimate of the biosecurity risk of the pest, known as the unrestricted risk estimate (URE).
3) Pest risk management—the process of identifying and proposing/recommending required phytosanitary measures to reduce the biosecurity risk to achieve the ALOP for Australia where the URE is determined as not achieving the ALOP for Australia. Restricted risk is estimated with these phytosanitary measure(s) applied.

A phytosanitary measure is 'any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests' (FAO 2025).

For further information on the:

- method for PRA see: Appendix A
- terms used in this risk analysis see: Glossary, acronyms and abbreviations at the end of this report
- pathway being assessed in this risk analysis see: section 1.2.2
- initiation and pest categorisation see: Appendix B
- commercial production practices of kiwifruit in China and its export capacity see: Chapter 2
- pest risk assessments for pests/pest groups identified in Appendix B as requiring further pest risk assessment see: Chapter 3
- risk management measures for pests/pest groups assessed in Chapter 3 as not achieving the ALOP for Australia see: Chapter 4.

1.2.7 Next steps

The department has notified the proposer, the registered stakeholders, and the WTO-Secretariat about the release of this draft report.

This draft report gives stakeholders an opportunity to comment on the department's review and proposed measures, and to draw attention to any scientific, technical or other gaps in the data, misinterpretations or errors.

The department will consider submissions received on the draft report and may consult further with stakeholders. The department will revise the report as appropriate and then prepare a final report, taking into account stakeholder comments.

The final report will be published on the department's website along with a notice advising stakeholders of the release. The department will also notify the proposer, the registered stakeholders and the WTO Secretariat about the release of the final report. Publication of the final report represents the end of the risk analysis process.

The biosecurity requirements recommended in the final report will form the basis of the import conditions published on BICON, and for any import permits subsequently issued.

Should the final report recommend importation be permitted, China must be able to demonstrate to the department that processes and procedures are in place to implement the agreed risk management measures prior to publication of import conditions on BICON. This will ensure safe trade in fresh kiwifruit from China.

2 Commercial production practices for kiwifruit in China

This chapter provides information on the pre-harvest, harvest and post-harvest practices considered to be standard practices in China for the production of kiwifruit for export. It also outlines the export capacity of China.

2.1 Considerations used in estimating unrestricted risk

China provided a technical market access submission to Australia that included information on commercial production practices of kiwifruit in China in May 2024.

In September 2024, officials from the department visited kiwifruit orchards, packing houses and industry innovation centres in Shaanxi and Sichuan provinces of China.

The department's observations during this visit, and additional information provided by China to supplement their original market access submission, confirmed the production, harvest, processing and packing procedures described in this chapter as standard commercial production practices for kiwifruit for export.

The information provided by China and gathered by the department during the visit has been supplemented with data from published literature and other sources and has been taken into consideration when estimating the unrestricted risks of pests that may be associated with import of this commodity.

These standard commercial production practices were taken into consideration in the pest initiation and categorisation processes (Appendix B), and when estimating the unrestricted risk of pests that may be associated with the import of fresh kiwifruit (*Actinidia chinensis* and *A. deliciosa*) fruit from China (Chapter 3).

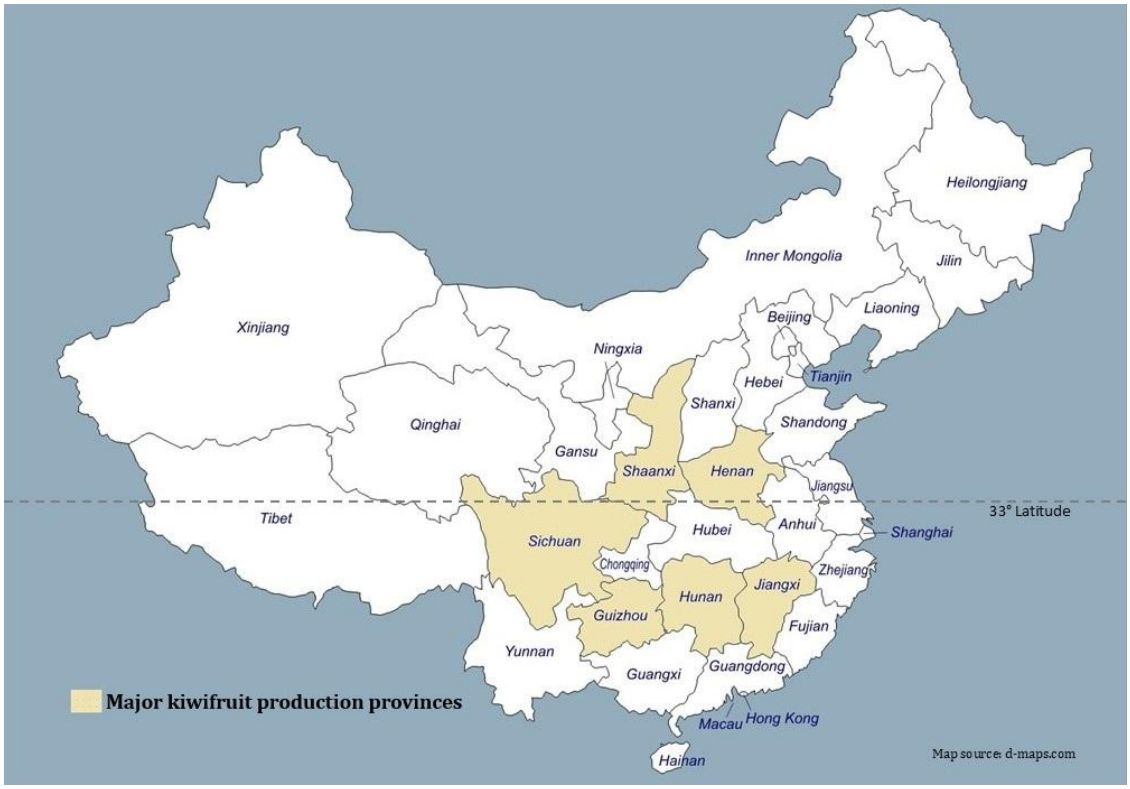
2.2 Production areas of kiwifruit

Kiwifruit, known as "míhóutáo" or Chinese gooseberry, originated from central and eastern China, with the first recorded description dating back to the 12th century. In the early 20th century, cultivation of kiwifruit spread from China to New Zealand, where the first commercial plantings took place.

Two species names are often used to describe kiwifruit: *Actinidia chinensis* and *A. deliciosa*. Both species names are used in this report although some authors refer to *A. deliciosa* as a subspecies or variety of *A. chinensis* (Bao, Li & Li 2018). Fruit of *A. chinensis* have golden yellow flesh, sometimes with a red centre, and a smoother skin. In contrast, *A. deliciosa* fruit have green flesh and a more hairy or fuzzy skin (Figure 1.1). Some cultivars are hybrids of *A. chinensis* and *A. deliciosa* (Atak et al. 2015; Xie et al. 1991).

China is the largest kiwifruit producing country in the world with a planting area of around 292,000 hectares in 2024 and total production of 3,826,000 tonnes in 2023 (Li, Huang & Zhong 2024). In China, six provinces account for 76.4% of China's total kiwifruit production area and more than 82% of total kiwifruit production (Map 3).

Map 3 Major production provinces of kiwifruit in China



Source: GACC (2024); Li, Huang and Zhong (2024)

2.3 Climate in major production provinces

2.3.1 Shaanxi province

In Shaanxi province, the two largest kiwifruit production counties of Meixian and Zhouzhi (Li, Huang & Zhong 2024) have temperate continental monsoon climates characterised by hot and humid summers, and cold and dry winters.

In Meixian, the mean monthly minimum and maximum temperatures are -4°C to 20°C and 4°C to 29°C, respectively (Figure 2.1). Mean annual precipitation is around 1,066 mm, with highest mean monthly rainfall of 221.9 mm in July and lowest mean monthly rainfall of 7.8 mm in December.

2.3.2 Sichuan province

Pujiang, the largest kiwifruit production county in Sichuan province (Li, Huang & Zhong 2024), has a humid subtropical climate, characterised by hot and wet summers, and cold and dry winters (Figure 2.1). Mean monthly minimum and maximum temperatures are 3°C to 22°C and 9°C to 29°C, respectively. Mean annual rainfall is 1,143 mm, with highest mean monthly rainfall in August and lowest mean monthly rainfall in December.

2.3.3 Guizhou Province

Xiuwen, the largest kiwifruit production county in Guizhou province (Li, Huang & Zhong 2024), has a warm, moist subtropical climate (Figure 2.1). The mean monthly minimum and maximum temperatures are 2°C to 19°C and 9°C to 28°C respectively. Humidity levels are high, especially in the months of June and January when the average relative humidity is about 94% and 97%, respectively.

The county receives abundant annual rainfall of 1,562 mm throughout the year, which is typical for the subtropical monsoon climate zone of southeastern China.

2.3.4 Hunan Province

Yongshun, the largest kiwifruit production county in Hunan province (Li, Huang & Zhong 2024), has a subtropical monsoon climate. Yongshun has warm, humid summers and cool, damp winters. Mean monthly minimum and maximum temperatures are 2°C to 22°C and 8°C to 30°C, respectively (Figure 2.1). Mean annual rainfall is about 1,485 mm, with the wettest month being June, while the driest month is December.

2.3.5 Jiangxi Province

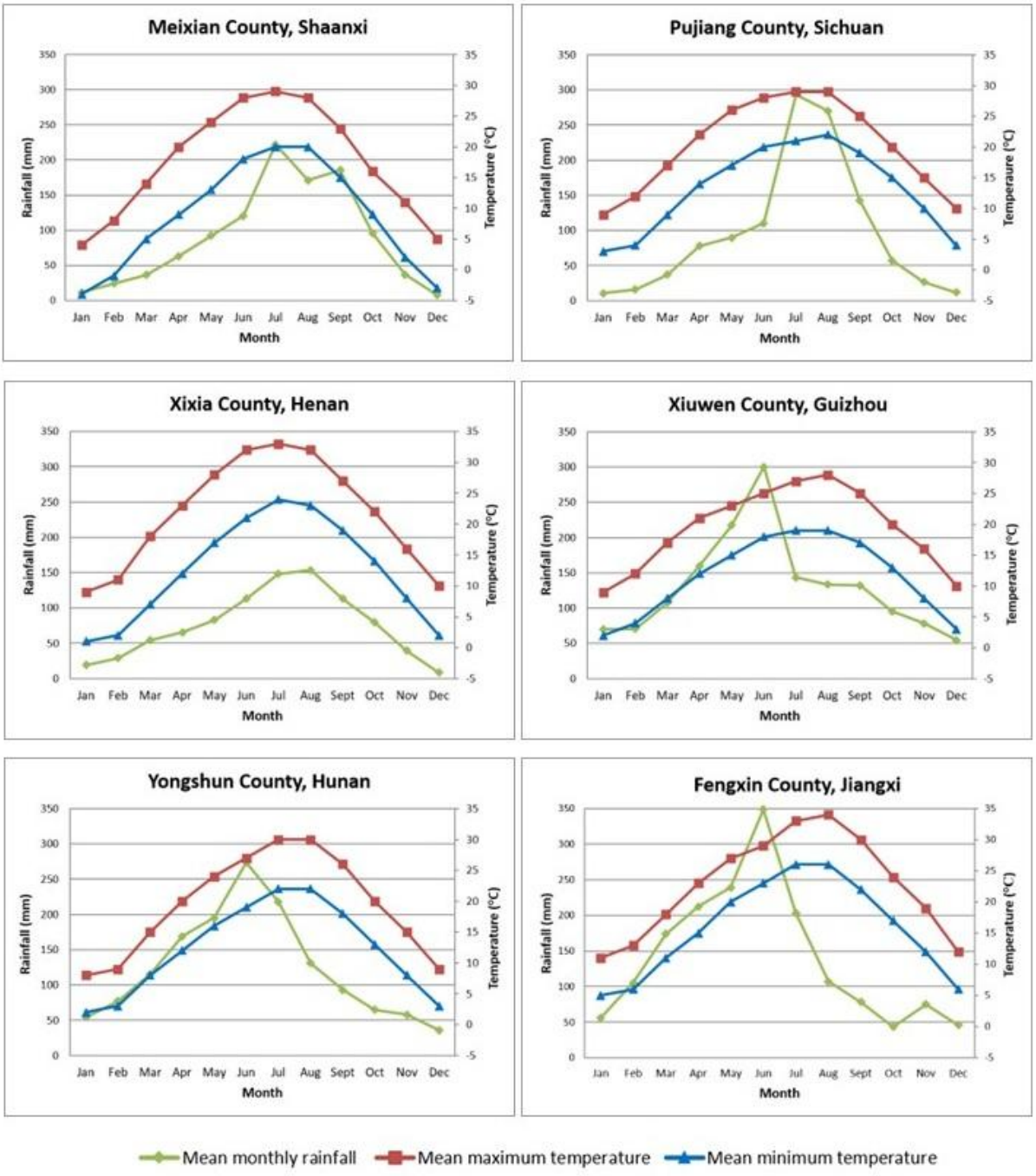
Fengxin, the largest kiwifruit production county in Jiangxi province (Li, Huang & Zhong 2024), has a humid subtropical climate with hot, humid summers and cool, damp winters (Figure 2.1). Mean monthly minimum and maximum temperatures are 5°C to 26°C and 11°C to 34°C, respectively. Mean annual rainfall is 1,688 mm, with peak mean monthly rainfall of approximately 350 mm in June.

2.3.6 Henan province

Xixia, the largest kiwifruit planting region in Henan province (Li, Huang & Zhong 2024), has a subtropical monsoon and continental climate. Mean monthly minimum and maximum temperatures are 1°C to 24°C and 9°C to 33°C, respectively (Figure 2.1). Around 60% of the annual precipitation is concentrated between June and September.

Figure 2.1 presents the mean monthly maximum and minimum temperatures and rainfall for the main production county in each of the 6 major kiwifruit producing provinces in China.

Figure 2.1 Mean monthly minimum and maximum temperatures and mean monthly rainfall in the main production areas of kiwifruit in China



Source: World Weather Online (2025)

2.4 Registration of exporting orchards and packing houses

Commercial orchards growing kiwifruit for export and packing houses processing kiwifruit for export must be audited and registered with GACC.

GACC officers carry out routine surveys and an annual audit of orchards before kiwifruit are harvested by checking records of pest and disease monitoring and control; sanitation conditions; and agrochemical usage. GACC officers also carry out an annual audit of packing houses prior to the

export season, covering fruit processing, inspection, storage, export and traceability systems and procedures.

2.5 Pre-harvest

2.5.1 Cultivars

Over 100 kiwifruit cultivars are grown in China, many of which have been developed in China (GACC 2024). The main commercial kiwifruit cultivars grown in China are listed in Table 2.1.

Table 2.1 Information on the main kiwifruit cultivars grown in China

Cultivar	Harvest time	Fruit flesh colour	Main production provinces
Cuiyu (Liangmei No. 1)	August to September	Green	Hubei, Hunan, Sichuan and Shanxi
Cuixiang	August to October	Green	Guangdong, Hunan and Shaanxi
Donghong (Oriental red)	August to October	Yellow with red inner pericarp	Guangxi, Henan, Hubei, Hunan, Sichuan and Shaanxi
Hayward	November	Green	Guangdong, Hubei, Shaanxi and Sichuan
Huamei No. 2	September	Green	Henan and Shaanxi
Huayou	October to November	Light yellow	Shaanxi
Hongyang	September	Yellow-green with red inner pericarp	Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Shaanxi and Sichuan
Jinfeng (Jinxiang)	September	Yellow	Shaanxi and Sichuan
Jinkui	October	Green	Guizhou, Hubei, Jiangxi, Shaanxi and Sichuan
Jintao	October to November	Yellow	Hebei, Hubei, Jiangxi, Shaanxi, Shandong and Sichuan
Jinyan (Chuanmi)	October to November	Yellow	Guangdong, Guangxi, Hebei, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shandong and Sichuan
Kuimi	September	Yellow-green	Guangdong, Hubei, Jiangsu, Jiangxi and Zhejiang
Lushanxiang (Yushan 79-2)	October	Yellow	Jiangxi, Shaanxi and Sichuan
Miliang No. 1	October	Yellow-red with red inner pericarp	Guangxi, Hunan, Sichuan and Zhejiang
Qinmei	September to October	Green	Guangxi, Shaanxi and Zhejiang
Ruiyu	September	Green	Shaanxi
Shimei	October	Green	Guangxi, Shaanxi and Sichuan
Tongshan No. 5	September	Green	Guizhou, Shaanxi and Sichuan
Wuzhi No. 3	October to November	Green	Hebei, Hubei and Jiangxi
Xuxiang (Xuzhou 75-4)	October	Green	Hubei, Hunan, Jiangsu, Shaanxi and Sichuan
Yate (Zhou Yuan No.1)	October	Green	Shaanxi
Zao Xian	August to September	Green-yellow	Shaanxi and Sichuan

2.5.2 Cultivation practices

Orchard planning and establishment

Site selection

In China, commercial kiwifruit orchards are typically established on sites with fertile loam soils that hold moisture but also drain excess water to prevent waterlogging. Commercial kiwifruit orchards are usually located in areas that receive at least 6 to 8 hours of direct sunlight daily and are on a slight slope (4% to 8%) to avoid frost pockets. Taller trees, to act as windbreaks, are planted on the southern and western sides of the orchard to protect the site from strong winds, which can damage kiwifruit vines.

Planting

Kiwifruit nursery stocks are mainly sourced locally. Disease free and/or disease resistant planting materials and grafting materials are used. Nursery stocks are randomly sampled and tested for diseases in laboratories under the guidelines and supervision of GACC regional office staff and/or local government agriculture bureau staff (GACC 2024; SPBQTS 2014). Grafted plants are typically used.

Soil at sites for planting are cultivated to produce a raised planting row. If needed, soil pH is adjusted to between 5.0 and 6.8 by adding lime or sulfur (GACC 2024; Li, Huang & Zhong 2024). At planting, a hole approximately 50 cm deep is dug and organic matter is added along with the plant. Planting density is typically in the range of 800 to 1,200 plants/ha, which varies depending on factors such as growing area and cultivar. Kiwifruit are dioecious with male and female plants. Males are planted at a ratio of around 1:8 to ensure sufficient pollination of female plants on which fruit grow.

Training systems

In China, kiwifruit vines are typically trained on T-bar or pergola systems (GACC 2024; Li, Huang & Zhong 2024; SPBQTS 2014) (Figure 2.2). These systems involve growing the vine canopy horizontally above the ground on wires attached to concrete, metal or wooden posts or T-bars, which promote air circulation and light penetration for healthy fruit development. Historically, vines have been grown on a T-Bar system, which is cheaper to construct and easier to maintain. However, pergola systems are now more popular as greater yields are achieved. Some kiwifruit orchards are grown under protected plastic tunnels.

2.5.3 Orchard management

Pruning

Pruning is primarily carried out after leaves have dropped from plants during dormancy in winter (GACC 2024; Li, Huang & Zhong 2024; SPBQTS 2014). During pruning, all current year fruiting lateral vines on female plants are removed, and up to 10 newly grown lateral vines are kept for fruit setting the following year. The pruned materials are mulched into soil in the orchard during dormancy. Pruning of male plants may also be carried out after flowering to reduce male plant competition for resources.

Figure 2.2 Kiwifruit canopy training systems used in China



a): pergola system; b): T-bar system

Fertilising and irrigation

Organic fertilisers (composted manures) are used to improve the soil and provide nutrition for kiwifruit plants. Synthetic fertilisers may also be used when required during the growing season (GACC 2024; Li, Huang & Zhong 2024; SPBQTS 2014).

Drip or sprinkler irrigation are the most common methods of delivering water to kiwifruit plants during hot and/or dry periods. These methods deliver water directly to the roots, minimizing evaporation and maximising water absorption. Many orchards are increasingly focused on optimising water and fertiliser use through applying fertiliser with drip irrigation.

Pollination

Both bee pollination and human-aided pollination are used. Human-aided pollination using pollination guns is a common practice (GACC 2024; Li, Huang & Zhong 2024; SPBQTS 2014). Commercial pollen products are available and are tested for quarantine diseases.

Fruit thinning

Fruit thinning, a practice of removing some fruitlets to improve the size and quality of the remaining kiwifruit, is a common technique in China's kiwifruit orchards (GACC 2024; Li, Huang & Zhong 2024; SPBQTS 2014). Kiwifruit vines often produce excessive fruit, leading to smaller, lower-quality fruit and lower yields. Thinning, through hand removal of flowers or fruitlets, or pruning, helps ensure a manageable crop load, resulting in larger, more marketable fruit. Thinning is often done in the early stages of fruit development, either at the bud swell stage or during the fruit-set stage. Fruit thinning is commonly carried out to achieve yields in the range of 12 to 30 tonnes/ha.

Fruit bagging

Fruit bagging is not a mandatory practice in China, but is commonly practised in some provinces and for some cultivars to prevent sunburn and other physical damage (GACC 2024; Li, Huang & Zhong 2024; SPBQTS 2014).

In orchards that conduct bagging, individual fruit are bagged with a brown paper bag approximately 40 to 45 days after flowering and after required pesticide applications (Figure 2.3). Bags are 12 x 16 cm, with small openings in each of the bottom corners of the bag. The top of the bag has an opening with wire to enable the top of the bag to be securely attached to the pedicel. Any imperfect fruit

(abnormal or damaged) are removed and discarded during the bagging process. Bags are removed around 1 day prior to harvest or after harvest in the packing house.

Figure 2.3 Fruit bagging



2.5.4 Pest management

Pests and diseases

The common pests and diseases of kiwifruit in China are listed below:

- Diseases: *Pseudomonas syringae* pv. *actinidiae*, *Pestalotiopsis maculans*, *Corynespora cassiicola*, *Botryosphaeria dothidea*, *Penicillium expansum*, *Trichothecium roseum* and *Colletotrichum gloeosporioides*
- Arthropods pests: *Pseudaulacaspis pentagona*, *Tetranychus* spp., *Prodenia litura*, *Parlatoria pergandii*, *Cortinicara gibbosa* and *Adoxophyes orana*.

Monitoring

Integrated pest management (IPM) is commonly implemented to monitor and manage pests and diseases in kiwifruit orchards. Pests and diseases are monitored every 2 weeks throughout the growing season by orchard personnel under the guidance and supervision of GACC regional staff. If any suspected pests and diseases are detected, samples are taken and sent to laboratories at GACC regional offices, agricultural universities or agricultural bureaus for identification.

For fruit flies, in addition to the National Fruit Fly Trapping Network, additional traps are set up in the orchards and packing houses. Traps are inspected every 2 weeks and serviced every month by technical officers from GACC regional offices.

Pest and disease prevention control

A pest and disease prevention and control calendar has been developed by GACC regional staff for each of the major kiwifruit production provinces. The calendar identifies key times for specific pests and diseases and provides recommendations for prevention and control. An example calendar is shown in Table 2.2.

Table 2.2 Example of a pest and disease prevention and control calendar for kiwifruit orchards

Month	Phenological stage	Target pests and diseases	Prevention and control measures
November-January	Dormancy	Cankers, scale insects, spider mites	Pruning and orchard sanitation Fungicides (Bordeaux or lime sulfur mixture) to prevent canker and other diseases. Insecticides to control insect pests.
February-March	Budding stage	Grey mould, flower rot, anthracnose, canker, aphids, scale insects, beetles	Traps (e.g. solar insecticidal lamps) for physical control of beetles and other pests. Fungicides (microbial agents, thiamydone, copper hydroxide, copper thiomycete or lime sulfur mixture) to prevent diseases.
April-May	Leaf expansion Flower bud development Flowering Fruit setting Fruit enlargement	Aphids, apple leaf roller, snails, scale insects, thrips, beetles, cicadas, stink bugs, grey mould, flower rot, anthracnose, powdery mildew, brown spot	Insecticides and fungicides before flowering to control beetles, cicadas, stink bugs, brown spot and flower rot. Mesomycin or bacterial applications to prevent flower rot.
June	Fruit development Fruit enlargement	Beetles, stink bugs, scales, red spider mites, brown spot, grey mould, canker, fruit rot and other pests and diseases	After fruit setting, spray with difenoconazole, thiamium copper, cyhalothrin, chlorpyrifos etc. based on disease and insect occurrence. Predatory mites may be used to control red spider mites.
July-August	Fruit enlargement Fruit sugar accumulation Harvesting	Anthracnose, leaf brown spot, root rot and other disease and pests	Fungicides and insecticides are applied to control diseases and insect pests when required.
September-October	Harvesting Post-harvest	Canker, grey mould, brown spot	After harvest and leaf drop, copper fungicides such as copper oxychloride or copper hydroxide along with potassium dihydrogen phosphate and urea are applied (focusing on spraying fruit stalks, leaf marks and wounds), to manage canker bacteria and other pathogens.

2.6 Harvesting and handling procedures

2.6.1 Harvesting of kiwifruit

The timing of harvest is determined by a flesh hardness of 8 to 10 kg/cm^2, minimum dry matter content of 17%, and a brix level (soluble solids content) of 6.5 to 8%, depending on cultivar.

Kiwifruit are harvested by hand. For kiwifruit with the bag still attached, fruit are harvested with the bag and usually a section of the pedicel. In contrast, unbagged fruit are picked such that the pedicel breaks close to the calyx, or the pedicel is removed by the picker in the orchard. Pickers place harvested fruit into a carry-on bag before emptying fruit into plastic collection bins with a capacity of about 20 kg.

Each bin is labelled with a record card with details of the registered orchard, cultivar and harvest date. To avoid contamination, collection bins are placed in the orchard so that they do not touch the ground.

2.6.2 Transport of harvested fruit to packing houses

To prevent contamination after harvest, kiwifruit are transported from the orchard to the packing house by a truck that is covered.

2.7 Post-harvest

2.7.1 Packing house processes

Receival at registered packing house

When kiwifruit arrive at the packing house, they are checked to confirm they are from a registered orchard, before being temporarily stored in an allocated receival area in the packing house. At this stage, bags are removed from any bagged fruit, along with the pedicel. Fruit are also checked for fruit damage, pests and diseases, and abnormal fruit shapes and colour. Any infested, damaged or abnormal fruit are discarded. Collection bins are then placed onto pallets and moved via a forklift into the packing house.

Sorting

Fruit are unloaded from the collection bins onto the processing line, which uses brushes, air blowers or vacuums to remove trash (leaves etc.). Packing houses use computer-based automatic sorting systems to detect and remove fruit with physical damage and damage caused by pests and diseases (Figure 2.4). Culled fruit are collected into bins that are emptied regularly.

Grading and packing prior to cold storage

After sorting, fruit are automatically graded by weight in 10 g increments, with fruit typically weighing between 70 g and 120 g (Figure 2.5). Graded kiwifruit are packed into 20 kg plastic bins with a perforated plastic liner that is then closed at the top. Packed bins are palletised, with each bin or pallet carrying a record card with details of the registered orchard, cultivar, grade and date of packing.

Figure 2.4 Automatic sorting system



Figure 2.5 Automatic grading system



Quality inspection

Random sampling of fruit from packed bins are taken to an onsite testing laboratory to ensure the fruit meet export quality requirements (Figure 2.6). Fruit meeting export quality requirements, including flesh hardness, dry matter content and brix, are stored in cold rooms. For fruit that do not meet the requirements, the relevant orchard owners are informed and the fruit are re-packed and re-inspected or downgraded and withdrawn from the export program.

Figure 2.6 Quality inspection in packing house



a): laboratory bench for visual inspection and fruit cutting for internal pests; b): brix meter for sugar content measurement; c): penetrometer for fruit hardness measurement; and d): hot air-drying oven for dry matter measurement

Cold storage

Palletised bins of fruit are stored in cold rooms at 0°C to 1°C and 85% relative humidity (Figure 2.7). Fruit can be cold-stored for up to 8 months after harvest, but fruit for export are generally only stored for up to 4 months to maintain quality.

Figure 2.7 Palletised bins of fruit stored in cold room



Packing for export

When an export order is received, kiwifruit in palletised bins are removed from cold storage and taken to a dedicated area of the packing house for packing. Fruit are placed onto a conveyer belt to allow further manual sorting of fruit to ensure any damaged, deformed or poor-quality fruit are discarded prior to packing. Packing houses may also employ pressurised air guns to clean any contaminants or debris from the fruit surface. Fruit are then packed into export packaging according to the importing country and/or customer's requirements. Export packages are generally 3 kg cartons or 9 kg plastic bag lined crates. Each package carries a label with details of the registered orchard and packing house, fruit cultivar and grade.

2.7.2 Phytosanitary inspection

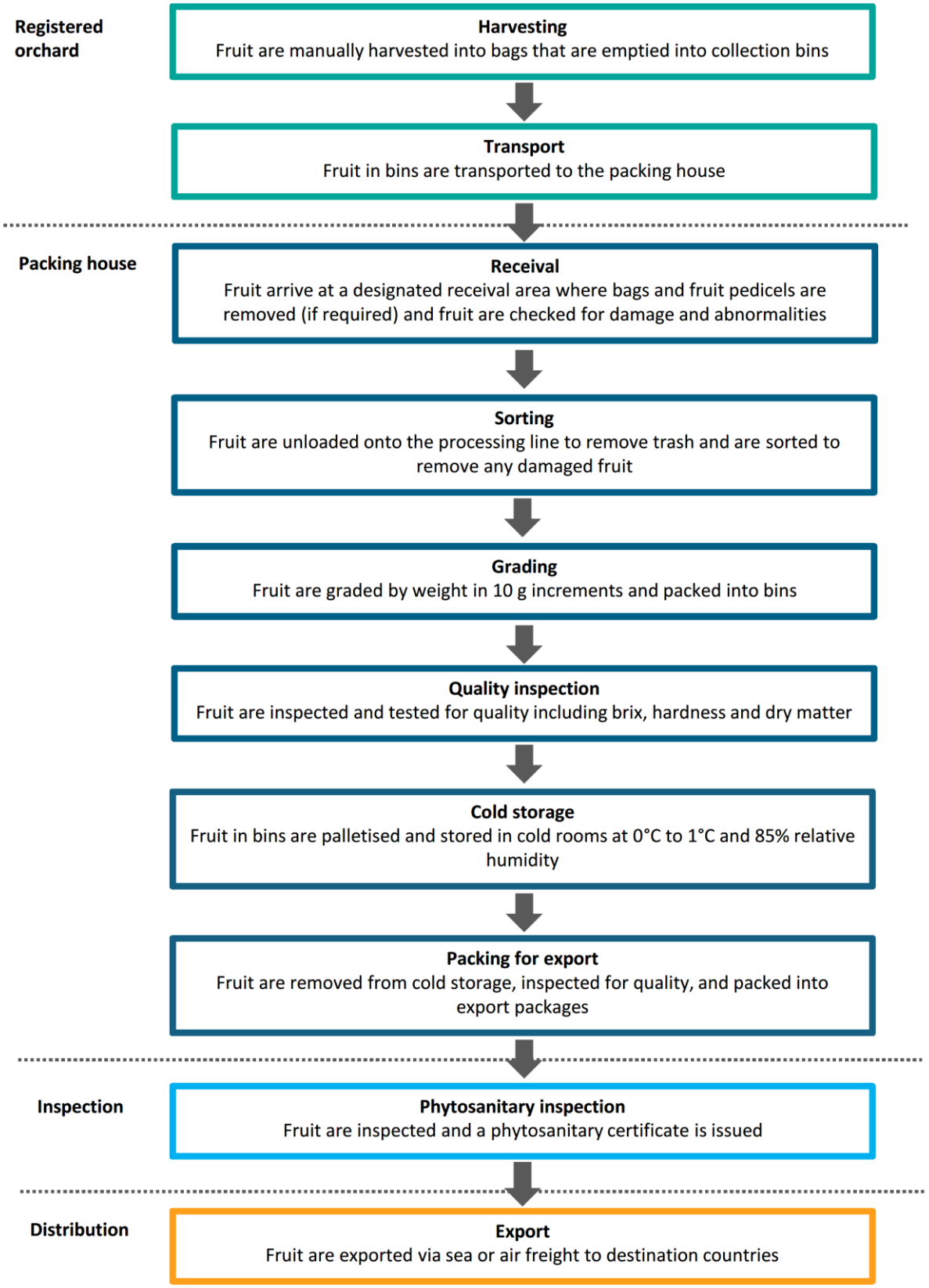
Officers from the GACC regional office will inspect the packed consignment prior to export, according to the importing country's phytosanitary requirements. A phytosanitary certificate is issued for a consignment passing inspection.

2.7.3 Transport

Loading, unloading and transport activities must be carried out in compliance with China's export standards. Transport vehicles must be cleaned and securely closed after loading, and during transportation. Fresh kiwifruit may be exported via sea or air freight. For sea freight, the fruit are secured at the container level. For air freight, packed fruit are secured at carton or pallet level. Air freight generally occurs over about 1 day during which fruit are likely to be maintained at cool to ambient temperatures, whereas sea freight has a duration of about 3 weeks at temperatures of about 0°C to 1°C.

A schematic diagram summarising the commercial production of fresh kiwifruit for export is provided in Figure 2.8.

Figure 2.8 Summary of operational steps for fresh kiwifruit commercially grown in China for export



2.8 Export capacity

2.8.1 Production statistics

China is the world's largest kiwifruit producer, with an area of around 292,000 hectares in 2024 and production of 3,826,000 tonnes in 2023 (Table 2.3). Current production primarily supplies the domestic market. Shaanxi is the largest kiwifruit producing province accounting for around one-third of China's total production across 73,000 hectares.

Table 2.3 Kiwifruit production areas and volumes by province

Province	Production area in 2024 (ha)	Percentage of total planting area	Production volume in 2023 (tonnes)	Percentage of total production
Shaanxi	73,000	25.00	1,300,000	33.98
Sichuan	50,000	17.12	530,000	13.85
Guizhou	43,000	14.73	475,000	12.42
Hunan	24,000	8.22	338,000	8.83
Jiangxi	20,000	6.85	299,000	7.82
Henan	13,000	4.45	212,000	5.54
Other provinces	69,000	23.63	672,000	17.56
Total	**292,000**	**100.00**	**3,826,000**	**100.00**

Source: Li, Huang and Zhong (2024), GACC (2024); Annual statistics compiled by the Kiwifruit Branch of the Chinese Society for Horticulture from council members and agricultural departments in producing provinces.

2.8.2 Export statistics

In 2024, kiwifruit exports from China totalled 31,000 tonnes (Research and Markets), with most exports to southeast Asia, Chile, Russia, the Middle East, the European Union and Japan (GACC 2024; Li, Huang & Zhong 2024). Export volumes in recent years have increased significantly and are expected to continue growing in future years following significant growth in new kiwifruit plantings.

2.8.3 Export season

In China, kiwifruit are harvested from late August to early November depending on the cultivar and growing region. However, exports can be extended for several months as the fruit can be cold-stored.

3 Pest risk assessments for quarantine pests

3.1 Summary of outcomes of pest initiation and categorisation

The initiation process (Appendix B) identified 225 pests as being potentially associated with fresh kiwifruit in China.

Of these 225 pests, the pest categorisation process (Appendix B) identified:

- 112 pests as already present in Australia and not under official control, and therefore not requiring further assessment
- 84 pests as not having potential to enter on the commercially produced kiwifruit from China pathway, and therefore not requiring further assessment
- 1 pest as not having potential to cause economic consequences in Australia, and therefore not requiring further assessment.

The remaining 28 pests were assessed as having potential to enter, establish, spread and cause consequences in Australia, and therefore requiring further pest risk assessment.

3.2 Pests requiring further pest risk assessment

The 28 pests, associated with commercially produced kiwifruit for export from China, identified as requiring further pest risk assessment are listed in Table 3.1.

Of these 28 pests:

- 26 are quarantine pests
  - 5 of the 26 quarantine pests are regional quarantine pests as, while they have been recorded in some regions of Australia, interstate quarantine regulations are in place and enforced.
  - 1 of the 26 quarantine pests is also a regulated article for Australia as it vectors quarantine orthotospoviruses
- 2 are regulated articles for Australia as they vector quarantine orthotospoviruses.

Table 3.1 Quarantine pests and regulated articles potentially associated with kiwifruit from China, and requiring further pest risk assessment

Pest/pest group	Scientific name	Common name	Policy status/region
Fruit flies [Diptera: Tephritidae]	*Bactrocera dorsalis*	Oriental fruit fly	EP
Moths [Lepidoptera: Tortricidae]	*Adoxophyes orana*	summer fruit tortrix	EP
	Lobesia botrana	European grapevine moth	EP
Mealybugs [Hemiptera: Pseudococcidae]	*Planococcus minor*	Pacific mealybug	GP, WA
	Pseudococcus calceolariae	citrophilus mealybug	GP, WA
	Pseudococcus maritimus	American grape mealybug	GP
Scale insects [Hemiptera: Coccidae]	*Parthenolecanium corni*	European fruit lecanium	GP, WA
Scale insects [Hemiptera: Diaspididae]	*Parlatoria pergandii*	black parlatoria scale	GP, WA
	Pseudaulacaspis pentagona	mulberry scale	GP, WA
Spider mites [Trombidiformes: Tetranhychidae]	*Amphitetranychus viennensis*	Hawthorn spider mite	GP
	Eotetranychus kankitus	spider mite	GP
Thrips [Thysanoptera: Thripidae]	*Frankliniella intonsa*[a]	European flower thrips	GP
	Frankliniella occidentalis	Western flower thrips	GP, RA
	Scirtothrips dorsalis	chilli thrips	GP, RA
Soft rot [Diaporthales: Diaporthaceae]	*Diaporthe amygdali*	soft rot	EP
	Diaporthe apiculata	soft rot	EP
	Diaporthe eres	soft rot	EP
	Diaporthe eucommiae	soft rot	EP
	Diaporthe ganjae	soft rot	EP
	Diaporthe liupanshuiensis	soft rot	EP
	Diaporthe passiflorae	soft rot	EP
	Diaporthe shuichengensis	soft rot	EP
	Diaporthe xiuwenensis	soft rot	EP
Fruit rot [Botryosphaeriales: Botryosphaeriaceae]	*Neofusicoccum actinidiae*	fruit rot	
	Neofusicoccum guttatum	fruit rot	
Sooty spot and dimple disease [Mycosphaerellales: Mycosphaerellaceae]	*Pseudocercospora actinidiae*	sooty spot	
	Pseudocercospora hangzhouensis	dimple	
Turnip vein-clearing virus [Martellivirales: Virgaviridae]	*Tobamovirus rapae*	TVCV	

a: Quarantine pest species that is also identified as a regulated article for Australia as it vectors quarantine viruses.
EP: Species has been assessed previously and import policy already exists. **GP:** Species has been assessed previously in a Group PRA, and the Group policy has been applied. **RA:** Regulated article. **WA:** Regional quarantine pest for Western Australia.

3.3 Overview of pest risk assessment

This chapter assesses, for each of the pests, or pest groups identified in Table 3.1, the likelihoods of entry, establishment and spread, and the associated potential consequences these species may cause if they were to enter, establish and spread in Australia.

Most of the pests in Table 3.1 have been assessed previously by the department. Where appropriate, the outcomes of the previous assessments for these pests have been adopted for this risk analysis, unless new information is available that suggests the risk would be different. The acronym 'EP' is used to identify species assessed previously and for which import policy already exists. The process relating to the adoption of outcomes from previous assessments is outlined in Appendix A in section A2.6.

The acronym 'GP' is used to identify species assessed previously in a Group PRA and for which a Group PRA was applied. The application of the Group PRAs to this risk analysis is outlined in Appendix A in section A2.7. A summary of assessment from the Group PRAs is presented for the relevant quarantine pests and/or regulated articles in this chapter for convenience.

3.4 Oriental fruit fly

***Bactrocera dorsalis* (EP)**

Bactrocera dorsalis (Oriental fruit fly) is one of the most damaging Tephritid fruit flies in the world (Guo, Chen & Zhao 2022; Li et al. 2021; Liu et al. 2019b; Yu et al. 2022a). This species has a wide host range of over 500 fruit species belonging to 46 families, and is associated with kiwifruit in China (Guo et al. 2023; KVH 2022). It is highly invasive having spread to over 65 countries (Allwood et al. 1999; Moquet & Delatte 2021; Moquet et al. 2024; Weems et al. 2016; Yu et al. 2022a).

Bactrocera dorsalis is not present in Australia and is a quarantine pest for Australia.

Bactrocera dorsalis has 4 life stages: egg, larva, pupa and adult (Follett et al. 2019a; Wijekoon, Duarte & Neto 2025; Wu et al. 2024; Yu et al. 2022a). Adult females lay eggs in clutches under the skin of host fruits. Once the eggs hatch, the larvae feed on the flesh of the host fruit (Chen & Ye 2007; Follett et al. 2019a; Wijekoon, Duarte & Neto 2025). On reaching maturity, larvae leave the fruit, drop to the ground, and pupate in the soil beneath the host plant (Christenson & Foote 1960; Wijekoon, Duarte & Neto 2025). Adults begin mating within 1 to 2 weeks following emergence, and may live from 1 to 3 months, or up to 12 months in cool conditions (Christenson & Foote 1960; Wijekoon, Duarte & Neto 2025).

Bactrocera dorsalis can undergo several generations each year, depending primarily on temperature and host fruit availability (Fletcher 1987; Liu et al. 2019b; Liu & Ye 2009; Liu et al. 2019c; Vargas et al. 2000; Wijekoon, Duarte & Neto 2025). The optimal temperature range for development of *B. dorsalis* is 20°C to 28°C. The lower developmental threshold temperatures for eggs, larvae, and pupae are 11°C to 12°C, 9°C to 11°C, and 9°C to 11°C, respectively (Chen & Ye 2007; Danjuma et al. 2014; Dhillon et al. 2005; Liu et al. 2019b; Liu & Ye 2009; Michel et al. 2021; Vargas et al. 2000; Wijekoon, Duarte & Neto 2025).

Bactrocera dorsalis can invade new habitats and establish rapidly due to its high dispersal, wide host range, climatic tolerance, high reproduction potential and adaptation capacity (Liu et al. 2019b; Wijekoon, Duarte & Neto 2025). The major dispersal mechanism of tephritid fruit flies is by human-mediated activities through transportation of infested fruit (Louzeiro et al. 2021; Putulan et al. 2004). Adult dispersal by flight is also effective, as they actively search for food and hosts (Kausar et al. 2022; Win et al. 2014).

Bactrocera dorsalis has been assessed previously in many existing policies. For example, *B. dorsalis* has been assessed for Chinese jujubes, apples, table grapes, pears, nectarines, plums, peaches and apricots from China (AQIS 1998; Biosecurity Australia 2005a, 2010, 2011a; DAWR 2016a, 2017a; Department of Agriculture 2020). In those policies, the URE for *B. dorsalis* did not achieve the ALOP for Australia. Therefore, specific risk management measures are required for *B. dorsalis* on those pathways.

However, there may be differences in the commercial production practices, climatic conditions, fruit biology and/or pest prevalence between the previously assessed commodity/country pathways, and fresh kiwifruit from China. These potential differences make it necessary to assess the likelihood that *B. dorsalis* will arrive in Australia in a viable state on the fresh kiwifruit from China pathway.

Previous assessments for *B. dorsalis* in the existing policies rated the likelihood of distribution as High. Fresh kiwifruit from China are expected to be distributed in Australia in a similar way to the previously assessed commodity/country pathways. It is expected that once kiwifruit arrive in Australia from China, they will be distributed to various destinations throughout Australia for sale. Any surviving immature stages in kiwifruit may develop into adult fruit flies that are highly mobile and capable of flying to new hosts. *Bactrocera dorsalis* has a wide host range and there will likely be hosts present between spring and summer when kiwifruit are most likely to be imported into Australia. On this basis, the same rating of High for the likelihood of distribution for *B. dorsalis* in previous assessments is adopted for the fresh kiwifruit from China pathway.

The likelihoods of establishment and spread of *B. dorsalis* in Australia from the fresh kiwifruit from China pathway have also been assessed as similar to those of the previous assessments of High and High, respectively. Those likelihoods relate specifically to events that occur in Australia and are essentially independent of the import pathway. The consequences of entry, establishment and spread for *B. dorsalis* are also independent of the import pathway and have been assessed as being similar to the previous risk assessments of High. The existing ratings for the likelihoods of establishment and spread, and the rating for the overall consequences for *B. dorsalis* in previous assessments have been adopted for the fresh kiwifruit from China pathway.

In addition, the department has reviewed the latest literature—for example, Arya et al. (2024); Chen et al. (2023); Choi et al. (2020); Drew and Hancock (2022); Follett et al. (2019a); Guo, Chen and Zhao (2022); He, Xu and Chen (2024); Moquet et al. (2024); Mutamiswa et al. (2021); Ofori et al. (2023); Wijekoon, Duarte and Neto (2025); and Yu et al. (2022a). No new information has been identified that would significantly change the risk ratings for distribution, establishment, spread and consequences as set out for *B. dorsalis* in the existing policies.

The risk scenario of biosecurity concern is that eggs and/or larvae of *B. dorsalis,* may be present within fresh kiwifruit imported from China, which may result in the establishment and spread of the pest in Australia.

3.4.1 Likelihood of entry

The likelihood of entry is considered in 2 parts, the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that *B. dorsalis* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **Moderate**.

The likelihood of importation is assessed as Moderate because *B. dorsalis* is present in some kiwifruit production areas in China. Kiwifruit is generally considered a poor host for *B. dorsalis* but there is evidence that some cultivars can be significantly damaged. Infested immature fruit tend to develop visible damage and fungal infections around sting punctures, and in some cases, fruit rot and drop from the plant. However, infestation of mature kiwifruit, especially closer to the harvest, may not be readily visible during harvest and packing house processes, leading to infested fruit being cold-stored. Kiwifruit are generally cold-stored at 0°C to 1°C for up to several months prior to packing for export. Cold storage of fruit at these temperatures for a minimum of around 10 to 14 days is likely to

result in complete mortality of any eggs and larvae in fruit. However, shorter storage periods may not result in complete mortality of eggs and larvae. Fresh kiwifruit will be exported via sea or air freight. Sea freight consignments will be maintained at cold temperatures for at least 2 to 3 weeks during transit to Australia, which would impact on fruit fly survival. However, air freight consignments will be exported over approximately 1 day at higher temperatures that are more suitable for fruit fly survival and development.

The following information provides supporting evidence for this assessment.

Bactrocera dorsalis is present in parts of China and can be a pest of fresh kiwifruit.

- *Bactrocera dorsalis* is widespread in central, eastern, southern and southwestern regions of China (AQSIQ 2017; He, Xu & Chen 2024). Kiwifruit is commercially produced in these regions, including the provinces of Sichuan, Guizhou, Hunan, Hubei, Jiangxi, Zhejiang and Guangdong (GACC 2024). Sichuan, Guizhou, Hunan and Jiangxi provinces are the second to fifth largest kiwifruit producing provinces in China, respectively (Li, Huang & Zhong 2024).
- *Bactrocera dorsalis* is a quarantine pest for China and is under official control in areas above 33 degrees North where tephritid fruit fly pest free areas are maintained through China's National Fruit Fly Trapping Network (NFFTN) (AQSIQ 2007). *Bactrocera dorsalis* is absent from Shaanxi and Henan provinces, the largest and sixth largest kiwifruit production provinces in China, respectively (GACC 2024; Li, Huang & Zhong 2024).
- Although *B. dorsalis* is associated with fresh kiwifruit in China (Guo et al. 2023; He, Xu & Chen 2024; KVH 2022; WTO 2020), kiwifruit is generally considered a poor host for *B. dorsalis* (Follett, Haynes & Dominiak 2021; Follett et al. 2019a).
- However, there appear to be differences in the suitability or susceptibility of kiwifruit cultivars to *B. dorsalis*. Guo, Chen and Zhao (2022) reported that *B. dorsalis* is a major pest of Hongyang kiwifruit, a red-cored yellow flesh kiwifruit cultivar grown in China. In severe cases of infestation, significant economic losses resulted following kiwifruit drop rates of 50% or more (Guo et al. 2023).

In provinces where *B. dorsalis* is present, pest monitoring and management would reduce the risk of kiwifruit being infested with *B. dorsalis*.

- GACC regional staff guide and supervise managers of registered orchards in managing kiwifruit pests such as *B. dorsalis* (GACC 2024), which would reduce the risk of infestation in fruit at the time of harvest.
  - Mass trapping using the lure methyl eugenol is primarily used to reduce fruit fly populations and fruit damage.
  - Chemical controls such as bait sprays or cover sprays may be used to manage fruit flies.
  - Fruit bagging is conducted in some production provinces and for some cultivars of kiwifruit, and would reduce the likelihood of fruit being infested prior to harvest.
  - Cultural practices such as collection and disposal of fallen fruit would assist in managing the risk of fruit flies.
  - Male annihilation technique, which is an "attract and kill" strategy for male flies, may also be used to reduce male fly populations and therefore reduce mating opportunities for females.

Kiwifruit with clear signs of infestation would be detected and removed during harvest and/or postharvest processes. However, fruit with early stages of infestation may not be detected and may inadvertently be cold-stored for future packing and export.

- Infested kiwifruit showing clear signs of infestation, such as rotting associated with larval feeding, would be removed during harvest or postharvest practices.
- Fruit that have been oviposited in just prior to harvest may not show evident signs of infestation as oviposition stings on the fruit surface and early larval feeding can be difficult to detect (Duyck, Jourdan & Mille 2022; Ekman 2017). As a result, newly infested fruit may not be detected during post-harvest processes and may be cold-stored for later export.

Cold temperatures during storage and sea freight transport of kiwifruit are likely to halt fruit fly development and may cause complete mortality of any immature stages of *B. dorsalis* in fruit. However, immature stages in fruit may survive short periods of cold storage and air freight transport.

- Fresh kiwifruit for export are generally cold-stored at 0°C to 1°C for up to several months prior to being packed (GACC 2024).
  - Development will halt at 0℃ to 1℃ as the lower developmental threshold temperatures for eggs and larvae are 11°C to 12°C and 9°C to 11°C, respectively (Chen, Ye & Mu 2007; Danjuma et al. 2014; Dhillon et al. 2005; Liu et al. 2019b; Liu & Ye 2009; Michel et al. 2021; Vargas et al. 2000; Wijekoon, Duarte & Neto 2025).
  - A temperature of 0℃ to 1℃ is at, or below, typical cold disinfestation treatment temperatures for *B. dorsalis* (DAFF 2020; Dohino et al. 2017). Therefore, cold storage at 0℃ to 1℃ for longer periods of time, such as a minimum of around 10 to 14 days prior to export, is likely to cause complete mortality of any fruit fly eggs and/or larvae in fruit.
- However, kiwifruit may be imported into Australia after only short periods of cold storage, and therefore may not be exposed to cold temperatures for sufficient time to cause complete mortality of any immature stages in fruit.
- Kiwifruit may be transported to Australia via sea freight over a minimum of 2 to 3 weeks (Biosecurity Australia 2011a), during which kiwifruit are likely to be maintained at cold temperatures in refrigerated containers. During the voyage, fruit may be maintained at cold temperatures for a sufficient duration to cause complete mortality of any *B. dorsalis* eggs and/or larvae in fruit. However, eggs and/or larvae may survive if higher temperatures are maintained during the voyage.
- Alternatively, kiwifruit may be air freighted to Australia over approximately 1 day. While kiwifruit may be stored at cold temperatures prior to loading, fruit temperatures during air freight are likely to rise and be more variable during transit. For air freight consignments, any live *B. dorsalis* eggs and/or larvae in kiwifruit are likely to survive and continue developing due to the higher temperatures and short transit time.

For the reasons outlined, the likelihood of importation of *B. dorsalis* on imported kiwifruit from China is assessed as Moderate.

Likelihood of distribution

The likelihood that the assessed *B. dorsalis* will be distributed within Australia in a viable state as a result of the processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is likely to be similar to *B. dorsalis* on previously assessed pathways. The

same rating of **High** for the likelihood of distribution for *B. dorsalis* in previous assessments is adopted for kiwifruit from China.

Likelihood of entry

The likelihood of entry is determined as **Moderate** by combining the assessed likelihood of importation of Moderate with the adopted likelihood of distribution of High, using the matrix of rules in Table A.2.

3.4.2 Likelihoods of establishment and spread

The likelihoods of establishment and spread for the assessed *B. dorsalis* are independent of the import pathway and are considered similar to those in previously assessed pathways.

Based on the existing import policies for *B. dorsalis*, the likelihoods of establishment and spread are assessed as **High** and **High**, respectively.

3.4.3 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, of establishment and of spread using the matrix of rules in Table A.2.

The overall likelihood that *B. dorsalis* will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as **Moderate**.

3.4.4 Consequences

The potential consequences of the entry, establishment and spread of *B. dorsalis* in Australia are similar to those in the previously assessed pathways. The overall consequences in the previous assessments were assessed as High. The overall consequences for *B. dorsalis* on the kiwifruit from China pathway are also assessed as **High**.

3.4.5 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for *Bactrocera dorsalis*	
Overall likelihood of entry, establishment and spread	Moderate
Consequences	High
Unrestricted risk	**High**

The URE for *B. dorsalis* on the kiwifruit from China pathway is assessed as **High**, which does not achieve the ALOP for Australia. Therefore, specific risk management measures are required for *B. dorsalis* on this pathway.

3.5 Summer fruit tortrix

***Adoxophyes orana* (EP)**

Adoxophyes orana (summer fruit tortrix) belongs to the moth family Tortricidae and is an economic pest of a range of fruit crops including pome and stone fruit such as apple, pear and peach (CAES 2024; Davis, French & Venette 2005; DAWE 2021b; Gilligan & Epstein 2014b; Milonas & Savopoulou-Soultani 2006; PPQ 2024). *Adoxophyes orana* is reported to cause yield losses on host fruit trees of up to 10-80% (Davis, French & Venette 2005; Ma et al. 2023; Sun et al. 2014). *Adoxophyes orana* is a pest of kiwifruit in China (GACC 2024; Richardson, Burdon & Ferguson 2024).

Adoxophyes orana is widely distributed across Europe, China, Korea, Japan, Turkey and Russia (AgroAtlas 2009; CABI 2025; Gilligan & Epstein 2014a; Yasuda 1998). *Adoxophyes orana* is not present in Australia and is a quarantine pest for Australia.

Adoxophyes orana has 2-4 annual generations in China (Ma et al. 2023). *Adoxophyes orana* female adult moths lay eggs in masses of usually 20 to 150 eggs on the leaf or fruit and eggs are typically yellow to yellow-green in colour (Barel 1973; CAES 2024). First generation larvae emerging in summer feed on fruit, leaves and shoots of hosts (MAF Biosecurity New Zealand 2009; Subcommittee on Plant Health Diagnostics 2016), while later generation larvae mainly feed on fruit (MAF Biosecurity New Zealand 2009; Subcommittee on Plant Health Diagnostics 2016). Larvae feed on the surface of host fruit or inside the fruit by boring shallow holes and, in some cases in peach and apricot, by tunnelling into the fruit flesh and through to the seed (AgroAtlas 2009; Janssen 1958; MAF Biosecurity New Zealand 2009; PPQ 2024; Subcommittee on Plant Health Diagnostics 2016).

Larvae of *A. orana* enter diapause in response to shorter day lengths and lower temperatures, typically during –early to mid-autumn (Jo & Kim 2001). Third instar larvae generally enter diapause (Jo & Kim 2001; Milonas & Savopoulo-Soultani 1999; Milonas & Savopoulou-Soultani 2004), although some studies indicated second and fourth instars can also enter diapause (Barel 1973; CAES 2024; MAF Biosecurity New Zealand 2009; Milonas & Savopoulou-Soultani 2004). Diapausing larvae create small, white, silk-lined cocoons, or "hibernacula," often hidden under bud scales, in branch forks, or in bark cracks on their host trees. Diapausing larvae remain inactive in these cocoons to survive cold winter temperatures. Diapause ends in early spring (usually around March) (Koppert 2025), and the larvae re-emerge to feed on buds as temperatures rise (Jo & Kim 2001; Milonas & Savopoulo-Soultani 1999). Larvae complete five instars before pupating within a silk cocoon spun between leaves, twigs or shoots; inside crevices on trunks and branches; in mummified fruit attached with silk to a fruiting spur; or on developing fruit (AgroAtlas 2009; Davis, French & Venette 2005; Gilligan & Epstein 2014b; Koppert 2025).

The major dispersal mechanism of *A. orana* is through transportation of infested fruit and other plant parts (CABI 2025; PPQ 2024). Limited local dispersal by adult moths is also possible as adults have been reported to fly up to 427 m (PPQ 2024).

Adoxophyes orana has been assessed previously in a number of existing import policies, including for apples, pears, nectarines, plums, peaches and apricots from China; longans and lychees from China and Thailand; and lychees from Taiwan and Vietnam (AQIS 1998; Biosecurity Australia 2010; DAFF 2004a, 2013c; DAWR 2016a). In the policies for apples, pears, nectarines, plums, peaches and apricots from China, the UREs for *A. orana* did not achieve the ALOP for Australia. Therefore, specific

risk management measures are required for *A. orana* on those pathways. In the longan and lychee policies, the UREs for *A. orana* achieved the ALOP for Australia due to very low ratings for the likelihood of importation as the species is rarely associated with longan and/or lychee. Therefore, specific risk management measures are not required for *A. orana* on the longan and lychee pathways.

However, there may be differences in the commercial production practices, climatic conditions, fruit biology and/or pest prevalence between the previously assessed commodity/country pathways, and fresh kiwifruit from China. These potential differences make it necessary to assess the likelihood that *A. orana* will arrive in Australia in a viable state on the fresh kiwifruit from China pathway.

Previous assessments for *A. orana* in the existing policies rated the likelihood of distribution as Moderate. Fresh kiwifruit from China are expected to be distributed in Australia in a similar way to the previously assessed commodity/country pathways. It is expected that once kiwifruit arrive in Australia from China, they will be distributed to various destinations throughout Australia for sale. *Adoxophyes orana* is most likely to enter the environment through the disposal of infested fruit waste. Most fruit waste would likely be disposed of via managed municipal waste facilities reducing the risk of *A. orana* distributing to a host. However, small quantities may be discarded in urban, rural and natural environments. Eggs, larvae or pupae associated with discarded kiwifruit may develop into adults under suitable conditions and disperse to new hosts nearby. *Adoxophyes orana* has a wide host range and there will likely be hosts present between spring and summer when fresh kiwifruit are most likely to be imported into Australia. On this basis, the same rating of **Moderate** for the likelihood of distribution for *A. orana* in previous assessments is adopted for the fresh kiwifruit from China pathway.

The likelihoods of establishment and spread of *A. orana* in Australia from the fresh kiwifruit from China pathway have also been assessed as similar to those of the previous assessments of **High** and **High**, respectively. Those likelihoods relate specifically to events that occur in Australia and are essentially independent of the import pathway. The consequences of entry, establishment and spread for *A. orana* are also independent of the import pathway and have been assessed as being similar to the previous risk assessments of **Moderate**. The existing ratings for the likelihoods of distribution, establishment and spread, and the rating for the overall consequences for *A. orana* in previous assessments have been adopted for the fresh kiwifruit from China pathway.

In addition, the department has reviewed more recent literature—for example, Damos et al. (2022); Gilligan and Epstein (2014b); Ma et al. (2023); Pehlevan and Kovanci (2014); PPQ (2024); Subcommittee on Plant Health Diagnostics (2016); Sun et al. (2015); and Tsai et al. (2023). No new information has been identified that would significantly change the risk ratings for distribution, establishment, spread and consequences as set out for *A. orana* in the existing policies.

The risk scenario of biosecurity concern is that eggs, larvae and/or pupae of *A. orana,* may be present on fresh kiwifruit imported from China, which may result in the establishment and spread of this pest in Australia.

3.5.1 Likelihood of entry

The likelihood of entry is considered in 2 parts, the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that *A. orana* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **Low**.

Adoxophyes orana is a pest of kiwifruit in China. Eggs, larvae and pupae may be associated with fresh kiwifruit around the time of harvest. However, pest management practices are likely to reduce the prevalence of this moth in orchards and reduce the risk of fruit being infested at harvest. Infested fruit are likely to be detected and removed during harvest and post-harvest processes. Larval feeding on fruit results in visible damage, and associated silken webbing, webbed leaves and excrement may be apparent. Fruit with pupae are likely to be detected and removed as pupae are protected by a silk cocoon and often associated with leaves that are webbed to fruit. Eggs are generally laid in masses on leaves, but in the unlikely event they are laid on fruit, infested fruit are likely to be detected and removed as the egg masses are relatively conspicuous. Any eggs, non-diapausing larvae or pupae associated with exported kiwifruit may only survive short periods of cold temperatures during storage and transport. However, diapausing larvae could survive long term cold storage and transport.

The following information provides supporting evidence for this assessment.

Adoxophyes orana is widespread in China and is a pest of fresh kiwifruit.

- *Adoxophyes orana* is widely distributed in China (AQSIQ 2006b; CIQSA 2001; GACC 2024).
- *Adoxophyes orana* is a minor pest of kiwifruit in China (GACC 2024; Richardson, Burdon & Ferguson 2024). The species is known to damage leaves and fruit of kiwifruit in China (GACC 2024).
- First generation larvae emerging in summer feed on developing fruit, leaves and shoots of kiwifruit (MAF Biosecurity New Zealand 2009; Subcommittee on Plant Health Diagnostics 2016), while later generation larvae mainly feed on fruit (MAF Biosecurity New Zealand 2009; Subcommittee on Plant Health Diagnostics 2016). Eggs, larvae and/or pupae may be associated with fresh kiwifruit during the harvest period of late August to early November.

Commercial pest monitoring and management practices in China reduce the risk of infestation at the time of harvest.

- GACC regional office staff guide and supervise managers of registered orchards in managing kiwifruit pests such as *A. orana* (GACC 2024), which would reduce the risk of *A. orana* being on fruit at the time of harvest. Monitoring is conducted every two weeks throughout the growing season (GACC 2024).
- Pheromone traps are used to inform monitoring, management, and control measures such as pesticides applied when required (GACC 2024).
- Fruit of some kiwifruit cultivars and in some production areas are bagged, which may prevent the pest accessing the fruit to oviposit and feed.

Immature life stages of *A. orana* associated with fresh kiwifruit generally show clear signs of infestation on fruit, and as a result infested kiwifruit are likely to be detected and removed during harvest and/or postharvest processes.

- *Adoxophyes. orana* larvae tend to be conspicuous as they typically feed on the fruit surface under a webbed leaf and cause visible damage to the surface of the fruit (Gilligan & Epstein 2014a; Sullivan, Molet & Mackesy 2014). Hence, fruit infested by *A. orana* larvae are likely to be detected and removed.
- Pupation ocurs in webbed leaves or shoots that may be attached to fruit (AgroAtlas 2009; CABI 2025; Gilligan & Epstein 2014a; Meijerman & Ulenberg 2026). Although pupae may be associated with fruit, they are relatively conspicuous with a length of 8 to 13 mm (AgroAtlas 2009; UC IPM 2025) and often associated with obvious feeding damage to fruit and/or foliage webbed to fruit. As a result, any fruit with pupae are likely to be detected and removed during harvest and packing house processes.
- *Adoxophyes orana* lays eggs in masses of usually 20-150 eggs on leaves, shoots and, in outbreak conditions, on fruit (AgroAtlas 2009; Gilligan & Epstein 2014a; PPQ 2024). As *A. orana* is actively monitored and managed in commercial orchards (GACC 2024), outbreaks of the pest leading to egg masses on fruit are not likely to occur. However, in the unlikely event egg masses are on fruit at harvest, infested fruit are likely to be detected and removed during harvest and packing house processes as the yellow-green egg masses with scale-like overlapping layers of eggs (Janssen 1958; Whittle 1985) are relatively conspicuous.

Cold temperatures during storage and sea freight transport are likely to halt development and may cause complete mortality of any immature stages of *A. orana* in kiwifruit. Eggs, non-diapausing larvae and pupae on fruit are likely to survive only short periods of cold storage and air freight transport. Although diapausing larvae are not known to be associated with fruit, it is possible that larvae on fruit may be able to enter diapause and survive long term cold storage and transport.

- Kiwifruit for export are generally cold-stored at 0°C to 1°C for up to several months prior to being packed for export (GACC 2024).
  - Egg, larval and pupal development would cease as the lower temperature threshold for development of *A. orana* eggs and larvae is 7.2°C (Damos et al. 2022; Milonas & Savopoulou-Soultani 2006) and 10°C for pupae (Jo & Kim 2001; PPQ 2024).
  - Egg mortality is common at temperatures below 13°C to 14°C (PPQ 2024) and complete mortality of non-diapausing larvae and pupae was achieved after 12 and 18 days at 0°C and 5°C, respectively (Milonas & Savopoulo-Soultani 1999). Therefore, cold storage of fruit at 0°C to 1°C is likely to result in complete mortality of eggs, non-diapausing larvae and pupae, except in cases where fruit are only cold-stored for short periods of time.
  - Although diapausing larvae are not known to be associated with fruit, it is possible that larvae on harvested fruit may be in the early stages of entering diapause or able to enter diapause, especially given fruit may be harvested during the autumn months of September and October when larvae typically enter diapause (Jo & Kim 2001). Diapausing larvae of *A. orana* have been reported to be able to tolerate freezing temperatures (Jo & Kim 2001). Constant exposure of diapausing larvae to -5°C resulted in 63.1% mortality after a period of 30 days. In contrast, 100% mortality of non-diapause larvae was recorded after only 6 days at -5°C (Milonas & Savopoulo-Soultani 1999). Therefore, any diapausing larvae on fruit may be able to survive long periods of fruit cold storage.
- Kiwifruit may be transported to Australia via sea freight over a minimum of 2 to 3 weeks (Biosecurity Australia 2011a), during which kiwifruit are likely to be maintained at cold temperatures in refrigerated containers. During the voyage, fruit may be maintained at cold temperatures for a sufficient duration to cause complete mortality of non-diapausing larvae, pupae and eggs, but diapausing larvae may be able to survive.

- Alternatively, kiwifruit may be air freighted to Australia over approximately 1 day. While kiwifruit may be stored at cold temperatures prior to loading, fruit temperatures during air freight are likely to rise and be more variable during transit. For air freight consignments, any immature stages of *A. orana* that survived pre-export cold storage of fruit are likely to survive air freight due to the higher temperatures and much shorter transit time.

For the reasons outlined, the likelihood of importation of *A. orana* on imported kiwifruit from China is assessed as Low.

Likelihood of distribution

The likelihood that the assessed *A. orana* will be distributed within Australia in a viable state as a result of the processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is likely to be similar to *A. orana* on previously assessed pathways. The same rating of **Moderate** for the likelihood of distribution for *A. orana* in previous assessments is adopted for kiwifruit from China.

Likelihood of entry

The likelihood of entry is determined as **Low** by combining the assessed likelihood of importation of Low with the adopted likelihood of distribution of Moderate, using the matrix of rules in Table A.2.

3.5.2 Likelihoods of establishment and spread

The likelihoods of establishment and spread for the assessed *A. orana* is independent of the import pathway and are considered similar to those in previously assessed pathways.

Based on the existing import policies for *A. orana*, the likelihoods of establishment and spread are assessed as **High** and **High**, respectively.

3.5.3 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, of establishment and of spread using the matrix of rules in Table A.2.

The overall likelihood that *A. orana* will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as **Low**.

3.5.4 Consequences

The potential consequences of the entry, establishment and spread of *A. orana* in Australia are similar to those in the previously assessed pathways. The overall consequences in the previous assessments were assessed as Moderate. The overall consequences for the assessed *A. orana* on the kiwifruit from China pathway are also assessed as **Moderate**.

3.5.5 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for *Adoxophyes orana*	
Overall likelihood of entry, establishment and spread	Low
Consequences	Moderate
Unrestricted risk	**Low**

The URE for *A. orana* on the kiwifruit from China pathway is assessed as **Low**, which does not achieve the ALOP for Australia. Therefore, specific risk management measures are required for *A. orana* on this pathway.

3.6 European grapevine moth

***Lobesia botrana* (EP)**

Lobesia botrana (European grapevine moth) is a polyphagous species in the family Tortricidae (Thiéry & Desneux 2018). *Lobesia botrana* is native to parts of Europe (ADW 2025) but has spread to Mediterranean regions of Europe, Asia, southern Russia, the Middle East, northern and western Africa, and South America (Argentina and Chile) (Altimira et al. 2022; Gutierrez et al. 2012; Simmons et al. 2021; USDA-APHIS 2010). The species is a recent incursion in China, with first reports in the city of Turpan in the Xinjiang province in 2014, and it has since spread to most areas of Turpan (Wang & Satter 2023). *Lobesia botrana* has been reported to damage kiwifruit in southern Italy (Moleas 1988; Richardson, Burdon & Ferguson 2024) and Japan (KVH 2022). There are no reports of damage to kiwifruit by *L. botrana* in China, but there is only limited commercial kiwifruit production in Turpan.

Lobesia botrana is not present in Australia and is a quarantine pest for Australia.

Grapes (*Vitis vinifera*) and spurge laurel (*Daphne gnidium*) are preferred hosts of *L. botrana*, but the species can also attack over 40 plant species belonging to 27 families including blackberry (*Rubus fruticosus*), gooseberry and currants (*Ribes* spp.), olive (*Olea europaea*), cherry (*Prunus avium*), plum (*Prunus domestica*), persimmon (*Diospyrus kaki*), kiwifruit (*Actinidia chinensis*), pomegranate (*Punica granatum*) and carnation (*Dianthus* spp.) (Gilligan & Epstein 2014a; Gutierrez et al. 2012; Ioriatti et al. 2011; Simmons et al. 2021; Venette et al. 2003). Kiwifruit has been listed as a minor or secondary host for *L. botrana* (APHIS 2012).

Lobesia botrana has four life stages: egg, larva, pupa and adult. Eggs are typically laid singly and more rarely in groups of 2 to 3 eggs on leaves, but can be laid on fruit (Benelli et al. 2023a; Varela 2010). Eggs hatch 7 to 11 days after oviposition (Benelli et al. 2023a; Varela 2010) and go through 5 larval instars (Altimira et al. 2022; Benelli et al. 2023a). Pupation occurs inside a silken cocoon, which can be located on the flower cluster, under the bark, in soil cracks, or within fallen leaves (CFIA 2014; Sullivan & Molet 2014). Short-day photoperiods (between 8 and 12 hours) during the larval stage induce diapause in larvae that later expresses in pupae. The pupal stage during winter undergoes diapause for about 90 days, which allows the insect to survive cold temperatures (CFIA 2014; Sullivan & Molet 2014). During spring and summer, the pupal stage is shorter, lasting about 6 to 14 days, depending on temperature (Balduque-Gil et al. 2023; Benelli et al. 2023a).

The species undergoes 2 to 5 generations per year (Ioriatti et al. 2011; Simmons et al. 2021; Venette et al. 2003), with 5 generations per year reported in Turpan, China (Wang & Satter 2023). The number of generations is largely determined by day length and temperature (Benelli et al. 2023a), with more generations in warmer areas than in colder areas (Venette et al. 2003). Factors such as photoperiod, humidity and food quality can also influence the number of generations (Rank et al. 2020; Simmons et al. 2021; Thiéry & Moreau 2005). For many crops fruiting during summer, the later generations are the most damaging as the larvae feed directly on fruit.

There is limited information on feeding damage to fresh kiwifruit by *L. botrana*. In Italy, Moleas (1988) reported larval feeding on kiwifruit to cause hollows and/or holes in the fruit, which is consistent with damage caused by this species to other fruit (Cozzi et al. 2013; Fermaud & Le Menn 1992; Iltis et al. 2020; Ioriatti et al. 2011).

Lobesia botrana has been assessed previously in the import policy for persimmon fruit from Japan, Korea and Israel (DAFF 2004b), in which the URE for *L. botrana* did not achieve the ALOP for Australia. Therefore, specific risk management measures are required for *L. botrana* on those pathways. The previous assessment for *L. botrana* was conducted over 20 years ago at a time when information on the species was more limited. Since that time, the pest has spread to several new countries, resulting in a number of new scientific publications on the species. As a result, a full pest risk assessment has been conducted for *L. botrana* on the fresh kiwifruit from China pathway.

The risk scenario of biosecurity concern is that *L. botrana* eggs or larvae may be present on imported kiwifruit from China.

3.6.1 Likelihood of entry

The likelihood of entry is considered in 2 parts: the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that *L. botrana* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **Low**.

The likelihood of importation is assessed as Low because *L. botrana* has a limited distribution in China and is being actively managed by government and industry, although large parts of southern and central China are suitable for the pest to spread. Kiwifruit is a minor host, and eggs and larvae may be present on fruit at the time of harvest. Larval feeding on fruit generally results in visible symptoms, such as excrement and visible feeding holes, and therefore infested fruit are likely to be detected and removed during harvest and/or post-harvest processes. However, eggs and early-stage larvae may not be detected leading to infested fruit being packed and exported. Eggs and larvae on kiwifruit may survive cold temperatures during storage and transport.

The following information provides supporting evidence for this assessment.

Lobesia botrana has a limited distribution in China and kiwifruit is a host.

- *Lobesia botrana* was first reported in the city of Turpan in Xinjiang province in 2014, and has since spread to most areas of Turpan (Wang & Satter 2023).
- Most parts of central and southern China are climatically suitable for the species (Lv et al. 2012), indicating there is potential for the species to spread.
- However, there are no reports of spread outside Turpan and natural spread is unlikely as a result of the area's arid desert climate (Domrös & Gongbing 1988).
- *Lobesia botrana* remains a quarantine pest for China and is under official control to prevent spread of *L. botrana* from Turpan to the rest of China (MOA 2022). Control measures include restrictions on movement of infested plant materials from Turpan to other parts of China, and monitoring and surveillance in areas where this pest is absent (GACC 2026).
- Kiwifruit is a minor host of *L. botrana* (Mundoagro 2025), with reports of damage to fresh kiwifruit in southern Italy (Moleas 1988; Richardson, Burdon & Ferguson 2024) and Japan (KVH 2022).

- There are no reports of damage to kiwifruit by *L. botrana* in China, but there is only limited commercial kiwifruit production in Turpan.

Lobesia botrana eggs and larvae could be present on kiwifruit at the time of harvest.

- *Lobesia botrana* undergoes multiple generations per year, with 5 generations a year reported in Turpan, China (Wang & Satter 2023).
- Although *L. botrana* generally lays eggs on leaves, the species has been reported to lay eggs on fruit of some species, including *Vitis* spp. (Altimira et al. 2022; Balduque-Gil et al. 2023; Garinie et al. 2025; Rank et al. 2020; Venette et al. 2003). No evidence of *L. botrana* laying eggs on fruit of *Actinidia* spp. was found.
- Larvae feed on flowers and fruit of kiwifruit, with later generations of larvae feeding on fruit (KVH 2022; Moleas 1988).
- As *L. botrana* undergoes multiple annual generations, larvae and eggs may be present on fresh kiwifruit during the harvest period in China from August to November.

Pest monitoring and management would reduce the risk of harvested kiwifruit being infested with *L. botrana*.

- In areas of China where this pest occurs, GACC regional staff guide and supervise orchard managers to monitor and manage kiwifruit pests such as *L. botrana* (GACC 2024), which would reduce the risk of *L. botrana* being on fruit at the time of harvest. Monitoring is conducted every two weeks throughout the growing season and control measures such as pesticides are applied when required.
- Pheromone traps are used to inform monitoring and management and control measures such as pesticides are applied when required (GACC 2024).
- Fruit of some kiwifruit cultivars and in some production areas are bagged, which may prevent the pest accessing the fruit to oviposit and feed.

Harvest and post-harvest procedures are likely to remove visibly damaged and infested kiwifruit, but may not detect and remove fruit infested with *L. botrana* eggs and early-stage larvae.

- There is limited information on feeding damage to fresh kiwifruit by *L. botrana*, but damage to kiwifruit in Italy resulted in visible hollows and holes in fruit (Moleas 1988), which is similar to damage reported for other fruits (Altimira et al. 2022; Blueberries Consulting 2015). Infested kiwifruit may also be infected by secondary pathogens such as fungi and show signs of rotting as occurs in grapes (Cozzi et al. 2013; Fermaud & Le Menn 1992; Iltis et al. 2020; Ioriatti et al. 2011; Wang & Satter 2023).
- Fresh kiwifruit infested by late-stage larvae are likely to show visible feeding damage and be detected and removed during harvest and post-harvest procedures.
- However, eggs and early instar larvae of *L. botrana* on fresh kiwifruit may not be detected during harvest and post-harvest procedures due to their small size and limited signs of damage and, as a result, infested fruit may be cold-stored for later packing and export.

Non-diapausing larvae and eggs of *L. botrana* may be able to survive short periods of cold temperatures during storage and transport of kiwifruit to Australia.

- After sorting and grading in the packing house, kiwifruit are generally cold-stored at 0°C to 1°C for up to several months before they are packed for export (GACC 2024).

- Development of *L. botrana* eggs and larvae would cease at these low temperatures based on the lower development threshold of 8°C to 10°C for eggs and larvae (Briere & Pracos 1998).
- Cold temperatures during storage are likely to affect survival because mortality of *L. botrana* eggs and larvae increases at temperature below 10°C (Gutierrez et al. 2012; Rank et al. 2020).
- Although, there are no data on survival of immature stages of *L. botrana* at temperatures of 0°C to 1°C, some eggs and/or larvae may survive cold storage, especially for short storage periods.
- Kiwifruit may be transported to Australia via sea freight over a minimum of 2 to 3 weeks (Biosecurity Australia 2011a), during which kiwifruit are likely to be maintained at cold temperatures in refrigerated containers. During the voyage, fruit may be maintained at cold temperatures for a sufficient duration to cause high levels of mortality of eggs and larvae of *L. botrana*.
- Alternatively, kiwifruit may be air freighted to Australia over approximately 1 day. While kiwifruit may be stored at cold temperatures prior to loading, fruit temperatures during air freight are likely to rise and be more variable during transit. Any immature stages of *L. botrana* that survived pre-export cold storage of fruit are likely to survive air freight due to the higher temperatures and much shorter transit time.

For the reasons outlined, the likelihood that *L. botrana* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as Low.

Likelihood of distribution

The likelihood that *L. botrana* will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as: **Moderate**.

The likelihood of distribution is assessed as Moderate because infested fruit or fruit waste may be discarded near potential hosts, and eggs and larvae may be able to successfully develop into adults that disperse to a new host. Although adult moths can fly, they are not reported to fly long distances which would limit their ability to disperse to a suitable host. Distribution to a new host is more likely to occur in southern Australia where suitable hosts and climatic conditions are more prevalent. Northern Australia is not likely to be suitable for distribution of the pest due to limited host availability and less suitable climate.

The following information provides supporting evidence for this assessment.

Kiwifruit imported from China will likely be distributed throughout Australia for wholesale and retail sale. Prior to sale, fruit are likely to be stored and transported at cold temperatures for a short period of time, and any immature stages of *L. botrana* on fruit may be able to survive.

- The intended end use for imported fresh kiwifruit is human consumption. Fresh kiwifruit without obvious signs of infestation could potentially be distributed via the wholesale and retail trade pathway.
- Cold temperature of around 0°C to 1°C (BMT 2025) may be used to store and transport kiwifruit within Australia. Cold temperatures during storage and transport within Australia are likely to adversely affect the viability of eggs and larvae (Gutierrez et al. 2012; Rank et al. 2020). However, some eggs and larvae may survive short exposure times to cold temperatures (Amozegarfard et al. 2023; Rank et al. 2020; Reineke & Thiéry 2016). Any surviving eggs and

larvae would not develop at these temperatures as the lower development threshold is 8°C to 10°C for eggs and larvae (Briere & Pracos 1998).

- Once in retail stores, fruit are likely to be kept at room temperature for some of the time, which could allow any surviving *L. botrana* to resume development.
- Infested fruit that begin to show damage prior to sale are likely to be removed and discarded into managed waste systems where host plants are generally not available.

After sale of fruit to consumers, any surviving eggs and larvae on fruit may be able to pupate and develop into adults and reach a new host. Distribution to a new host plant is more likely to occur in southern Australia where suitable hosts for *L. botrana* are widely available.

- Imported kiwifruit from China are likely to be mainly available for purchase in Australia from August when harvest commences to around March when imports of cold-stored fruit are likely to stop.
- Fruit that are purchased by consumers may be stored in refrigerated conditions or at ambient temperature prior to consumption.
- While development and survival of any eggs and larvae on fruit would be impacted at cold temperatures, ambient temperatures during those months are likely to be suitable for development and survival of *L. botrana*.
- *Lobesia botrana* is most likely to enter the external environment through the disposal of infested fruit or fruit waste.
- Most fruit waste would likely be disposed of via municipal waste facilities (Pickin et al. 2022) where host plants are generally not available.
- However, consumers may discard small quantities of fruit waste in a variety of urban, rural and natural environments.
- Some of this waste could be discarded near suitable host plants, including grapes, spurge laurel, berries and stone fruit, which are widely grown in southern parts of Australia and less commonly grown in northern Australia. Eggs and/or larvae in infested fruit waste may be able to complete development and emerge as adults to distribute to a new host.

Although adult *L. botrana* moths are capable of flying, they can only fly short distances, which would limit their ability to find suitable new hosts.

- Adult *L. botrana* moths have been reported to fly up to 155 m in a single flight (Simmons et al. 2021), but usually do not actively disperse more than 80 to 100 m during their lifetime (Benelli et al. 2023a; Benelli et al. 2023b). Longer distances may be possible where flight is assisted by wind (Benelli et al. 2023a; Benelli et al. 2023b).
- Adult female moths would need to emerge near suitable host plants and near adult male moths to ensure successful mating and oviposition on a suitable host plant.

For the reasons outlined, the likelihood that *L. botrana* will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as Moderate.

Likelihood of entry

The likelihood of entry is determined by combining the likelihood of importation with the likelihood of distribution using the matrix of rules shown in Table A.2.

The likelihood that *L. botrana* will enter as a result of trade in kiwifruit from China and be distributed in a viable state to a susceptible part of a host is assessed as: **Low**.

3.6.2 Likelihood of establishment

The likelihood that *L. botrana* will establish within Australia based on a comparison of factors in the source and destination areas that affect pest survival and reproduction is assessed as: **High**.

The likelihood of establishment is assessed as High because there are a range of suitable hosts and climatic conditions for *L. botrana* across southern Australia. Northern parts of Australia are likely to be less suitable or not suitable for establishment of *L. botrana* due to limited host plant availability and lower climatic suitability. Establishment would be assisted by the pest's ability to undergo multiple generations and survive cold winter conditions through pupal diapause.

The following information provides supporting evidence for this assessment.

Establishment of *L. botrana* is more likely to occur in southern Australia where suitable host plants and climatic conditions occur.

- *Lobesia botrana* is a polyphagous species that has a range of host plants, including the preferred hosts grapes and spurge laurel, and other hosts such as berries and stone fruit (APHIS 2012; CFIA 2014; Sullivan & Molet 2014).
- These host plants are generally grown in temperate climates, and are therefore more widely distributed throughout southern Australia than in northern Australia where tropical and subtropical climates predominate.
- *Lobesia botrana* is also more likely to establish in southern parts of Australia where more suitable temperate climatic conditions occur.
  - *Lobesia botrana* is found in Mediterranean regions of Europe, Asia, southern Russia, the Middle East, northern and western Africa, and South America (Argentina and Chile) (Altimira et al. 2022; Gutierrez et al. 2012; Simmons et al. 2021; USDA-APHIS 2010). Parts of Australia, especially the southern regions of Australia, have climates similar to these regions, suggesting that *L. botrana* has the potential to establish and spread in Australia.
  - Climate modelling has shown that southern parts of Australia are predicted to be more suitable for the pest due to climatic suitability and availability of key hosts such as grapes (Rank et al. 2020). Northern parts of Australia are likely to be less suitable or not suitable for establishment of *L. botrana* due to limited host plant availability and lower climatic suitability.

Lobesia botrana has biological traits that may assist establishment in new areas.

- *Lobesia botrana* produces 2 to 5 generations per year depending on climatic conditions (Simmons et al. 2021; Venette et al. 2003; Wang & Satter 2023) and this is also likely to be the case under Australian conditions.
- Diapausing pupae of *L. botrana* are cold tolerant (Andreadis, Milonas & Savopoulos-Soultani 2005), which may assist the species establishing in parts of Australia that have cold winters.

For the reasons outlined, the likelihood that *L. botrana* will establish within Australia is assessed as High.

3.6.3 Likelihood of spread

The likelihood that *L. botrana* will spread within Australia, based on a comparison of factors in the source and destination areas that affect the expansion of the geographic distribution of the pest, is assessed as: **Moderate**.

The likelihood of spread is assessed as Moderate because hosts of *L. botrana* are abundant and climatic conditions are favourable across large parts of southern Australia. While adults are unlikely to fly long distances, movement of infested host fruit and host plants could promote further spread across southern Australia. Northern parts of Australia are likely to be less suitable or not suitable for spread of *L. botrana* due to limited host plant availability and lower climatic suitability.

The following information provides supporting evidence for this assessment.

Spread of *L. botrana* is more likely to occur in southern Australia where suitable host plants and climatic conditions occur. Northern parts of Australia are likely to be less suitable or not suitable for spread of *L. botrana* due to limited host plant availability and lower climatic suitability.

- *Lobesia botrana* larvae are reported to feed and develop on a wide range of commercial, ornamental and wild host plants (Gilligan & Epstein 2014a; Gutierrez et al. 2012; Ioriatti et al. 2011; Simmons et al. 2021; Venette et al. 2003).
- These include the preferred hosts grapes and spurge laurel, and other hosts such as berries and stone fruit (APHIS 2012; CFIA 2014; Sullivan & Molet 2014) which are widely distributed in southern Australia, but less abundant in northern parts of Australia.
- *Lobesia botrana* occurs in Asia, southern Russia, the Middle East, northern and western Africa, South America and the Mediterranean regions of Europe (Altimira et al. 2022; Gutierrez et al. 2012; Simmons et al. 2021; USDA-APHIS 2010; Wang & Satter 2023). Many of these regions have similar climatic conditions to parts of Australia, especially southern parts of Australia.
- If *L. botrana* was to establish, the climatic conditions in parts of southern Australia would likely be suitable for the spread of this pest. Northern parts of Australia are likely to be less suitable or not suitable for spread of *L. botrana* due to limited host plant availability and lower climatic suitability.

Natural spread of *L. botrana* in Australia may be limited due to natural barriers and the short flight capacity of adult moths. However, domestic movement of infested host fruit and host plants could aid the spread of *L. botrana* in Australia.

- Adult *L. botrana* moths have been reported to fly up to 155 m in a single flight (Simmons et al. 2021), but usually do not actively disperse more than 80 to 100 m during their lifetime unless assisted by wind (Benelli et al. 2023a; Benelli et al. 2023b), and.
- Natural spread of the species may be limited in some parts of southern Australia due to the long distances between horticultural production areas and interconnecting regions that are largely arid with few potential hosts for *L. botrana*.
- Domestic trade of infested host fruit and host plants such as grapes may aid the spread of *L. botrana*.

For the reasons outlined, the likelihood that *L. botrana* will spread within Australia is assessed as Moderate.

3.6.4 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, establishment and spread using the matrix of rules in Table A.2.

The overall likelihood that *L. botrana* will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as: **Low.**

3.6.5 Consequences

The potential consequences of the establishment of *L. botrana* in Australia have been estimated according to the methods described in Figure A.1.

Based on the decision rules described in Table A.3, that is, where the potential consequences of a pest with respect to one or more criteria are 'E', the overall consequences are estimated to be **Moderate.**

Criterion	Estimate and rationale
Direct	
Plant life or health	E – Significant at regional level: The primary commercially grown host of *L. botrana* is grape (Altimira et al. 2022; Ioriatti et al. 2011). The pest has also been recorded to feed and develop on a wide variety of host plants including kiwifruit, cherry, berries, stone fruit and persimmon (Gilligan & Epstein 2014a; Gutierrez et al. 2012; Ioriatti et al. 2011; Simmons et al. 2021; Venette et al. 2003). *Lobesia botrana* larvae are capable of causing direct feeding damage to host plants and fruit. Larvae of *L. botrana* have been known to cause serious damage to grapes (Altimira et al. 2022; Ioriatti et al. 2011; Simmons et al. 2021). Severe fruit damage occurs when larval densities are high and the damaged fruit become infected by fungi (Cozzi et al. 2013; Fermaud & Le Menn 1992). Australia's wine and table grape industries are valued at $40 billion and $751.6 m respectively (Hort Innovation 2025a; Wine Australia 2023). Other important Australian horticultural industries that could be impacted by this pest include kiwifruit, berries, persimmon cherry and stone fruit.
Other aspects of the environment	B— Unlikely to be discernible at the district level: There are currently no known direct consequences of *L. botrana* on other aspects of the natural environment, but its introduction into a new environment may lead to some competition for resources with native species.
Indirect	
Eradication, control	E– Significant at regional level: Any eradication program for this pest is likely to be costly and may disrupt existing integrated pest management (IPM) and other pest management programs for other pests in Australia because of the need to re-introduce or increase the use of insecticides for the control of *L. botrana*. Programs to contain, eradicate, and/or minimise the impact of *L. botrana* on host plants may include visual inspection, population monitoring, biological control, pheromone trapping and pesticide application (Benelli et al. 2023a; Benelli et al. 2023b; GACC 2024; Simmons et al. 2021). *Lobesia botrana* was detected in Napa County, California, USA in 2009 and in 2016 it was successfully eradicated from all previously infested areas in California at a cost of over US$105 million (Hendrichs, Pereira & Vreysen 2021; Vinehealth Australia 2017). Adult *L. botrana moths* have been reported to only fly short distances of up to 155 m in a single flight (Simmons et al. 2021), but usually do not actively disperse more than 80 to 100 m during their lifetime unless assisted by wind

	(Benelli et al. 2023a; Benelli et al. 2023b). Due to the limited dispersal capacity of adults, eradication efforts may be able to be concentrated to limited geographical areas, increasing the likelihood of eradication success. Australia's existing pest management practices using insecticides (e.g., methidathion, indoxacarb) for similar lepidopteran pests (Sutton, Collie & Learmonth 2014) may be effective at controlling *L. botrana*. However, additional applications may be necessary.
Domestic trade	E – Significant at regional level: The presence of *L. botrana* in commercial fruit production areas of Australia may result in interstate trade restrictions of these commodities, potential loss of markets and significant industry adjustment at the regional level. Domestic trade of nursery stock hosts may also be affected.
International trade	E – Significant at regional level: In 2024, Australia exported approximately 107,315 tonnes of table grapes (Hort Innovation 2025a) and lesser volumes of other host fruits such as berries, cherries and summer fruit (Hort Innovation 2025a). The presence of *L. botrana* in commercial production areas of host commodities may affect access to international markets where this pest is not present. Trading partners may impose additional import requirements to manage the risk of *L. botrana*. International trade of nursery stock hosts may also be affected.
Non-commercial and environmental	B— Unlikely to be discernible at the district level Although additional pesticide applications or other control activities may be required to control *L. botrana* on susceptible crops, this increase is unlikely to substantially change the current impact of pesticides on the local environment.

3.6.6 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for *Lobesia botrana*	
Overall likelihood of entry, establishment and spread	Low
Consequences	Moderate
Unrestricted risk	**Low**

The URE for *L. botrana* on the fresh kiwifruit from China pathway is assessed as **Low**, which does not achieve the ALOP for Australia. Therefore, specific risk management measures are required for *L. botrana* on this pathway.

3.7 Mealybugs

***Planococcus minor* (GP, WA), *Pseudococcus calceolariae* (GP, WA) and *P. maritimus* (GP)**

Three mealybug species were identified on the fresh kiwifruit from China pathway as quarantine pests for Australia: *Planococcus minor, Pseudococcus calceolariae* and *Pseudococcus maritimus* (Table 3.2).

Pseudococcus maritimus is not present in Australia and is identified as a quarantine pest for Australia. *Planococcus minor* and *P. calceolariae* are not present in Western Australia and are identified as regional quarantine pests for that state.

The indicative likelihood of entry for all quarantine mealybugs is assessed in the mealybugs Group PRA as Moderate (DAWR 2019), which is comprised of indicative likelihoods of importation and distribution of High and Moderate, respectively. *Planococcus minor*, *Pseudococcus calceolariae* and *P. maritimus* are reported from China and are associated with fresh kiwifruit (EPPO 2024; GACC 2024; García Morales et al. 2024; Li, Wang & Waterhouse 1997a). Commercial production and export processes are not expected to eliminate these mealybugs on the fresh kiwifruit from China pathway. After assessment of relevant pathway-specific factors (outlined in sections A2.6 and A2.7) for fresh kiwifruit from China, the likelihood of entry of Moderate was verified as appropriate for these mealybug species on this pathway (Table 3.2).

Table 3.2 Quarantine mealybug species for kiwifruit from China

Pest	In mealybugs Group PRA	Quarantine pest	On fresh kiwifruit pathway	Likelihood of entry
Planococcus minor	Yes	Yes (WA)	Yes	Moderate
Pseudococcus calceolariae	Yes	Yes (WA)	Yes	Moderate
Pseudococcus maritimus	Yes	Yes	Yes	Moderate

WA: Regional quarantine pest for Western Australia.

As outlined in sections A2.6 and A2.7, the risk factors considered in the likelihoods of establishment and spread, and the potential consequences associated with a pest species, are independent of the import pathway. Therefore, the assessments for the likelihoods of establishment (High) and spread (High) and the potential consequences (Low) have been adopted from the mealybugs Group PRA.

A summary of the risk assessment for quarantine mealybugs is presented in Table 3.3 for convenience.

Table 3.3 Risk estimates for quarantine mealybugs

Risk component	Rating for quarantine mealybugs
Likelihood of entry (importation x distribution)	Moderate (High x Moderate)
Likelihood of establishment	High
Likelihood of spread	High
Overall likelihood of entry, establishment and spread	Moderate
Consequences	Low
Unrestricted risk	**Low**

As assessed in the mealybugs Group PRA, the indicative URE for mealybugs is Low (Table 3.3) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for all quarantine mealybugs present on the fresh kiwifruit from China pathway. Therefore, specific risk management measures are required for the quarantine mealybugs on this pathway.

In the mealybugs Group PRA, viruses of biosecurity concern transmitted by mealybugs were assessed to have an 'indicative' URE of 'Very Low' for plant import pathways, including the fresh fruit pathway. This is because mealybugs can only transmit viruses for a short period of time (semi-persistent transmission) and these viruses also have a limited host range compared to their mealybug vectors. These biological factors make it very unlikely for the viruses vectored by mealybugs on imported fresh fruit to be transmitted to a suitable host plant in Australia. The URE of 'Very Low' achieves the ALOP for Australia, therefore, no specific risk management measures are required for the viruses transmitted by mealybugs on this pathway.

This risk assessment, which is based on the mealybugs Group PRA, applies to all quarantine mealybugs on the kiwifruit from China pathway, irrespective of their specific identification in this document. This is explained in section A2.7.

3.8 Scales

***Parlatoria pergandii* (GP, WA), *Parthenolecanium corni* (GP, WA) and *Pseudaulacaspis pentagona* (GP, WA)**

Three scale insect species were identified on the kiwifruit from China pathway as quarantine pests for Australia: *Parlatoria pergandii, Parthenolecanium corni* and *Pseudaulacaspis pentagona* (Table 3.4).

Parlatoria pergandii, Parthenolecanium corni and *Pseudaulacaspis pentagona* are not present in Western Australia and are identified as regional quarantine pests for that state.

The indicative likelihood of entry for all quarantine scale species is assessed in the scales Group PRA as Moderate (DAWE 2021a), which is comprised of indicative likelihoods of importation and distribution of High and Moderate, respectively. *Parlatoria pergandii*, *Parthenolecanium corni* and *Pseudaulacaspis pentagona* are reported from China and are associated with fresh kiwifruit (GACC 2024; García Morales et al. 2024; Güncan 2015; WTO 2020). Commercial production and export processes are not expected to eliminate these scale insect species on the fresh kiwifruit from China pathway. After assessment of relevant pathway-specific factors (outlined in sections A2.6 and A2.7) for fresh kiwifruit from China, the likelihood of entry of Moderate was verified as appropriate for these scale species on this pathway (Table 3.4).

Table 3.4 Quarantine scale insect species for kiwifruit from China

Pest	In scales Group PRA	Quarantine pest	On fresh kiwifruit pathway	Likelihood of entry
Parlatoria pergandii	Yes	Yes (WA)	Yes	Moderate
Parthenolecanium corni	Yes	Yes (WA)	Yes	Moderate
Pseudaulacaspis pentagona	Yes	Yes (WA)	Yes	Moderate

WA: Regional quarantine pest for Western Australia.

As outlined in sections A2.6 and A2.7, the risk factors considered in the likelihoods of establishment and spread, and the potential consequences associated with a pest species, are independent of the import pathway. Therefore, the assessments for the likelihoods of establishment (High) and spread (High) and the potential consequences (Low) have been adopted from the scales Group PRA.

A summary of the risk assessment for quarantine scales is presented in Table 3.5 for convenience.

Table 3.5 Risk estimates for quarantine scale insects

Risk component	Rating for quarantine scales
Likelihood of entry (importation x distribution)	Moderate (High x Moderate)
Likelihood of establishment	High
Likelihood of spread	High
Overall likelihood of entry, establishment and spread	Moderate
Consequences	Low
Unrestricted risk	**Low**

As assessed in the scales Group PRA, the indicative URE for scale insects is Low (Table 3.5) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for the quarantine scale insects present on the fresh kiwifruit from China pathway. Therefore, specific risk management measures are required for the quarantine scales on this pathway.

This risk assessment, which is based on the scales Group PRA, applies to all quarantine scale insects on the kiwifruit from China pathway, irrespective of their specific identification in this document. This is explained in section A2.7.

3.9 Spider mites

***Amphitetranychus viennensis* (GP) and *Eotetranychus kankitus* (GP)**

Two spider mite species on the fresh kiwifruit from China pathway, *Amphitetranychus viennensis* and *Eotetranychus kankitus*, are not present in Australia and are identified as quarantine pests for Australia (Table 3.6).

Amphitetranychus viennensis and *E. kankitus* belong to the family Tetranychidae. All members of Tetranychidae are commonly referred to as spider mites or tetranychids.

The biosecurity risk posed by spider mites was re-assessed by the department in the *Final report for a review of pest risk assessments for spider mites (Acari: Trombidiformes: Tetranychidae)* (spider mites Group PRA) (DAFF 2024a). The spider mites Group PRA examined and evaluated all previous pest risk assessments conducted by the department on species of Tetranychidae. The PRA concluded that those spider mite species share several biological characteristics relevant to biosecurity risk and are expected to pose similar risk, with similar likelihoods of entry, establishment and spread, and with comparable overall consequences.

The spider mites Group PRA recommends that a likelihood rating of High for establishment, a likelihood rating of High for spread and an estimate of Low for overall consequences are appropriate for all spider mite species previously assessed by the department. These ratings will also be applied to other spider mite species in future assessments unless counter evidence is available. The spider mites Group PRA also recommends an indicative likelihood rating of High for importation (pathway specific) and an indicative likelihood rating of Moderate for distribution (pathway and/or species specific) for all spider mite species in future assessments. The indicative ratings mean that factors relevant to likelihoods of importation and distribution should be examined to determine whether the indicative rating can be verified. This approach is consistent with that applied to the Group PRAs for thrips (DAWR 2017b), mealybugs (DAWR 2019) and scale insects (DAWE 2021a).

The indicative likelihood of entry for all quarantine spider mites is proposed in the spider mites Group PRA to be Moderate (DAFF 2024a), which is comprised of indicative likelihoods of importation and distribution of High and Moderate, respectively. *Amphitetranychus viennensis* and *E. kankitus are* reported from China and are associated with fresh kiwifruit (GACC 2024; Richardson, Burdon & Ferguson 2024). Commercial production and export processes are not expected to eliminate these spider mites on the fresh kiwifruit pathway. After assessment of relevant pathway-specific factors (outlined in sections A2.6 and A2.7) for the kiwifruit from China pathway, the indicative likelihood of entry of Moderate was verified as appropriate for the two spider mite species on the kiwifruit from China pathway (Table 3.6).

Table 3.6 Likelihood of entry for spider mites species identified as a quarantine pest for kiwifruit from China

Pest	In spider mites Group PRA	Quarantine pest	On fresh kiwifruit pathway	Likelihood of entry
Amphitetranychus viennensis	Yes	Yes	Yes	Moderate
Eotetranychus kankitus	Yes	Yes	Yes	Moderate

As outlined in sections A2.6 and A2.7, the risk factors considered in the likelihoods of establishment and spread, and the potential consequences associated with a pest species, are independent of the import pathway. Therefore, the assessments for the likelihoods of establishment (High) and spread (High) and the potential consequences (Low) have been adopted from the spider mites Group PRA.

A summary of the risk assessment for quarantine spider mites is presented in Table 3.7 for convenience.

Table 3.7 Risk estimates for quarantine spider mites on kiwifruit from China

Risk component	Rating for quarantine spider mites
Likelihood of entry (importation x distribution)	Moderate (High x Moderate)
Likelihood of establishment	High
Likelihood of spread	High
Overall likelihood of entry, establishment and spread	Moderate
Consequences	Low
Unrestricted risk	**Low**

As assessed in the spider mites Group PRA, the indicative URE for spider mites is **Low** (Table 3.7) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for the quarantine spider mites present on the fresh kiwifruit from China pathway. Therefore, specific risk management measures are required for the spider mites on this pathway.

This risk assessment, which is based on the spider mites Group PRA, applies to all quarantine spider mites on the fresh kiwifruit from China pathway, irrespective of their specific identification in this document. This is explained in section A2.7.

3.10 Thrips

***Frankliniella intonsa* (GP, RA), *F. occidentalis* (GP, RA) and *Scirtothrips dorsalis* (GP, RA)**

Three thrips species were identified on the kiwifruit from China pathway as quarantine pests and/or regulated articles for Australia: *Frankliniella intonsa*, *F. occidentalis* and *Scirtothrips dorsalis* (Table 3.8).

Frankliniella intonsa is not present in Australia and is identified on the kiwifruit from China pathway as a quarantine pest for Australia. *Frankliniella occidentalis* and *S. dorsalis* are present in Australia and are not under official control, and are therefore not quarantine pests for Australia.

However, *Frankliniella intonsa*, as well as *F. occidentalis* and *S. dorsalis* are identified as regulated articles because they are capable of harbouring and spreading (vectoring) orthotospoviruses that are quarantine pests for Australia, as detailed in the thrips Group PRA (DAWR 2017b).

A regulated article is defined by the IPPC as 'any plant, plant product, storage place, packaging, conveyance, container, soil and any other organism, object or material capable of harbouring or spreading pests, deemed to require phytosanitary measures, particularly where international transportation is involved' (FAO 2025).

The indicative likelihood of entry for all quarantine thrips and all thrips that were identified as regulated articles, is assessed in the thrips Group PRA as Moderate (DAWR 2017b), which is comprised of indicative likelihoods of importation and distribution of High and Moderate, respectively. *Frankliniella intonsa*, *F. occidentalis* and *S. dorsalis* are present in China and are associated with fresh kiwifruit (CABI 2025). Commercial production and export processes are not expected to eliminate these thrips species on the fresh kiwifruit from China pathway. After assessment of relevant pathway-specific factors (outlined in sections A2.6 and A2.7) for kiwifruit from China, the likelihood of entry of Moderate was verified as appropriate for these thrips species on this pathway (Table 3.8).

Table 3.8 Thrips species identified as a quarantine pest and/or a regulated article for kiwifruit from China

Pest	In thrips Group PRA	Quarantine pest	Regulated article	On fresh kiwifruit pathway	Likelihood of entry
Frankliniella intonsa	Yes	Yes	Yes	Yes	Moderate
Frankliniella occidentalis	Yes	No	Yes	Yes	Moderate
Scirtothrips dorsalis	Yes	No	Yes	Yes	Moderate

As outlined in sections A2.6 and A2.7, the risk factors considered in the likelihoods of establishment and spread, and the potential consequences associated with a pest species, are independent of the import pathway. Therefore, the assessments for the likelihoods of establishment (High) and spread (High) and the potential consequences (Low) have been adopted from the thrips Group PRA.

A summary of the risk assessment for quarantine thrips is presented in Table 3.9 for convenience.

Table 3.9 Risk estimates for quarantine thrips

Risk component	Rating for quarantine thrips
Likelihood of entry (importation x distribution)	Moderate (High x Moderate)
Likelihood of establishment	High
Likelihood of spread	High
Overall likelihood of entry, establishment and spread	Moderate
Consequences	Low
Unrestricted risk	**Low**

As assessed in the thrips Group PRA, the indicative URE for thrips is Low (Table 3.9) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for the quarantine thrips species present on the fresh kiwifruit from China pathway. Therefore, specific risk management measures are required for quarantine thrips on this pathway.

As the thrips species *F. intonsa*, *F. occidentalis* and *S. dorsalis* vector orthotospoviruses that are quarantine pests for Australia, a summary of the risk assessment for quarantine orthotospoviruses transmitted by thrips is presented in Table 3.10 for convenience.

Table 3.10 Risk estimates for quarantine orthotospoviruses vectored by thrips

Risk component	Rating for quarantine orthotospoviruses (a)
Likelihood of entry (importation x distribution)	Low (Moderate x Moderate)
Likelihood of establishment	Moderate
Likelihood of spread	High
Overall likelihood of entry, establishment and spread	Low
Consequences	Moderate
Unrestricted risk	**Low**

a: Risk estimates for quarantine orthotospoviruses adopted from the thrips Group PRA (DAWR 2017b).

As assessed in the thrips Group PRA, the URE for quarantine orthotospoviruses transmitted by thrips is Low (Table 3.10), which does not achieve the ALOP for Australia.

This URE is considered to be applicable for the orthotospoviruses known to be vectored by the thrips species present on the kiwifruit from China pathway. Therefore, specific risk management measures are required for these thrips species to mitigate the risks posed by quarantine orthotospoviruses in order to achieve the ALOP for Australia.

This risk assessment, which is based on the thrips Group PRA, applies to all phytophagous quarantine thrips and all thrips identified as regulated articles on the kiwifruit from China pathway, irrespective of their specific identification in this document. This is explained in section A2.7.

3.11 Kiwifruit soft rot

***Diaporthe amygdali, D. apiculata, D. eres, D. eucommiae, D. ganjae, D. liupanshuiensis, D. passiflorae, D. shuichengensis* and *D. xiuwenensis* (EP)**

Diaporthe is a cosmopolitan genus of fungi in the family *Diaporthaceae* within the phylum Ascomycota (Dissanayake et al. 2017a; Dissanayake et al. 2017b; Hyde et al. 2014). Species in the genus have been reported as saprophytes, endophytes and plant pathogens (Dissanayake et al. 2024; Gomes et al. 2013; Guo et al. 2020; Hyde et al. 2014). As pathogens, *Diaporthe* species have a broad range of host plants including economically important fruits, vegetables, forest trees and ornamentals. Horticultural crop hosts include kiwifruit, stonefruit, apples, grapes, blueberries and carrots (Bai et al. 2015; Bastide et al. 2017; Baumgartner et al. 2013; Díaz et al. 2017; Hongsanan et al. 2023; Michailides & Thomidis 2006; Vučković et al. 2022; Zhang et al. 2016a; Zhang et al. 2018).

A number of *Diaporthe* species have been recorded infecting kiwifruit in China (Díaz et al. 2017; Du et al. 2021; Feng et al. 2026; Li et al. 2015; Ren et al. 2025; Yu et al. 2022b; Zou et al. 2026). Nine of these species, *D. amygdali, D. apiculata, D. eres*, *D. eucommiae, D. ganjae*, *D. liupanshuiensis, D. passiflorae, D. shuichengensis* and *D. xiuwenensis*, are not present in Australia and are quarantine pests for Australia. The biology of these *Diaporthe* species is considered sufficiently similar to justify combining them into a single assessment. In this assessment, the term '*Diaporthe* spp.' is used to refer to the 9 species unless otherwise specified.

Diaporthe spp. have been reported to be associated with kiwifruit shoot blight and leaf spot in China (Du et al. 2021) and are among the main pathogens causing soft rot of kiwifruit in China (Díaz et al. 2017; Du et al. 2021; Li et al. 2015; Yu et al. 2022b). *Diaporthe* spp. can infect fruit throughout the growing season, with initial and maximum infection occurring 3 and 6 weeks after petal fall, respectively (Fullerton et al. 2007; Richardson, Burdon & Ferguson 2024; Wang et al. 2013). Fresh kiwifruit infected with *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007), with symptoms generally developing post-harvest (Richardson, Burdon & Ferguson 2024).

Kiwifruit soft rots caused by *Diaporthe* spp. are commonly referred to as stem-end rots (SER) and body rots (BR) based on whether the rot starts at the stem-end or the main body of the fruit, respectively (Lee et al. 2001; Manning, Meier & Olsen 2003; Richardson, Burdon & Ferguson 2024). Kiwifruit soft rots result in the skin softening and lightening in colour compared to adjacent healthy tissues. A watery exudate and white mycelial mats are often visible, forming a water-drop stain down the sides of the fruit skin. Fruit flesh under the skin is typically water soaked, soft and lighter coloured than healthy tissue (Lee et al. 2001; Richardson, Burdon & Ferguson 2024).

Species in the genus *Diaporthe* commonly overwinter in kiwifruit orchards on dead wood or bark, old pedicels, pruning stubs, debris on the orchard floor, and in almost all other plants used as shelterbelt species in kiwifruit orchards (Fullerton et al. 2007; Richardson, Burdon & Ferguson 2024). Although species-specific information on reproductive stages is currently unavailable for these 9 *Diaporthe* spp., in general, species of *Diaporthe* have both anamorph and teleomorph stages that produce two reproductive structures, pycnidia that release conidia, and long-necked perithecia that release ascospores, respectively. Conidia are primarily dispersed by rain, and the most common cause of fruit infection (Chaisiri et al. 2022; Fullerton et al. 2007; Richardson, Burdon & Ferguson 2024).

Conidia can also be transmitted through the air by wind when rainfall is limited (Chaisiri et al. 2022). Ascospores are also likely to be rain dispersed (Richardson, Burdon & Ferguson 2024).

Another *Diaporthe* species, *Diaporthe ampelina* (Synonym: *Phomopsis viticola*), has been assessed previously in import policies for table grapes from Mexico (DAWR 2016b), Chile (Biosecurity Australia 2005b), China (Biosecurity Australia 2011a), Korea (Biosecurity Australia 2011b), Japan (Department of Agriculture 2014), and California to Western Australia (DAFF 2013a). In those policies, the UREs for *D. ampelina* achieve the ALOP for Australia. Therefore, specific risk management measures are not required for *D. ampelina* on these table grape pathways.

Diaporthe spp. have similar biological characteristics to *D. ampelina* - including lifecycle, morphology, disease development (Dissanayake et al. 2015; Dissanayake et al. 2024; Gomes et al. 2013; Richardson, Burdon & Ferguson 2024). Based on their similarities, outcomes of the previous risk assessments for *D. ampelina* on various table grape pathways have been reviewed in this risk assessment for *Diaporthe* spp. on the fresh kiwifruit from China pathway. Where the risk profile is assessed as comparable to those previously assessed situations, outcomes of previous risk assessments have been adopted in this assessment. For each of the risk components, the comparisons and bases for adopting previous assessments for *D. ampelina* on various table grape pathways, or for assessing the risk of *Diaporthe* spp. on the fresh kiwifruit from China pathway, are outlined below.

Assessment of the likelihood of importation for *Diaporthe* spp. associated with the kiwifruit from China pathway is necessary as the previous assessments were for different commodity/country pathways. There may be differences in the commercial production practices, climatic conditions, fruit biology and/or pest prevalence between the previously assessed table grape pathways and the fresh kiwifruit from China pathway.

Previous assessments for *D. ampelina* on various table grape pathways rated the likelihood of distribution as Low. Fresh kiwifruit from China are expected to be distributed in Australia in a similar way to the previously assessed table grape pathways. It is expected that once fresh kiwifruit arrive in Australia from China, they will be distributed to various destinations throughout Australia for sale. Disposal of infected fruit waste is the most likely means for *Diaporthe* spp. to enter the environment. Most fruit waste would be discarded in municipal waste facilities, which reduces the risk of *Diaporthe* spp. distributing to a host. However, fruit waste may also be discarded in the environment near suitable hosts. Suitable hosts of *Diaporthe* spp. are widely available in Australia in spring and summer, when imports of fresh kiwifruit from China are likely to occur. Water-splash transmission of conidia and ascospores from infected fruit waste to a suitable host, which is the primary means of infection, is unlikely to occur. However, conidia can also be transmitted through the air by wind when rainfall is limited (Chaisiri et al. 2022; Richardson, Burdon & Ferguson 2024). On this basis, the same rating of Low for the likelihood of distribution for *D. ampelina* in previous assessments is adopted for *Diaporthe* spp. on the fresh kiwifruit from China pathway.

The likelihoods of establishment and spread of *Diaporthe* spp. in Australia from the fresh kiwifruit from China pathway have been assessed as similar to those of the previous assessments of High and Moderate, respectively. Those likelihoods relate specifically to events that occur in Australia and are essentially independent of the import pathway. The consequences of the entry, establishment and spread of *Diaporthe* spp. in Australia are also independent of the import pathway and have been

assessed as being similar to those previous risk assessments of Low. The existing ratings for the likelihoods of establishment and spread, and the rating for the overall consequences for *D. ampelina* on various table grape pathways have been adopted for *Diaporthe* spp. on the fresh kiwifruit from China pathway.

In addition, the department has reviewed the latest literature—for example, Ahn and Thuy (2023); Arciuolo et al. (2021); Chaisiri et al. (2022); Dissanayake et al. (2024); Du et al. (2021); Feng et al. (2026);Gi, Kim and Yang (2022); Hongsanan et al. (2023); Mena et al. (2024); Ren et al. (2025); Richardson, Burdon and Ferguson (2024) and Zou et al. (2026). No new information has been identified that would significantly change the risk ratings for distribution, establishment, spread and consequences as set out for *D. ampelina* in the existing policies.

The risk scenario of biosecurity concern is fresh kiwifruit may be infected with *Diaporthe* spp., which may result in the establishment and spread of these pathogens in Australia.

3.11.1 Likelihood of entry

The likelihood of entry is considered in 2 parts, the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that *Diaporthe* spp. will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **High**.

The likelihood of importation is assessed as High because *Diaporthe* spp. are present in China's main commercial kiwifruit growing regions, where they cause soft rots in fresh kiwifruit. Pest monitoring and management in orchards would reduce the risk of fresh kiwifruit becoming infected. Harvest and post-harvest procedures are likely to detect and remove infected kiwifruit with visible symptoms. However, kiwifruit infected with *Diaporthe* spp. are often symptomless at harvest and are therefore likely to be cold-stored prior to packing and export. *Diaporthe* spp. are likely to survive cold temperatures, and latent infected kiwifruit that develop visible symptoms during cold storage are likely to be removed during packing for export. However, some infected fruit may remain asymptomatic and be packed for export. Any *Diaporthe* spp. in asymptomatic fruit are likely to survive transport to Australia.

The following information provides supporting evidence for this assessment.

Diaporthe spp. assessed in this risk analysis are present in China and are associated with fresh kiwifruit.

- *Diaporthe* spp. have been reported to infect kiwifruit in the major kiwifruit production provinces of China (Du et al. 2021; Feng et al. 2026; Li et al. 2015; Yu et al. 2022b; Zou et al. 2026).
- *Diaporthe* spp. have been reported to be associated with kiwifruit shoot blight and leaf spot in China (Du et al. 2021).
- *Diaporthe* spp. are among the main pathogens causing soft rot of fresh kiwifruit in China (Díaz et al. 2017; Du et al. 2021; Feng et al. 2026; Li et al. 2015; Yu et al. 2022b; Zou et al. 2026).

Pest monitoring and management in orchard would reduce the risk of fresh kiwifruit being infected with *Diaporthe* spp.

- GACC regional staff guide and supervise orchard personnel in monitoring and managing kiwifruit pathogens such as *Diaporthe* spp. (GACC 2024), which would reduce the risk of fruit being infected at harvest. Monitoring is conducted every two weeks throughout the growing season.
- Preventative broad-spectrum fungicides are sprayed (GACC 2024), which are likely to reduce the incidence of *Diaporthe* spp. (Gomez-Garay et al. 2024; Latorre et al. 2013).
- In some kiwifruit orchards, fruit are bagged around 40 days after flowering, which may reduce exposure of fruit to conidia of *Diaporthe* spp. and subsequent infection. However, not all kiwifruit are bagged, and infection may still occur prior to bagging.

Kiwifruit with clear signs of infection would be detected and removed during harvest and/or postharvest processes. However, fruit with latent infection would not be detected and would be packed for export.

- Kiwifruit with symptoms of *Diaporthe* spp. infection would likely be detected and removed during harvest and/or postharvest processes in the packing house.
  - Kiwifruit soft rots caused by *Diaporthe* spp. result in detectable symptoms on fruit including the skin softening and lightening in colour; watery exudate and white mycelial mats on the skin; and soft, lighter coloured, water-soaked fruit flesh (Feng et al. 2026; Lee et al. 2001; Ren et al. 2025; Richardson, Burdon & Ferguson 2024; Zou et al. 2026).
- However, fruit with latent infection would not be detected and would be cold-stored at 0°C to 1°C for up to several months for later packing and export.
- *Diaporthe* spp. present on infected kiwifruit are likely to survive and continue developing during cold storage.
  - Although the impact of cold temperatures on the survival and development of *Diaporthe* spp. is not known, other species in the genus can survive a wider range of temperatures (–20°C to 35°C), enabling survival during cold storage and transport (Abramczyk et al. 2020).
  - The closely related species *D. novem* survived and showed rot symptoms in fresh kiwifruit after 30 days at 0°C (Díaz et al. 2014).
  - While information on disease development in cold storage of these 9 *Diaporthe* spp. is not known, other species of *Diaporthe* have been shown to develop in fruit maintained in cold storage at 0°C for at least 16 weeks (Manning et al. 2016).
- Fruit that develop symptoms during cold storage are likely to be detected and excluded as part of fruit quality inspections during packing for export, but infected fruit showing little or no symptoms are unlikely to be excluded and may be packed and exported.

Diaporthe spp. are likely to survive and continue developing in fruit during export to Australia.

- Export may occur via sea freight where fruit would be maintained at consistent low temperatures of around 0°C to 1°C for several weeks, or air freight over approximately 1 day where temperatures would likely be higher and more variable.
- Temperatures during sea and air freight are likely to be suitable for survival and development of *Diaporthe* spp., based on data available for other species in the genus (Díaz et al. 2014; Manning et al. 2016). Development would occur more quickly during air freight due to fruit being held at higher temperatures.

For the reasons outlined, the likelihood of importation of *Diaporthe* spp. on imported kiwifruit from China is assessed as **High**.

Likelihood of distribution

The likelihood that the assessed *Diaporthe* spp. will be distributed within Australia in a viable state as a result of the processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is likely to be similar to previously assessed *D. ampelina* on previously assessed grape pathways. The same rating of **Low** for the likelihood of distribution for *D. ampelina* in previous assessments is adopted for the assessed *Diaporthe* spp. on the kiwifruit from China pathway.

Likelihood of entry

The likelihood of entry is determined as **Low** by combining the assessed likelihood of importation of High with the adopted likelihood of distribution of Low, using the matrix of rules in Table A.2.

3.11.2 Likelihoods of establishment and spread

The likelihoods of establishment and spread for the assessed *Diaporthe* spp. are independent of the import pathway and are considered similar to those for *D. ampelina* in previously assessed pathways.

Based on the existing import policies for *D. ampelina*, the likelihoods of establishment and spread for *Diaporthe* spp. on the kiwifruit from China pathway are assessed as **High** and **Moderate**, respectively.

3.11.3 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, of establishment and of spread using the matrix of rules in Table A.2.

The overall likelihood that *Diaporthe* spp. will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as **Low**.

3.11.4 Consequences

The potential consequences of the entry, establishment and spread of *Diaporthe* spp. in Australia are similar to those for *D. ampelina* in the previously assessed pathways. The overall consequences in the previous assessments were assessed as Low. The overall consequences for the assessed *Diaporthe* spp. on the kiwifruit from China pathway are also assessed as **Low**.

3.11.5 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for *Diaporthe amygdali, D. apiculata, D. eres, D. eucommiae, D. ganjae, D. liupanshuiensis, D. passiflorae, D. shuichengensis* and *D. xiuwenensis*	
Overall likelihood of entry, establishment and spread	Low
Consequences	Low
Unrestricted risk	**Very Low**

The URE for *Diaporthe amygdali, D. apiculata, D. eres, D. eucommiae, D. ganjae, D. liupanshuiensis, D. passiflorae, D. shuichengensis* and *D. xiuwenensis s* on the kiwifruit from China pathway is assessed as **Very Low**, which achieves the ALOP for Australia. Therefore, no specific risk management measures are required for *D. amygdali, D. apiculata, D. eres, D. eucommiae, D. ganjae, D. liupanshuiensis*, *D. passiflorae, D. shuichengensis* and *D. xiuwenensis* on this pathway.

3.12 *Neofusicoccum* fruit rot

Neofusicoccum actinidiae* and *N. guttatum

Neofusicoccum actinidiae and *N. guttatum* are recently identified species within the family *Botryosphaeriaceae* that cause fruit rot of kiwifruit in China (Feng et al. 2023). Although *Neofusicoccum* spp. generally have a broad host range (Feng et al. 2023; Phillips et al. 2008; Zhou et al. 2015a), host information for the newly identified *N. actinidiae* and *N. guttatum* is limited (Feng et al. 2023). In addition to kiwifruit, experimental laboratory studies using artificial inoculation have shown that *N. actinidiae* can infect apple and orange, and that *N. guttatum* can infect apple (Feng et al. 2023).

Neofusicoccum actinidiae and *N. guttatum* are not present in Australia and are quarantine pests for Australia. The biology of *N. actinidiae* and *N. guttatum* is considered sufficiently similar to justify combining them into a single assessment.

The genus *Neofusicoccum* was introduced by Crous et al. (2006) to accommodate a group of asexual fungi being morphologically similar to *Botryosphaeria*, but phylogenetically distinct. *Neofusicoccum* species can be endophytes, latent pathogens of plants, and are also known to be symbionts (Salvatore, Alves & Andolfi 2021). Plant pathogenic species have been recorded causing shoot blight, canker, necrosis, fruit rot and dieback of fruit and forest tree hosts, including grape, mango, peach, strawberry, kiwifruit, pine and eucalypt (Feng et al. 2023; Lopes et al. 2014; Phillips et al. 2008; Thomidis, Michailides & Exadaktylou 2011; Zhou et al. 2015a). Pathogenic species usually infect trees through wounds caused by freezing, fertilizer burn, sunburn or mechanical injury such as pruning (APPS 2020; UC IPM 2020). Zhou et al. (2015a) revealed that the presence of a wound is not necessary for *N. parvum* to infect the fruit and leaves of kiwifruit, but wounding can enhance the severity of symptoms.

Neofusicoccum species can have both sexual (teleomorph) and asexual (anamorph) stages in their lifecycle, with the anamorph stage being more commonly encountered (Nyaka Ngobisa et al. 2013). Ascospores, the sexual spores of *Neofusicoccum* are responsible for primary infections, with the optimal temperature for infection being 20°C and in the presence of free water. Ascospores are produced in tree litter and on dead leaves, twigs and branches in the tree canopy, and are spread by water splash and wind. They can infect host plants throughout the season, and disease symptoms typically appear about two weeks after infection (EFSA et al. 2025; EPPO 2025). The asexual fruiting bodies, pycnidia, which are located on infected wood, old pruning wounds, and on pruning canes, produce conidia that can lead to secondary infections during summer. Conidia are discharged at temperatures between 10°C and 35°C, with an optimum temperature of 25°C, and relative humidity at 98%, and can be dispersed by rain (Spagnolo et al. 2014).

No teleomorph has been reported for either *Neofusicoccum actinidiae* or *N. guttatum* (Feng et al. 2023). Although species-specific information on their life cycles is currently unavailable, evidence from closely related anamorphic *Neofusicoccum* species indicates that reproduction and dispersal is likely to occur predominantly, or only, via asexual conidia.

The risk scenario of biosecurity concern is that fresh kiwifruit from China may be infected with *N. actinidiae* and *N. guttatum*, which may result in the establishment and spread of these pathogens in Australia.

3.12.1 Likelihood of entry

The likelihood of entry is considered in 2 parts: the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that *N. actinidiae* and *N. guttatum* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **Low**.

The likelihood of importation is assessed as Low because *N. actinidiae* and *N. guttatum* are present in China and kiwifruit is a host. The distribution and prevalence of *N. actinidiae* and *N. guttatum* in China are unclear, but they are not likely to be commonly associated with fresh kiwifruit as there is only a single report of the species causing fruit rot in kiwifruit. Commercial production practices in kiwifruit orchards are likely to reduce the risk of *N. actinidiae* and *N. guttatum* infecting fresh kiwifruit. Symptomatic infected fruit are likely to be discarded during harvesting and packing house processes. However, fruit with latent infection are unlikely to be detected leading to infected fruit being cold-stored and packed for export. *Neofusicoccum actinidiae* and *N. guttatum* on infected kiwifruit are likely to survive cold temperatures during storage and transport.

The following information provides supporting evidence for this assessment.

Neofusicoccum actinidiae and *N. guttatum* infect fresh kiwifruit in China, but are not commonly reported to be associated with fruit rot of kiwifruit in China.

- *Neofusicoccum actinidiae* and *N. guttatum* were recently identified infecting fresh kiwifruit in commercial orchards in Hubei and Jiangxi provinces in China (Feng et al. 2023).
- These two *Neofusicoccum* spp. cause soft spots and watery decay on kiwifruit that lead to rotting of the fruit (Feng et al. 2023).
- The distribution and prevalence of these species in China are not clear; but they are not likely to be commonly associated with fresh kiwifruit.
  - Feng et al. (2023) is the only study reporting association of these two *Neofusicoccum* spp. with fruit rot of kiwifruit in China.
  - Other studies on kiwifruit postharvest fruit rot in China have not reported *Neofusicoccum* species being associated with fruit of kiwifruit (Ren et al. 2025; Wang et al. 2026), and there are no reports of these two *Neofusicoccum* spp. causing disease symptoms on other parts of the kiwifruit plant.

Pest monitoring and management in orchards would reduce the risk of infection of fresh kiwifruit by *N. actinidiae* and *N. guttatum*.

- GACC regional staff guide and supervise orchard personnel in monitoring and managing kiwifruit pathogens such as *N. actinidiae* and *N. guttatum* (GACC 2024), which would reduce the risk of fruit being infected at harvest. Monitoring is conducted every two weeks throughout the growing season.
- Preventative broad-spectrum fungicides are sprayed (GACC 2024), which are likely to reduce the incidence of postharvest rot (Gomez-Garay et al. 2024; Latorre et al. 2013).

- In some kiwifruit orchards, fruit are bagged around 40 days after flowering, which may reduce exposure of fruit to conidia of *N. actinidiae* and *N. guttatum* and subsequent infection. However, not all kiwifruit are bagged, and infection may still occur prior to bagging.

Kiwifruit with clear signs of infection are likely to be detected and removed during harvest and/or postharvest processes. However, fruit with latent infection may not be detected and thus may be cold-stored for future packing for export.

- Fruit showing clear symptoms of *Neofusicoccum* infection, including soft spots and watery decay (Feng et al. 2023), are likely to be detected and removed during harvest and/or postharvest processes.
- However, infected fruit may not show symptoms and therefore may be cold-stored prior to packing for export.

Neofusicoccum actinidiae and *N. guttatum* present on infected kiwifruit are likely to survive and continue developing during cold storage and transport. Fruit that develop symptoms during cold storage are likely to be detected and excluded as part of fruit quality inspections during packing. However, infected fruit showing little or no symptoms are unlikely to be excluded and may be packed and exported.

- After sorting and grading in the packing house, kiwifruit are generally cold-stored at 0°C to 1°C for up to several months before they are packed for export (GACC 2024). Although information on survival and growth of *N. actinidiae* and *N. guttatum* at these cold storage temperatures is not available, the two species are likely to survive and develop at these temperatures based on information for other *Neofusicoccum* species.
  - Closely related species such as *N. ribis* have been shown to develop fruit rot symptoms on commercially stored apple fruit stored at similar temperatures (Jurick et al. 2013).
  - Similarly, another closely related species, *N. yunnanense*, isolated from symptomatic apple fruit in commercial cold storage, was shown to be able to infect apple fruit and cause fruit rot symptoms (Vučković et al. 2022).
- Fruit that develop visible symptoms during cold storage are likely to be detected and removed during quality inspections of fruit prior to packing for export. However, infected fruit may not develop symptoms during cold storage and therefore may be packed and exported.
- *Neofusicoccum actinidiae* and *N. guttatum* are also likely to survive transport to Australia.
  - For kiwifruit exported by sea freight, fruit would be maintained at consistent low temperatures of around 0°C to 1°C for at least 2 to 3 weeks.
  - Exports by air freight typically take approximately 1 day at more variable and higher temperatures, which would be suitable for survival of these pathogens.

For the reasons outlined, the likelihood that *N. actinidiae* and *N. guttatum* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as Low.

Likelihood of distribution

The likelihood that *N. actinidiae* and *N. guttatum* will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as: **Low**.

The likelihood of distribution is assessed as Low because fresh kiwifruit imported from China are intended for human consumption, and most fruit waste will be disposed of in managed waste systems. *N. actinidiae* and *N. guttatum* are likely to survive storage and transport conditions prior to and after retail sale and are only likely to enter the environment through the disposal of infected fruit waste. While infected fruit waste may be disposed of near hosts of *N. actinidiae* and *N. guttatum,* transfer of these pathogens from discarded fruit waste to susceptible hosts is unlikely to occur.

The following information provides supporting evidence for this assessment.

Fresh kiwifruit are likely to be distributed throughout Australia for retail sale. Fruit showing symptoms of *N. actinidiae and N. guttatum* infection are likely to be removed from distribution, but some infected fruit may show no or mild symptoms and may be distributed and sold.

- Imported fresh kiwifruit are intended for human consumption and would be distributed throughout Australia.
- Prior to sale, fruit are likely to be stored and transported at cold temperatures and high humidities as this prolongs storage time and shelf life. During and after sale, fruit may be refrigerated or kept at ambient temperature.
- Information on the survival of *N. actinidiae* and *N. guttatum* is not available, but both species are likely to survive storage temperatures prior to sale.
  - Other *Neofusicoccum* species can survive cold temperatures for extended periods. For example, *N. ribis* can survive and cause postharvest rot in cold-stored apples (Jurick et al. 2013).
- Any infected fruit showing symptoms are likely to be removed from distribution and disposed of in managed waste systems. Potential transfer of the pathogen to suitable hosts from managed waste systems is unlikely given host plants are generally not available near such facilities.
- However, some kiwifruit infected with *N. actinidiae* and *N. guttatum* may show no or only mild symptoms at the time of retail sale and may be purchased by consumers.

Disposal of infected kiwifruit waste is the most likely means for *N. actinidiae* and *N. guttatum* to enter the environment. Some kiwifruit waste infected with *N. actinidiae* and *N. guttatum* may be discarded into the environment near suitable host plants.

- Most fruit waste would likely be disposed of via managed municipal waste facilities (Pickin et al. 2022), where host plants are generally not present.
- Consumers may also discard small quantities of fruit waste in a variety of urban, rural and natural environments. Some of this waste could be discarded near suitable host plants.
- Kiwifruit is the only confirmed natural host of *N. actinidiae* and *N. guttatum* (Feng et al. 2023). Australia has a small commercial kiwifruit industry (Hort Innovation 2025a) with commercial orchards concentrated in temperate areas of Victoria and other southern Australian states, and smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). Kiwifruit is also occasionally grown in home gardens.
- However, experimental laboratory studies using artificial inoculation have shown that *N. actinidiae* can infect apple and orange, and *N. guttatum* can infect apple (Feng et al. 2023). Although kiwifruit has a limited distribution in southern Australia, it is likely that both species have a broader range of hosts that may be more widely distributed in Australia.

Neofusicoccum actinidiae and *N. guttatum* conidia may successfully transfer from discarded infected kiwifruit waste to a susceptible part of a nearby host plant. However, rain dispersal of conidia is only via very short distances and therefore would require fruit waste to be discarded near hosts. Although wind dispersal of ascospores over longer distances is possible in other *Neofusicoccum* species, there is no evidence that *N. actinidiae* and *N. guttatum* produce ascosopores.

- Although the mechanism of spread of *N. actinidiae* and *N. guttatum* is not reported, *Neofusicoccum* species are spread naturally via wind and rain splash (EFSA et al. 2025; UC IPM 2020).
  - *Neofusicoccum* conidia, if present on fruit waste, could potentially be dispersed by rain splash (EFSA et al. 2025). Transmission via rain splash is likely to result in only localised spread and requires the host to be near the infected fruit waste. For example, rain splash has been reported to disperse the conidia of *N. parvum* and *N. luteus* up to 2 m in a single rainfall event (Baskarathevan et al. 2013). *Neofusicoccum actinidiae* and *N. guttatum* could disperse in a similar way.
  - There is no evidence that *N. actinidiae* and *N. guttatum* produce ascosopores. However, if the species do produce ascospores, they could be disseminated by wind (EFSA et al. 2025; EPPO 2025; UC IPM 2020) and over longer distances.
- *Neofusicoccum actinidiae* and *N. guttatum* are not known to have biological vectors.
- No information is available on seed transmission of *N. actinidiae* and *N. guttatum*; however, some *Neofusicoccum* species have been reported to be distributed by seeds (EFSA et al. 2025; Slippers et al. 2017).

For the reasons outlined, the likelihood that *N. actinidiae* and *N. guttatum* will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as Low.

Likelihood of entry

The likelihood of entry is determined by combining the likelihood of importation with the likelihood of distribution using the matrix of rules shown in Table A.2.

The likelihood that *N. actinidiae* and *N. guttatum* will enter Australia, as a result of trade in kiwifruit from China and be distributed in a viable state to a susceptible part of a host, is assessed as: **Very Low**.

3.12.2 Likelihood of establishment

The likelihood that *N. actinidiae* and *N. guttatum* will establish within Australia based on a comparison of factors in the source and destination areas that affect pest survival and reproduction is assessed as: **Moderate**.

The likelihood of establishment is assessed as Moderate because kiwifruit is grown in Australia and other hosts are also likely to exist. Climatic conditions conducive for completing its life cycle are present in some areas, and particularly subtropical regions of Australia. A number of *Neofusicoccum* species are present in Australia indicating that conditions may also be suitable for establishment of *N. actinidiae* and *N. guttatum*.

The following information provides supporting evidence for this assessment.

Kiwifruit, the host of *N. actinidiae* and *N. guttatum*, is grown in Australia and other hosts are also likely to occur.

- Kiwifruit is the only confirmed natural host of *N. actinidiae* and *N. guttatum* (Feng et al. 2023). Australia has a small commercial kiwifruit industry (Hort Innovation 2025a) with commercial orchards concentrated in temperate areas of Victoria and other southern Australian states, and smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). Kiwifruit is also occasionally grown in home gardens.
- However, *N. actinidiae* and *N. guttatum* are likely to infect a broader range of hosts that may be more widely distributed in Australia.
  - Experimental laboratory studies using artificial inoculation have shown that *N. actinidiae* can infect apple and orange, and *N. guttatum* can infect apple (Feng et al. 2023). Apples and oranges are widely grown commercially and in home gardens in Australia (Hort Innovation 2025a).
  - Species in the genus *Neofusicoccum* generally have a broad host range (Feng et al. 2023; Phillips et al. 2008; Zhou et al. 2015a).

Climatic conditions that are conducive for growth and development of *N. actinidiae* and *N. guttatum* are available in Australia.

- *Neofusicoccum actinidiae* and *N. guttatum* have only been reported from parts of China with a subtropical monsoon climate (Feng et al. 2023; World Weather Online 2025), although the species may have a broader distribution.
- Similar climatic conditions occur in northern coastal and subcoastal parts of Australia (Bureau of Meteorology 2025), indicating that suitable environments for the establishment of *N. actinidiae* and *N. guttatum* are available.
- A number of *Neofusicoccum* species, including *N. australe*, *N. lutem* and *N. parvum*, exist in Australia (APPD 2025; Burgess et al. 2018), suggesting that *N. actinidiae* and *N. guttatum* are likely to establish in Australia.

For the reasons outlined, the likelihood that *N. actinidiae* and *N. guttatum* will establish within Australia is assessed as Moderate.

3.12.3 Likelihood of spread

The likelihood that *N. actinidiae* and *N. guttatum* will spread within Australia, based on a comparison of factors in the source and destination areas that affect the expansion of the geographic distribution of the pest is assessed as: **Moderate**.

The likelihood of spread is assessed as Moderate because the only confirmed natural host of *N. actinidiae* and *N. guttatum* is kiwifruit, which has a limited distribution in Australia. However, there are likely to be other hosts based on the broad host range of other *Neofusicoccum* species and laboratory studies showing infection of apple by both species, and orange by *N. actinidiae*. *Neofusicoccum actinidiae* and *N. guttatum* can spread naturally via conidia dispersed by water or rain splash and potentially by ascospores via wind. The movement of infected nursery stock could facilitate the spread of *N. actinidiae* and *N. guttatum* to new areas. The climate in parts of Australia is likely to be favourable for the spread of *N. actinidiae* and *N. gutattum*.

The following information provides supporting evidence for this assessment.

Suitable hosts and climatic conditions of *N. actinidiae* and *N. guttatum* are available in parts of Australia.

- The only confirmed natural host of *N. actinidiae* and *N. guttatum* is kiwifruit (Feng et al. 2023), which has a limited distribution in southern Australia.
  - Commercial kiwifruit orchards are mainly limited to temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). Kiwifruit is also occasionally grown in home gardens.
  - However, both species are likely to have a wider host range similar to other *Neofusicoccum* species (Feng et al. 2023; Phillips et al. 2008; Zhou et al. 2015a).
  - Experimental laboratory studies using artificial inoculation have shown that *N. actinidiae* can infect apple and orange, and *N. guttatum* can infect apple (Feng et al. 2023). Both apple and orange are widely grown commercially and in home gardens in many parts of Australia (Hort Innovation 2025a).
- Information on climatic preferences of *N. actinidiae* and *N. guttatum* is not available, however most *Neofusicoccum* species are more common in subtropical to temperate regions (Burgess et al. 2019). Sporulation of *Neofusicoccum* species generally occurs between 10°C to 35°C. These temperatures occur across Australia for at least part of the year.

Neofusicoccum actinidiae and *N. guttatum* may spread naturally to host plants by wind and rain splash.

- While information on the transmission of *N. actinidiae* and *N. guttatum* is limited, other *Neofusicoccum* species are known to spread naturally via wind-borne ascospores over longer distances and conidia dispersed by rain splash over short distances (Baskarathevan et al. 2013; EFSA et al. 2025).
- These two pathogens could spread in a similar manner although there is no evidence that the two species produce ascospores.

Movement of infected nursery stock could facilitate spread of *N. actinidiae* and *N. guttatum* to new areas.

- Spread of other *Neofusicoccum* species over long distances is facilitated by human activity, especially through the import or movement of infected plant materials, including plants and scions for planting (EFSA et al. 2025).
- Kiwifruit is the only confirmed natural host of *N. actinidiae* and *N. guttatum*, but both species are likely to have a wider host range similar to other *Neofusicoccum* species (Feng et al. 2023; Phillips et al. 2008; Zhou et al. 2015a). In addition, experimental laboratory studies using artificial inoculation have shown that *N. actinidiae* can infect apple and orange, and *N. guttatum* can infect apple (Feng et al. 2023).
- Seedlings of host plants such as kiwifruit and potential hosts such as apple and orange are widely available for purchase from commercial nurseries. The fungus may be present asymptomatically on plants and propagative materials (Hasey et al. 2016; Salvatore, Alves & Andolfi 2021) and may not be detected. Distribution and subsequent planting of infected plants and propagative materials could facilitate spread of *N. actinidiae* and *N. guttatum* over longer distances.

For the reasons outlined, the likelihood that *N. actinidiae* and *N. guttatum* will spread within Australia is assessed as Moderate.

3.12.4 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, establishment and spread using the matrix of rules in Table A.2.

The overall likelihood that *N. actinidiae* and *N. guttatum* will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as: **Very Low**.

3.12.5 Consequences

The potential consequences of the establishment of *N. actinidiae* and *N. guttatum* in Australia have been estimated according to the methods described in Figure A.1.

Based on the decision rules described in Table A.3, that is, where the potential consequences of a pest with respect to one or more criteria are 'C', the overall consequences are estimated to be **Low**.

Criterion	Estimate and rationale
Direct	
The life or health of plants and plant products	D – Significant at the local level Kiwifruit is the only confirmed natural host of *N. actinidiae* and *N. guttatum*. These pathogens can infect fruit causing them to rot (Feng et al. 2023). *Neofusicoccum* spp. are not major causing pathogens of fruit rot of kiwifruit in China (Li et al. 2022b). There is no evidence to indicate *N. actinidiae* and *N. guttatum* cause significant damage, but *Neofusicoccum* spp. have been reported to cumulatively account for 8.3% cases of postharvest rots on some kiwifruit cultivars in Hubei and Jiangxi provinces in China (Feng et al. 2023). Australia has a small commercial kiwifruit industry (Hort Innovation 2025a). Commercial orchards are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). In 2024/25, total production was estimated at 4,224 tonnes, valued at AUD 18.1 million, with 167 tonnes (valued at AUD 1 million) exported (Hort Innovation 2026). Kiwifruit is also occasionally grown in home gardens. *Neofusicoccum actinidiae* and *N. guttatum* have also been reported to cause fruit rot of apple and orange when introduced by artificial inoculation (CABI 2024b). Citrus and apples are widely grown and major horticultural industries in Australia (Hort Innovation 2025a). Over 883,627 tonnes of citrus (combined oranges, mandarins, lemons/limes, grapefruit) with a production value of $1,114.9 million, are produced in Australian states. Similarly, 293,731 tonnes of apples, valued at $680.2 million were produced in Australia in 2023/24 (Hort Innovation 2025a). There may be additional hosts for both species as other *Neofusicoccum* species have a broader host range (Feng et al. 2023; Lopes et al. 2014; Phillips et al. 2008; Thomidis, Michailides & Exadaktylou 2011; Zhou et al. 2015a).
Other aspects of the environment	B—unlikely to be discernible at district level There are no known direct consequences of *N. actinidiae and N. guttatum* on other aspects of the natural environment.
Indirect	
Eradication, control	C – Minor significance at the district level

Criterion	Estimate and rationale
	A number of existing management strategies (e.g. fungicides, pruning, removing infected material) for other *Neofusicoccum* and *Botryosphaeriaceae* species present in Australia are likely to be effective for these two *Neofusicoccum* species (Gomez-Garay et al. 2024; Seo et al. 1997; Úrbez-Torres). Eradication may not be successful and is likely to be costly and not justified given these species are not expected to pose significant economic impacts.
Domestic trade	B— Unlikely to be discernible at the district level. The introduction of *N. actinidiae* and *N. guttatum* is unlikely to have a discernible impact on domestic trade. It is unlikely to be cost-beneficial to impose movement controls on fresh fruit or nursery stock to prevent the spread of *N. actinidiae* and *N. guttatum*.
International trade	C – Minor significance at the district level *Neofusicoccum actinidiae* and *N. guttatum* are newly identified pathogens and no countries currently have specific import requirements to manage the risk of these species on fresh fruit and nursery stock pathways. The presence of *N. actinidiae* and *N. guttatum* in Australia is unlikely to have an impact on international trade of fresh fruit host commodities. However, trade in nursery stock may be affected based on the European Union having specific requirements for *N. laricinum* on plants and cuttings of *Larix* and *Pseudotsuga menziesii* from countries where *N. laricinum* occurs (EPPO 2025).
Non-commercial and environmental	B— Unlikely to be discernible at the district level Additional fungicide applications or other control measures may be required to control *N. actinidiae* and *N. guttatum* on susceptible hosts and these may have a minor impact on the environment.

3.12.6 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for *Neofusicoccum actinidiae* and *N. guttatum*	
Overall likelihood of entry, establishment and spread	Very Low
Consequences	Low
Unrestricted risk	**Negligible**

The URE for *N. actinidiae* and *N. guttatum* on the fresh kiwifruit from China pathway is assessed as **Negligible**, which achieves the ALOP for Australia. Therefore, specific risk management measures are not required for *N. actinidiae* and *N. guttatum* on this pathway.

3.13 Sooty spot and dimple disease

Pseudocercospora actinidiae and *P. hangzhouensis*

Pseudocercospora actinidiae and *P. hangzhouensis* are fungal pathogens from the family *Mycosphaerellaceae* that infect *Actinidia* species, including commercially grown kiwifruit (Braun, Crous & Nakashima 2015b; Tyson, Donati & Everett 2023; Yano et al. 2015a). *Pseudocercospora actinidiae* causes sooty spot (also known as black mould), and *P. hangzhouensis* causes dimple disease of fresh kiwifruit (Araujo et al. 2021; Kikuhara & Nakashima 2008; Yano et al. 2015a).

Pseudocercospora actinidiae was first described from leaf spot symptoms on *Actinidia callosa* in Guizhou Province, China (Deighton 1976), and *P. hangzhouensis* was originally identified on *A. arguta* in Zhejiang Province, China (Braun, Crous & Nakashima 2015b). However, both have subsequently been reported on fresh kiwifruit in several countries, including China, Japan, Korea and Taiwan, with *P. actinidiae* also recorded in Brazil (Ai 2007; Araujo et al. 2021; Braun, Crous & Nakashima 2015b; Deighton 1976; Liu & Guo 1998; Tyson, Donati & Everett 2023; Yano et al. 2015a).

Pseudocercospora actinidiae and *P. hangzhouensis* are not present in Australia; therefore, they are quarantine pests for all of Australia. The biology of *P. actinidiae* and *P. hangzhouensis* is considered sufficiently similar to justify combining them into a single assessment.

The genus *Pseudocercospora* is a large, globally distributed group of plant pathogenic fungi, commonly associated with foliar and fruit spot diseases of a wide range of host plants (Crous et al. 2013; Groenewald et al. 2024), particularly in subtropical and tropical regions (Groenewald et al. 2024). They are anamorphic fungi that reproduce and disperse via conidia (Crous et al. 2013). Under favourable environmental conditions, particularly warm temperatures around 22 to 28°C and high relative humidity (>90%), *Pseudocercospora* species produce conidiophores on infected tissues. These conidiophores give rise to conidia, which serve as the primary source of inoculum for disease spread. Conidia are dispersed locally by rain splash or wind. Once the conidia land on susceptible host tissue, infection is initiated when the spores germinate in the presence of free moisture. Germ tubes from the conidia penetrate the plant's cuticle directly or through natural openings like stomata, initiating infection. After penetration, the fungus colonises the plant tissue intercellularly, feeding on the host and causing symptoms such as leaf spots, necrosis or fruit lesions that contain masses of conidia for further dispersal by rain splash or wind (Ai 2007; Vicent & García-Jiménez 2008).

Pseudocercospora actinidiae and *P. hangzhouensis* infect leaves, branches and fruit of kiwifruit (Ai 2007; Araujo et al. 2021; KVH 2022; Yano et al. 2015b). While both species can infect the same plant tissues, they differ in the symptoms they produce, particularly on fruit. Infections by *P. actinidiae* are characterised by indistinct yellowish spots on the upper leaf surface and blackish-brown conidial masses on the lower surface. Fruit symptoms typically manifest as firm, shallow, dark concave lesions (2 to 5 cm), containing conidial masses (Ai 2007; KVH 2022). The underlying fruit flesh becomes spongy and pale brown, with a blackish-brown mould layer commonly forming between the pericarp and inner tissues. These symptoms generally emerge as the fruit matures and may progress during postharvest storage or ripening (Ai 2007; Araujo et al. 2021; Kikuhara & Nakashima 2008; KVH 2022).

In contrast, *P. hangzhouensis* produces distinct, irregular to angular lesions that are brown to greyish-brown with dark brown margins on the upper leaf surface. Fruit symptoms begin as small

(1 to 2 cm), sharply pitted, soft lesions and the underlying flesh becomes corky and brown, but unlike *P. actinidiae*, external mould is typically absent. Fruit softening and rot usually begin during ripening and may worsen during storage or postharvest handling (Yano et al. 2015a).

Sooty spot disease of kiwifruit, caused by *P. actinidiae*, is recognised as an important disease in subtropical areas of China. Although not a major postharvest issue, yield and fruit quality can be impacted (Ai 2007; Huang 2016). While no published data are currently available on the economic impact of *P. hangzhouensis,* its potential impact to commercial kiwifruit production is considered similar to that of *P. actinidiae*.

The risk scenario of biosecurity concern is that fresh kiwifruit imported from China may be infected with *P*. *actinidiae* and *P. hangzhouensis* which may result in the establishment and spread of these pathogens in Australia.

3.13.1 Likelihood of entry

The likelihood of entry is considered in 2 parts: the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that *P. actinidiae* and *P. hangzhouensis* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **Moderate**.

The likelihood of importation is assessed as Moderate because *P. actinidiae* and *P. hangzhouensis* are present in China and can infect fresh kiwifruit. Standard commercial production practices such as application of fungicides would reduce the likelihood of these pathogens being present on fruit at harvest. Symptoms on mature fruit are generally visible, and symptomatic fruit would likely be detected and removed during harvest or through sorting, grading and quality inspection practices in the packing house. However, fruit infected shortly before harvest may remain asymptomatic and could be harvested and packed for export. Both *P*. *actinidiae* and *P. hangzhouensis* are likely to survive cold temperatures during storage and transport.

The following information provides supporting evidence for this assessment.

Pseudocercospora actinidiae and *P. hangzhouensis* are present in China and can infect kiwifruit.

- *Pseudocercospora actinidiae* has been reported in the Chinese provinces of Anhui, Fujian, Guizhou, Guangdong, Hubei, Hunan and Jiangxi provinces (Ai 2007; Braun, Crous & Nakashima 2015b; Jiang, Gao & Lin 1995), while *P. hangzhouensis* is known to occur in Anhui and Zhejiang provinces (Braun, Crous & Nakashima 2015b; Yano et al. 2015a). Guizhou, Hunan and Jiangxi are major r commercial kiwifruit-producing provinces in China.
- The known host range of both pathogens is confined to *Actinidia* species (Braun, Crous & Nakashima 2015b; Tyson, Donati & Everett 2023), which originated in China (Ferguson 1991).
- *Pseudocercospora actinidiae* and *P. hangzhouensis* cause sooty spot and dimple disease of kiwifruit, respectively (Ai 2007; Yano et al. 2015a). Both diseases can lead to rot symptoms on fresh kiwifruit.

Pest monitoring and management in orchards would reduce the risk of infection of fresh kiwifruit by *P. actinidiae* and *P. hangzhouensis*.

- GACC regional staff guide and supervise orchard personnel in monitoring and managing kiwifruit pathogens such as *P. actinidiae* and *P. hangzhouensis* (GACC 2024), which would reduce the risk of fruit being infected at harvest. Monitoring is conducted every two weeks throughout the growing season.
- Preventative broad-spectrum fungicides are sprayed (GACC 2024) which are likely to reduce the incidence of postharvest rot caused by *P. actinidiae* and *P. hangzhouensis.*
- In some kiwifruit orchards, fruit are bagged around 40 days after flowering (GACC 2024), which may reduce exposure of fruit to infectious conidia and subsequent infection. However, not all kiwifruit are bagged, and infection may still occur prior to bagging.

Symptoms of sooty spot and dimple infection are readily apparent, and symptomatic fruit are likely to be removed during harvest and sorting, grading and quality inspection practices in the packing house. However, fruit with no or mild symptoms may not be detected and thus may be cold-stored prior to packing for export.

- Fruit infected by *P. actinidae* typically show firm, shallow, dark lesions (2 to 5 cm) often accompanied by mould (Yano et al. 2015a). In contrast, *P. hangzhouensis* causes smaller (1 to 2 cm), sharply pitted, corky, brown lesions on fruit with little to no mould that develop as fruit mature or during storage (Yano et al. 2015a). Infected fruit exhibiting these visible symptoms are likely to be removed during harvest, and sorting, grading and quality inspection practices.
- However, infected fruit may show little or no symptoms and therefore may be cold-stored before being packed for export.

Any *P. actinidiae* and *P. hangzhouensis* present on fruit are likely to survive temperatures during pre-export cold storage and export to Australia. Infected fruit that develop symptoms during cold storage are likely to be removed during packing and final quality inspection processes prior to export. However, infected fruit may develop little or no symptoms during cold storage and therefore may be packed for export.

- Kiwifruit are stored at temperatures of 0°C to 1°C for up to several months prior to being packed for export.
- *Pseudocercospora actinidiae* and *P. hangzhouensis* are likely to survive cold temperatures during storage and export, although any fungal growth would cease or slow (Pennycook 1985; Shao et al. 2022).
  - *In vitro* studies demonstrated that *P. actinidiae* is a slow-growing fungus that can grow across a wide temperature range of 5°C to 35°C, with optimal growth occurring at 25°C (Kikuhara & Nakashima 2008). These temperatures also broadly apply to other species in the *Pseudocercospora* genus (Lombardo et al. 2016; Yano et al. 2015a).
  - Lombardo et al. (2016) reported that conidial production in the closely related *P. cladosporioides* declines significantly when minimum temperatures fall below 10°C, although the fungus is still capable of growing at temperatures as low as 1°C.
  - Furthermore, studies have demonstrated that conidia of the related species *Pseudocercospora mori* can remain viable for extended periods under cold storage conditions (e.g., 4°C), although survival rates decline over time (Qazi et al. 2025).
- During cold storage, visible symptoms may develop on fruit (Ledesma et al. 2021; Pennycook 1985; Shao et al. 2022), with symptomatic fruit likely to be detected and removed during quality inspections prior to packing fruit for export. However, infected fruit may have little or no symptoms after cold storage and therefore could be packed for export.

- *Pseudocercospora actinidiae* and *P. hangzhouensis* are also likely to survive export to Australia via sea freight at temperatures of 0°C to 1°C for several weeks, or by air freight for up to around 1 day at higher and more variable temperatures.

For the reasons outlined, the likelihood that *P. actinidiae* and *P. hangzhouensis* will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as Moderate.

Likelihood of distribution

The likelihood that *P. actinidiae* and *P. hangzhouensis* will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as: **Low**.

The likelihood of distribution is assessed as Low because fresh kiwifruit imported from China are intended for human consumption. Most fruit waste will be discarded into managed waste systems, but a small amount of fruit waste may be discarded in the environment. The likelihood of conidia from infected fruit waste transferring to a new host via rain splash or wind is low because hosts of *P. actinidiae* and *P. hangzhouensis* are limited to *Actinidia* species, which are not widely grown in Australia.

The following information provides supporting evidence for this assessment.

Imported fresh kiwifruit are expected to be distributed throughout Australia for wholesale and retail sale. Kiwifruit showing symptoms of *P. actinidiae* and *P. hangzhouensis* infection are likely to be removed from distribution, but some fruit may show no or mild symptoms and may be distributed and sold.

- Imported fresh kiwifruit are intended for human consumption and are likely to be distributed across Australia through wholesale and retail trade.
- Prior to retail sale, kiwifruit are likely to be stored around 0°C to 1°C to maintain quality and extend shelf life (Tan & Considine 2006). *Pseudocercospora actinidiae* and *P. hangzhouensis* are likely to survive periods of cold storage.
- Fresh kiwifruit are generally presented for retail sale at ambient temperatures, which would promote growth of any surviving *P. actinidiae* and *P. hangzhouensis*.
- Infected fruit showing disease symptoms at retail points are likely to be removed and discarded into managed municipal waste systems facilities (Pickin et al. 2022). Distribution of *P. actinidiae* and *P. hangzhouensis* to a new host is unlikely given host plants are generally not available near such facilities.
- However, some kiwifruit infected with *P. actinidiae* and *P. hangzhouensis* may show no or only mild symptoms at the time of retail sale and may be purchased by consumers.

Disposal of infected kiwifruit waste is the most likely means for *P. actinidiae* and *P. hangzhouensis* to enter the environment. Some kiwifruit waste infected with *P. actinidiae* and *P. hangzhouensis* may be discarded into the environment near suitable host plants.

- Most fruit waste would likely be disposed of via managed municipal waste facilities (Pickin et al. 2022), where host plants are generally not present.
- Consumers may also discard small quantities of fruit waste in a variety of urban, rural and natural environments. Some of this waste could be discarded near suitable host plants.

- The known host range of both pathogens is confined to *Actinidia* spp. (Braun, Crous & Nakashima 2015b; Tyson, Donati & Everett 2023), which has a limited distribution in southern Australia. Commercial orchards are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). Kiwifruit is also occasionally grown in home gardens.

It is unlikely that *P. actinidiae* and *P. hangzhouensis* conidia could successfully transfer from discarded infected kiwifruit waste to a susceptible part of a nearby host plant.

- Conidia, if present on fruit waste, could potentially be dispersed via rain splash or wind (Ai 2007; Yano et al. 2015a). Transmission via rain splash is likely to result in only localised spread and requires the host to be near the infected fruit waste. The known host range of both pathogens is confined to *Actinidia* spp. (Braun, Crous & Nakashima 2015b; Tyson, Donati & Everett 2023), which have a limited distribution in southern Australia. However, spores dispersed in splash droplets will spread disease only if they are still viable when they reach the new tissue (Fitt et al. 1992). Even if viable, the exposure to antagonistic microorganisms, sunlight or dry conditions would diminish the likelihood of successful establishment (Braga et al. 2015; Singh et al. 2022).
- Although it has been claimed that *P. actinidiae* can also be spread by wind (Ai 2007), no studies have confirmed this dispersal method for either *P. actinidiae* or *P. hangzhouensis.* Based on observations of other *Pseudocercospora* species, which can be dispersed locally by rain splash and over longer distances by wind, it is reasonable to assume that wind could also contribute to the spread of *P. actinidiae* and *P. hangzhouensis* under suitable conditions. For example, (Diallo 2010) reported that citrus leaf spot caused by *Pseudocercospora angolensis* spread at an average rate of 23 km per year demonstrating that long-distance dispersal by wind is possible in some *Pseudocercospora* species. However, even if conidia of *P. actinidiae* or *P. hangzhouensis* can be dispersed by wind, they are unlikely to transfer to a new host due to the limited availability of *Actinidia* spp. in Australia, and especially in northern parts of Australia.

For the reasons outlined, the likelihood that *P. actinidiae* and *P. hangzhouensis* will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as Low.

Likelihood of entry

The likelihood of entry is determined by combining the likelihood of importation with the likelihood of distribution using the matrix of rules shown in Table A.2.

The likelihood that *P. actinidiae* and *P. hangzhouensis* will enter Australia, as a result of trade in kiwifruit from China and be distributed in a viable state to a susceptible part of a host, is assessed as: **Low**.

3.13.2 Likelihood of establishment

The likelihood that *P. actinidiae* and *P. hangzhouensis* will establish within Australia based on a comparison of factors in the source and destination areas that affect pest survival and reproduction is assessed as: **Moderate**.

The likelihood of establishment is assessed as **Moderate** because susceptible hosts of the genus *Actinidia* exist in multiple regions of Australia, with commercial and home cultivation largely limited to temperate parts of southern Australia. Limited kiwifruit production occurs in subtropical regions,

which are highly suitable for disease development, constraining the potential for widespread establishment of *P. actinidiae* and *P. hangzhouensis*.

The following information provides supporting evidence for this assessment.

Susceptible hosts of *P. actinidiae* and *P. hangzhouensis* exist in Australia but are not widely grown.

- *Actinidia arguta*, *A. chinensis*, *A. callosa* and *A. deliciosa* are known hosts of *P. actinidiae* and *P. hangzhouensis* (Braun, Crous & Nakashima 2015b; Yano et al. 2015a).
- Several *Actinidia* spp., including *A. arguta, A. chinensis* and *A. deliciosa,* are commercially cultivated in Australia, but plantings are mainly limited to temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020).
- *Actinidia* spp. are also grown in household gardens, but they are relatively uncommon, thereby reducing the potential for establishment.

Parts of Australia with subtropical climates are likely to be more suitable for establishment.

- *Pseudocercospora actinidiae* and *P. hangzhouensis* are mainly reported from subtropical parts of China, Japan, Korea, Taiwan and Brazil (only *P. actinidiae*) that experience hot, humid summers and mild winters (Groenewald et al. 2024; Liu et al. 2022).
- Similar climatic conditions occur in parts of Australia, indicating that suitable environments for the establishment of *P. actinidiae* and *P. hangzhouensis* are available.
- *Pseudocercospora actinidiae* and *P. hangzhouensis* are more likely to establish in subtropical areas of Australia as they require hot, humid and rainy conditions for disease development (Yano et al. 2015a).
  - Sporulation of *P. actinidiae* and *P. hangzhouensis* predominantly occurs during the rainy season (Yano et al. 2015a). Although specific data on humidity requirements for conidial germination of *P. actinidiae* and *P. hangzhouensis* are lacking, studies by Hartman, Chen and Wang (1991) showed that conidia germination of *P. fuligena* declined at relative humidities below 93.5% and did not occur below 84.5%.

For the reasons outlined, the likelihood that *P. actinidiae* and *P. hangzhouensis* will establish within Australia is assessed as Moderate.

3.13.3 Likelihood of spread

The likelihood that *P. actinidiae* and *P. hangzhouensis* will spread within Australia, based on a comparison of factors in the source and destination areas that affect the expansion of the geographic distribution of the pest is assessed as: **Moderate**.

The likelihood of spread is assessed as **Moderate** because the known host range of *P. actinidiae* and *P. hangzhouensis* is limited to *Actinidia* species, which are not widely cultivated in Australia. Commercial kiwifruit production in Australia occurs mostly in temperate regions, where the climate may not favour disease development. These pathogens can spread naturally via water splash, through human-assisted movement of infected plants or contaminated material, and potentially by wind.

The following information provides supporting evidence for this assessment.

Suitable hosts and climatic conditions for *P. actinidiae* and *P. hangzhouensis* are available in limited parts of Australia.

- *Actinidia arguta*, *A. chinensis* and *A. deliciosa* are known hosts of *P. actinidiae* and *P. hangzhouensis* (Yano et al. 2015a). These host species are not widely grown in Australia, with commercial production concentrated in temperate regions of Victoria and other southern Australian states, as well as subtropical regions in New South Wales and Queensland (Orchard Tech 2020). Host plant species are also grown in home gardens.
- *Pseudocercospora actinidiae* and *P. hangzhouensis* thrive in hot, humid conditions, with ideal conditions for sporulation occurring mainly during the rainy and relatively warmer seasons when temperatures range between 22°C to 28°C and relative humidity above 90% (Hartman, Chen & Wang 1991; Yano et al. 2015a). These conditions are more likely to occur in subtropical regions of Australia.
- Temperate climates in southern Australia where *Actinidia* spp. are mainly grown are characterised by warm to hot summers and cool winters (Love the Garden 2025), and these conditions may not assist the spread of *P. actinidiae* and *P. hangzhouensis*.

Rain splash and wind may cause the limited spread of *Pseudocercospora actinidiae* and *P. hangzhouensis* to new host plants.

- *Pseudocercospora* conidia are primarily dispersed over short distances via rain splash (Ai 2007; Yano et al. 2015a), but this will be limited as *Actinidia* spp. hosts are not widely grown commercially or in home gardens in Australia.
- Although it has been claimed that *P. actinidiae* can also be spread by wind (Ai 2007), there are no studies confirming this dispersal method for either *P. actinidiae* or *P. hangzhouensis.*
  - Dispersal via wind has been reported for the related species *Pseudocercospora angolensis*, which spread at an average rate of 23 km per year, demonstrating that long-distance dispersal by wind is possible in some *Pseudocercospora* species (Diallo 2010).
  - Even if *P. actinidiae* or *P. hangzhouensis* are capable of wind dispersal, spread is likely to be limited due to the restricted distribution of suitable hosts in Australia.

Movement of infected host plants could facilitate the wider spread of *P. actinidiae* and *P. hangzhouensis* to new areas.

- Kiwifruit and kiwiberry host plants are widely available for purchase from commercial nurseries. Pest management procedures may be undertaken in wholesale and retail nurseries that would reduce the likelihood of infected plants being sold. However, the fungus may be present asymptomatically on leaves (Kikuhara & Nakashima 2008) and may not be detected. The distribution and subsequent planting of these infected plants could facilitate spread of *P. actinidiae* and *P. hangzhouensis* over longer distances.

For the reasons outlined, the likelihood that *P. actinidiae* and *P. hangzhouensis* will spread within Australia is assessed as Moderate.

3.13.4 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, establishment and spread using the matrix of rules in Table A.2.

The overall likelihood that *P. actinidiae* and *P. hangzhouensis* will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as: **Low.**

3.13.5 Consequences

The potential consequences of the establishment of *P. actinidiae* and *P. hangzhouensis* in Australia has been estimated according to the methods described in Figure A.1.

Based on the decision rules described in Table A.3, that is, where the potential consequences of a pest with respect to one or more criteria are 'C', the overall consequences are estimated to be **Very Low.**

Criterion	Estimate and rationale
Direct	
The life or health of plants and plant products	C—Minor significance at the district level The known hosts of *P. actinidiae* and *P. hangzhouensis* are species within the genus *Actinidia*: including *A. arguta*, *A. chinensis*, *A. callosa* and *A. deliciosa* (Braun, Crous & Nakashima 2015b; Tyson, Donati & Everett 2023) of which only *A. arguta*, *A. chinensis* and *A. deliciosa* are grown commercially in Australia. *Pseudocercospora actinidiae* and *P. hangzhouensis* are responsible for sooty spot and dimple disease of kiwifruit, respectively. Sooty spot disease is recognised as an important disease in subtropical regions of China. Although it is not considered a major postharvest issue, severe outbreaks have been associated with reductions in yield and fruit quality during years of severe infection (Ai 2007; Huang 2016). Australia has a small commercial kiwifruit industry (Hort Innovation 2025a). Commercial orchards are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). In 2024/25, total production was estimated at 4,224 tonnes, valued at AUD 18.1 million, with 167 tonnes (valued at AUD 1 million) exported (Hort Innovation 2026). Kiwifruit is also occasionally grown in home gardens. Should the disease occur in commercial orchards, it is likely that these pathogens could be effectively managed through standard commercial practices, including fungicide applications.
Other aspects of the environment	B—Unlikely to be discernible at the district level There are no known direct consequences of *P. actinidiae* and *P. hangzhouensis* on other aspects of the natural environment.
Indirect	
Eradication, control	C— Minor significance at the district level Measures to control *P. actinidiae* and *P. hangzhouensis* include application of fungicide, removal of diseased leaves and fruit from kiwifruit vines, and removal of diseased plant material from orchards (Aslake et al. 2021). Several fungicides are known to control *Pseudocercospora* species, including carbendazim, copper fungicide, carbendazim, and pyraclostrobin plus boscalid (Hong et al. 2020). While these fungicides can reduce disease incidence and limit pathogen spread, they would not achieve complete eradication. Early detection, combined with cultural control measures and chemical treatment, offers the best potential for containment of *P. actinidiae* and *P. hangzhouensis* (Ai 2007). Eradication of other *Pseudocercospora* species has been achieved; for example, *P. fijiensis* was successfully eradicated from commercial banana plantations in North Queensland (Henderson et al. 2006). Given that kiwifruit cultivation in Australia is limited to relatively small geographical areas, it may be possible to eradicate these

Criterion	Estimate and rationale
	diseases if detected early and appropriate measures are implemented (Henderson et al. 2006).
Domestic trade	B— Unlikely to be discernible at the district level The introduction of *P. actinidiae* and *P. hangzhouensis* is unlikely to have a discernible impact on domestic trade. It is unlikely to be cost-beneficial to impose movement controls on fruit to prevent the spread of *P. actinidiae* and *P. hangzhouensis* between properties.
International trade	C— Minor significance at the district level Kiwifruit production in Australia is relatively small and focused on supplying local markets. Australia exports a small volume of kiwifruit, with 167 tones exported in 2024 (Hort Innovation 2025b). The detection of *P. actinidiae* and *P. hangzhouensis* in commercial production areas could potentially affect trade with countries where these two pathogens are absent.
Non-commercial and environmental	B— Unlikely to be discernible at the district level Additional fungicide applications or other control measures may be required to control *P. actinidiae* and *P. hangzhouensis* on susceptible hosts and these may have a minor impact on the environment.

3.13.6 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for *Pseudocercospora actinidiae* and *P. hangzhouensis*	
Overall likelihood of entry, establishment and spread	Low
Consequences	Very Low
Unrestricted risk	**Negligible**

The URE for *P. actinidiae* and *P. hangzhouensis* on the fresh kiwifruit from China pathway is assessed as **Negligible**, which achieves the ALOP for Australia. Therefore, specific risk management measures are not required for *P. actinidiae* and *P. hangzhouensis* on this pathway.

3.14 Turnip vein-clearing virus

Tobamovirus rapae

Tobamovirus rapae (turnip vein-clearing virus, TVCV) is a tobamovirus in the family *Virgaviridae*, order *Martellivirales* (ICTV 2024). TVCV is known to infect a range of hosts, primarily within the families Brassicaceae and Plantaginaceae, as well as other families such as Actinidiaceae, Caryophyllaceae, Balsaminaceae and Solanaceae (Chavan, Pearson & Cohen 2009; Heinze et al. 2006; Lockhart et al. 2008; O'Leary et al. 2024).

TVCV has been reported in a range of countries including China, Germany, Hungary, New Zealand, Portugal, Russia and the USA (Chavan, Pearson & Cohen 2009; Cohen et al. 2012; Lartey et al. 1993; Menzel et al. 2025; O'Leary et al. 2024; Tóth et al. 2019). TVCV is not present in Australia and is a quarantine pest for Australia.

Tobamoviruses are recognised for their environmental stability meaning they can survive for long periods on surfaces and in soil without losing infectivity. This stability allows them to persist outside of the host, resist heat and remain a source of infection. They are primarily spread by mechanical transmission such as through infected plant contact, grafting and contaminated tools, soils or surfaces (Creager et al. 1999; Gibbs 1977; Kan & Citovsky 2025; Melcher, Lewandowski & Dawson 2021; Walkey 1991).

Tobamoviruses are seed-borne, whereby the virus can persist on the external surface of the seed potentially leading to contamination during handling or planting. Infectious particles are typically found on the seed coat and may not survive germination once the coat detaches from the seedling (Dombrovsky & Smith 2017).

Some tobamoviruses may also be seed-transmitted, whereby the virus is present within seed tissues in infected embryos and can be passed systemically to the emerging seedling, resulting in infection of the next generation of plants (Dombrovsky & Smith 2017; Salem et al. 2022). However, there is currently no evidence to support seed transmission of TVCV in any host. There are currently no known vectors associated with the transmission of TVCV (Melcher 2003; Zhang et al. 2022b).

The most common symptoms caused by TVCV in host plants are vein clearing, systemic chlorotic mottling, ring-like markings, chlorotic streaks along the veins, twisting of the petioles, leaf deformation and stunting (Blouin et al. 2013; Lartey et al. 1993; Melcher 2003). TVCV causes mild or no symptoms on fruit of *Actinidia* spp. (Blouin et al. 2013; Zhang et al. 2022b).

The risk scenario of biosecurity concern is that fresh kiwifruit from China may be infected with TVCV, which may result in the establishment and spread of this virus in Australia.

3.14.1 Likelihood of entry

The likelihood of entry is considered in 2 parts: the likelihood of importation and the likelihood of distribution, which consider pre-border and post-border issues, respectively.

Likelihood of importation

The likelihood that TVCV will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as: **Moderate**.

The likelihood of importation is assessed as Moderate because TVCV is present in China but reports of its association with *Actinidia* spp. are limited (Chavan et al. 2012; Zhang et al. 2022b). TVCV-infected fruit are often asymptomatic and may be packed for export. TVCV is likely to survive fruit storage and transport conditions from China to Australia.

The following information provides supporting evidence for this assessment.

TVCV is associated with kiwifruit in China, but may not be common in commercial kiwifruit.

- TVCV has been detected in dried leaf material of *A. chinensis* from China (Blouin et al. 2013). Because TVCV is capable of systemic infection, it is also likely to be present in other kiwifruit plant tissues, including fruit (Ilyas et al. 2022; Rodrigo, Zwart & Elena 2014).
- However, there were no confirmed detections of TVCV in fruit or foliage during recent virus surveys conducted in Chinese commercial kiwifruit orchards in Shaanxi and Hubei Provinces, during 2018 and 2019 (Zhang et al. 2022b; Zhao et al. 2020; Zhao et al. 2021).
- Reports of the association of TVCV with kiwifruit in China are limited suggesting that the virus may not be common in commercial kiwifruit in China**.**

Fruit of infected kiwifruit plants may not show symptoms and may be packed for export.

- Symptoms of TVCV infection on fresh kiwifruit are mild or not present (Blouin et al. 2013; Chavan, Pearson & Cohen 2009; Zhang et al. 2022b).
- Asymptomatic fruit will not be detected during post-harvest processes and thus may be packed for export.

TVCV in fruit is likely to survive cold temperatures during post-harvest storage and transport to Australia.

- TVCV is known to be environmentally stable**,** with the potential to survive typical post-harvest handling, cold storage and shipping conditions associated with fresh kiwifruit (Creager et al. 1999; Gibbs 1977; Melcher, Lewandowski & Dawson 2021).
- Although there is no direct evidence on the survival of TVCV at low temperatures, other tobamoviruses can persist at cold temperatures. For example, cucumber green mottle mosaic virus was able to overwinter on plant debris in soil where air temperatures averaged 1°C and reached as low as -9°C (Li, Liu & Gu 2016).
- Kiwifruit for export can be cold-stored at 0-1°C for up to several months post-harvest and may then be exported via sea freight at similar temperatures for several weeks, or air freight at higher, more variable temperatures over approximately one day. Cold temperatures during storage and transport are not expected to affect the viability of any TVCV in fruit.

For the reasons outlined, the likelihood that TVCV will arrive in Australia in a viable state with the importation of kiwifruit from China is assessed as Moderate.

Likelihood of distribution

The likelihood that TVCV will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as: **Very Low**.

The likelihood of distribution is assessed as Very Low because kiwifruit imported from China are intended for human consumption. Most of the fruit, including the pulp and seeds, is typically consumed, with the skin and any rotten fruit discarded. The virus is most likely to enter the external environment through the disposal of fruit waste. Most fruit waste is likely to be discarded into managed waste systems, but small quantities of waste may be discarded in urban, rural and natural environments. Mechanical transmission is the main means for TVCV to spread to new hosts, but mechanical transmission from fruit waste to a new host is unlikely to occur.

The following information provides supporting evidence for this assessment.

Fresh kiwifruit imported from China will likely be distributed throughout Australia for retail sale. Since TVCV may not cause any symptoms on fruit, infected kiwifruit may be distributed and sold.

- Imported fresh kiwifruit will likely be distributed throughout Australia for sale for human consumption.
- Fresh kiwifruit are likely to be stored under refrigeration prior to sale and presented for sale at ambient temperature. These temperatures are unlikely to impact the viability of any TVCV in fruit.
- TVCV-infected kiwifruit are likely to show little to no symptoms and could therefore be sold to consumers.

TVCV is most likely to enter the external environment through the disposal of infected fruit waste, which may occur near suitable host plants. Like other tobamoviruses, TVCV is likely to remain viable under a range of environmental conditions.

- Kiwifruit from China are intended for human consumption and most of the fruit, other than the skin, will be consumed.
- Any waste, including skin and rotten fruit, is likely to be discarded into managed waste systems (Pickin et al. 2022). Potential exposure to suitable host plants from waste discarded in this way is likely to be negligible.
- However, consumers may discard small quantities of kiwifruit waste in a variety of environments, such as home gardens and compost. Some of this waste could be discarded near suitable host plants.
- Tobamoviruses, such as TVCV, are characterized by high stability and long persistence (Creager et al. 1999; Gibbs 1977; Melcher, Lewandowski & Dawson 2021; Oshima & Harrison 1975) and are therefore likely to remain viable for a significant period of time under a range of environmental conditions.
  - For example, the closely related ribgrass mosaic virus can remain infective for over 5 months in tobacco sap and more than 122 days in dried tobacco leaves (Oshima & Harrison 1975). This stability suggests that TVCV could remain viable in the external environment for similar extended periods of time.

TVCV is unlikely to survive in compost.

- Kiwifruit waste can be composted commercially (e.g. from municipal green waste bins) or in home gardens.
- While there is no specific study on the survival of TVCV in compost, similar studies have shown that commercial composting at high temperatures can inactivate other tobamoviruses.
  - Cucumber green mottle mosaic virus was inactivated in compost held at 72°C for 3 days, or laboratory incubation of dried materials at 50°C for 35 days (Avgelis & Manios 1992; Mandal et al. 2008; Wichuk, Tewari & McCartney 2011).
  - Aguilar et al. (2010) demonstrated that compost temperatures of 61.9°C to 73.8°C effectively inactivated pepper mild mottle virus and melon necrotic spot virus.
  - Noble and Roberts (2004) reported that composting over 26 weeks effectively inactivated tomato mosaic virus and tobacco mosaic virus, even at temperatures below 50°C.
- According to the Australian Standard for Composts, Soil Conditioners and Mulches (AS 4454 – 2012), commercial composting of higher-risk materials such as food waste must maintain a core temperature at 55°C or higher for at least 15 days, and be turned a minimum of 5 times, ensuring that outer material is brought to the centre, so the entire mass is subjected to the required thermal conditions (Standards Australia 2012). This is likely to inactivate any plant viruses, including TVCV, present in commercial compost.
- The temperature of home-produced compost is likely to be more variable and lower than those achieved by commercial composting. Therefore, home compost may not achieve high enough temperatures to inactivate TVCV. However, the home composting process generally takes longer than commercial composting and it is therefore likely to at least reduce the level of virus contamination (Imperial College London 2026).

Mechanical transmission is usually the main means for TVCV to spread to new hosts, but mechanical transmission from fruit waste to a new host is unlikely to occur.

- Like other tobamoviruses, TVCV can be mechanically transmitted by direct plant to plant contact, or through contaminated tools, hands, clothing and soil contacting healthy host plants (Broadbent 1976; Dombrovsky & Smith 2017; Kan & Citovsky 2025). Transfer can occur when virus-contaminated sap or tissue come in contact with a healthy plant through wounds or abrasions caused by activities such as pruning (Broadbent 1976; Dombrovsky & Smith 2017; Walkey 1991).
- However, mechanical transmission of TVCV from fruit waste to a new host is unlikely to occur because infected fruit waste is unlikely to come into direct contact with plant wounds or tools or equipment that would then contact or wound susceptible host plants.
- Tobamoviruses, such as tomato brown rugose fruit virus, can remain infective on hands and clothing for at least 2 hours after contact with infected plant material (Skelton et al. 2023). However, transmission of TVCV to a new host plant via infected hands or clothing is unlikely to occur as transfer would likely need to occur shortly after contamination and would typically require a wound or abrasion for the virus to enter a host plant.
- Invertebrates feeding on discarded kiwifruit waste are unlikely to transfer TVCV to new hosts as they would mainly be detritivores that are unlikely to move onto live plants to feed (Sagi, Grünzweig & Hawlena 2019).

- Insect vectors have not been reported to be associated with the transmission of TVCV (Melcher 2003; Zhang et al. 2022b) or other tobamoviruses (Gibbs 1977; Melcher, Lewandowski & Dawson 2021).

Transmission of TVCV to a kiwifruit plant germinating from infected seeds discarded with kiwifruit waste is unlikely to occur.

- Although TVCV is assumed to be seed-borne with the potential to be seed-transmitted (Blouin et al. 2013; Dombrovsky & Smith 2017), there is currently no direct evidence indicating that TVCV is seed-transmitted in any host plants (Ford, Beczner & Hamilton 1988; Gibbs 1977).
- Seeds from kiwifruit waste may be able to germinate, but this is very unlikely to occur in a natural environment.
  - As the kiwifruit pulp, including seeds, is usually consumed, seeds would generally not be discarded with other waste such as the fruit skin.
  - If kiwifruit seeds are discarded, they will likely have intact seed coats and be surrounded by fruit pulp, which contains germination inhibitors (Fukui 1995; Yagihashi, Hayashida & Miyamoto 1998).
  - Kiwifruit seeds exhibit dormancy and require removal of the seed coat, a period of cold stratification at around 5°C for 2 to 12 weeks, followed by exposure to fluctuating higher temperatures to break dormancy and germinate (Lastuvka, Benech-Arnold & Windauer 2021; Lawes & Anderson 1980; Windauer et al. 2016). Light may also be beneficial or even necessary for germination, especially after stratification (Lawes & Anderson 1980; Windauer et al. 2016). Natural conditions to break dormancy and initiate germination of kiwifruit seeds in the environment are only likely to occur in southern parts of Australia and during cooler times of the year.

For the reasons outlined, the likelihood that TVCV will be distributed within Australia in a viable state as a result of processing, sale or disposal of kiwifruit from China, and subsequently transfer to a susceptible part of a host is assessed as Very Low.

Likelihood of entry

The likelihood of entry is determined by combining the likelihood of importation with the likelihood of distribution using the matrix of rules shown in Table A.2.

The likelihood that TVCV will enter Australia, as a result of trade in kiwifruit from China and be distributed in a viable state to a susceptible part of a host, is assessed as: **Very Low**.

3.14.2 Likelihood of establishment

The likelihood that TVCV will establish within Australia based on a comparison of factors in the source and destination areas that affect pest survival and reproduction is assessed as: **High**.

The likelihood of establishment is assessed as High because host plants and suitable climatic conditions exist across Australia and tobamoviruses such as TVCV are able to remain infective across a range of temperatures.

The following information provides supporting evidence for this assessment.

Hosts of TVCV are widely grown throughout Australia.

- TVCV is known to infect a range of hosts, primarily within the families Brassicaceae and Plantaginaceae, and also other families such as Actinidiaceae, Caryophyllaceae, Balsaminaceae and Solanaceae (Chavan, Pearson & Cohen 2009; Heinze et al. 2006; Lockhart et al. 2008; O'Leary et al. 2024).
- Hosts include: *Brassica* spp. (e.g. turnip), *Plantago* spp. (ribgrass), *Digitalis* spp. (foxglove), *Impatiens* (balsam), *Actinidia* spp. (kiwifruit and kiwiberry), *Penstemon digitalis* (foxglove beardtongue), *Petunia* sp., *Alliaria petiolata* (garlic-mustard), *Silene flos-cuculi* (ragged robin) and *Arabidopsis thaliana* (Cohen et al. 2012; Lartey et al. 1993; Lockhart et al. 2014; Lockhart et al. 2008; Zhang et al. 2022b). A number of these plants are widely available across Australia (Randall 2007).

Climatic conditions in Australia are likely to be highly suitable for establishment.

- TVCV has been reported from a wide range of countries including China, Germany, Hungary, New Zealand, Portugal, Russia and USA (Chavan, Pearson & Cohen 2009; Cohen et al. 2012; Lartey et al. 1993; Menzel et al. 2025; O'Leary et al. 2024; Tóth et al. 2019).
- Similar climates exist in parts of Australia indicating that there are favourable climatic conditions in Australia for virus establishment.
- Although specific data are not available for TVCV, experimental studies have shown that tobamoviruses retain infectivity after exposure to a broad range of temperatures (Broadbent 1976; Gibbs 1977; Ilyas et al. 2022).
  - For example, yellow tailflower mild mottle virus (YTMMV) remained infectious across a range of storage temperatures for up to 1 year, and was able to persist at 55°C for 180 days (Koh et al. 2017).
  - Tobacco mosaic virus (TMV) remained infectious for >120 days at 28°C, ~95 days at 37°C, and ~30 days at 45°C (Yordanova, Donev & Stoimenova 2005).
  - In vitro studies have shown that TMV can remain viable for at least 50 years at temperatures of 5°C (Creager et al. 1999; Gibbs 1977; Skelton et al. 2023).

For the reasons outlined, the likelihood that TVCV will establish within Australia is assessed as High.

3.14.3 Likelihood of spread

The likelihood that TVCV will spread within Australia, based on a comparison of factors in the source and destination areas that affect the expansion of the geographic distribution of the pest is assessed as: **High**.

The likelihood of spread is assessed as High due to the widespread availability of susceptible host plants, suitable climatic conditions, and the capacity of TVCV to spread mechanically and via the spread of infected host plants.

The following information provides supporting evidence for this assessment.

Suitable host plants are widespread in Australia.

- TVCV can infect a range of plant species, including *Brassica* spp., *Plantago* spp., *Actinidia* spp. and various ornamental and weed hosts (Cohen et al. 2012; Lartey et al. 1993; Lockhart et al. 2014; Lockhart et al. 2008; Zhang et al. 2022b).
- Many of these host plants are common in agricultural and urban areas in Australia.

Australia has suitable climatic conditions for spread of TVCV.

- TVCV is present in a range of countries including China, Germany, Hungary, New Zealand, Portugal, Russia, former Yugoslavia and the USA (Menzel et al. 2025; O'Leary et al. 2024; Tóth et al. 2019).
- Many parts of Australia have similar climatic conditions to those areas where TVCV has already spread, suggesting many parts of Australia will be suitable for spread of TVCV.

TVCV is most likely to be spread by mechanical transmission and through movement of infected plants.

- Tobamoviruses like TVCV are typically spread through mechanical transmission such as direct plant to plant contact, grafting, contaminated tools, and hands and clothing (Broadbent 1976; Dombrovsky & Smith 2017; Kan & Citovsky 2025). Transfer occurs when virus-contaminated sap or tissue comes in contact with a healthy plant through wounds or abrasions (Walkey 1991).
- Standard industry practices in Australia such as regular cleaning and disinfection of tools (Kukulies & Veivers 2017; PHA & DEEDI 2009) may mitigate spread of the virus to some degree.
- TVCV may also be spread over longer distances through movement and planting of infected host plants that are asymptomatic. For example, TVCV hosts such as *Impatiens* are popular ornamental plants that are widely cultivated and distributed through nurseries and garden centres in Australia. Infected plants may not show symptoms at the time of sale and therefore may be planted in new areas (Lartey et al. 1993).

For the reasons outlined, the likelihood that TVCV will spread within Australia is assessed as High.

3.14.4 Overall likelihood of entry, establishment and spread

The overall likelihood of entry, establishment and spread is determined by combining the individual likelihoods of entry, establishment and spread using the matrix of rules in Table A.2.

The overall likelihood that TVCV will enter Australia as a result of trade in kiwifruit from China, be distributed in a viable state to a susceptible part of a host, establish in Australia and subsequently spread within Australia is assessed as: **Very Low.**

3.14.5 Consequences

The potential consequences of the establishment of TVCV in Australia has been estimated according to the methods described in Figure A.1.

Based on the decision rules described in Table A.3, that is, where the potential consequences of a pest with respect to one or more criteria are 'C', the overall consequences are estimated to be **Very Low.**

Criterion	Estimate and rationale
Direct	
The life or health of plants and plant products	C—minor significance at district level TVCV is known to infect a wide range of hosts, predominantly within the families Brassicaceae and Plantaginaceae, as well as Actidiniaceae, Balsaminaceae, Caryophyllaceae and Solanaceae. Canola (*Brassica napus*) is the most significant brassicaceous crop grown in Australia although there is no evidence it can be a host for TVCV. In 2023/24, approximately 7.5

Criterion	Estimate and rationale
	million tonnes of canola were produced in Australia at a value of $4.5 billion (ABS 2025). Brassicaceous vegetables, including broccoli, Brussels sprouts, cabbage, cauliflower and turnip, are also economically important crops, with a total production value of over $0.5 billion in 2023/24 (Hort Innovation 2025a). Although canola and brassicaceous vegetables are economically important crops across Australia, there is currently no evidence for TVCV causing economic losses, which suggests that any impacts are likely to be minimal. In kiwifruit, there is no evidence that TVCV causes disease symptoms in fruit. In addition, studies have shown that when TVCV is associated with symptoms on kiwifruit plants, it is often co-infected with other viruses (Blouin et al. 2013; Zhang et al. 2022b). Australia has a small commercial kiwifruit industry (Hort Innovation 2025a). Commercial orchards are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). In 2024/25, total production was estimated at 4,224 tonnes, valued at AUD 18.1 million, with 167 tonnes (valued at AUD 1 million) exported (Hort Innovation 2026). Kiwifruit is also occasionally grown in home gardens. Any impacts of TVCV to the Australian kiwifruit industry are expected to be minor. TVCV has been detected in non-crop and ornamental hosts possibly growing adjacent to commercial crops, including *Digitalis* spp. (foxglove), *Plantago* spp. (ribgrass) and *Silene flos-cuculi* (ragged robin) (Blouin et al. 2013; Chavan, Pearson & Cohen 2009). However, no evidence exists to suggest they suffer economic or ecological harm from TCVC infection.
Other aspects of the environment	B—unlikely to be discernible at district level There are no known direct consequences of TVCV on other aspects of the natural environment.
Indirect	
Eradication, control	B—unlikely to be discernible at district level There are no effective agrochemicals available for the control of TVCV in host plants. Once established, the virus is difficult to eradicate as it can survive for long periods on plant debris in the soil and on alternate hosts. Removal and destruction of all infected hosts followed by a period of fallowing may help in the management or eradication of the virus. However, these measures are likely to be labour intensive, costly and result in a significant loss of income. Any economic impacts of TVCV on affected industries are expected to be minimal; therefore, industries may not implement any specific management or eradication strategies.
Domestic trade	B—unlikely to be discernible at district level The introduction of TVCV is unlikely to have a discernible impact on domestic trade. It is unlikely to be cost-beneficial to impose movement controls to prevent the spread of TVCV between properties.
International trade	B—unlikely to be discernible at district level There is likely to be little or no impact on international trade of affected host commodities for consumption as they are generally not considered a risk pathway. For example, the presence of TVCV in New Zealand does not appear to impact exports of fresh kiwifruit to other countries. No countries appear to have specific import requirements to manage the risk of TVCV on kiwifruit from New Zealand. Exports of host plant nursery stock and seeds to countries that regulate TVCV may need to meet additional measures like virus testing. However, no specific requirements for TVCV were found for current Australian exports of nursery stock and seed.
Non-commercial and environmental	B— unlikely to be discernible at district level The potential use of herbicides to control alternate weed hosts may have a negative impact on native plants.

3.14.6 Unrestricted risk estimate

Unrestricted risk is the result of combining the overall likelihood of entry, establishment and spread with the outcome of overall consequences. The likelihood and consequences are combined using the risk estimation matrix shown in Table A.4.

Unrestricted risk estimate for TVCV	
Overall likelihood of entry, establishment and spread	Very Low
Consequences	Very Low
Unrestricted risk	**Negligible**

The URE for TVCV on the fresh kiwifruit from China pathway is assessed as **Negligible**, which achieves the ALOP for Australia. Therefore, specific risk management measures are not required for TVCV on this pathway.

3.15 Pest risk assessment conclusions

Likelihood ratings and the consequences estimate for individual quarantine pests and regulated articles are set out in Table 3.11.

Of the 28 pests for which a further pest risk assessment was conducted:

- The UREs for 12 quarantine pests were assessed as not achieving the ALOP for Australia, and thus specific risk management measures are required for these pests on this pathway. These pests are:
  - Oriental fruit fly (*Bactrocera dorsalis*)
  - Summer fruit tortrix (*Adoxophyes orana*)
  - European grapevine moth (*Lobesia botrana*)
  - Pacific mealybug (*Planococcus minor*)
  - Citrophilus mealybug (*Pseudococcus calceolariae*)
  - American grape mealybug (*Pseudococcus maritimus*)
  - Black parlatoria scale (*Parlatoria pergandii*)
  - European fruit lecanium (*Parthenolecanium corni*)
  - Mulberry scale (*Pseudaulacaspis pentagona*)
  - Hawthorn spider mite (*Amphitetranychus viennensis*)
  - Spider mite (*Eotetranychus kankitus*)
  - European flower thrips (*Frankliniella intonsa*)
- Two additional thrips species, Western flower thrips (*F. occidentalis*) and chilli thrips (*Scirtothrips dorsalis*), as well as 1 quarantine thrips species (*F. intonsa*), were identified as regulated articles for Australia due to their potential to introduce quarantine orthotospoviruses into Australia. The URE for quarantine orthotospoviruses transmitted by thrips was assessed in the thrips Group PRA (DAWR 2017b) as not achieving the ALOP for Australia, and thus specific risk management measures are required for these regulated articles on this pathway.
- The UREs for 14 quarantine pests were assessed as achieving the ALOP for Australia, and no measures are required for these pests on this pathway. These pests are:
  - soft rots (*Diaporthe amygdali, D. apiculata, D. eres*, *D. eucommiae*, *D. ganjae*, *D. liupanshuiensis*, *D. passiflorae*, *D. shuichengensis* and *D. xiuwenensis*)
  - fruit rots (*Neofusicoccum actinidiae* and *N. guttatum*)
  - sooty spot and dimple disease (*Pseudocercospora actinidiae* and *P. hangzhouensis*)
  - turnip vein-clearing virus (*Tobamovirus rapae*).

An overview of the decision process for the pest risk assessment for kiwifruit from China is presented in Figure 3.1.

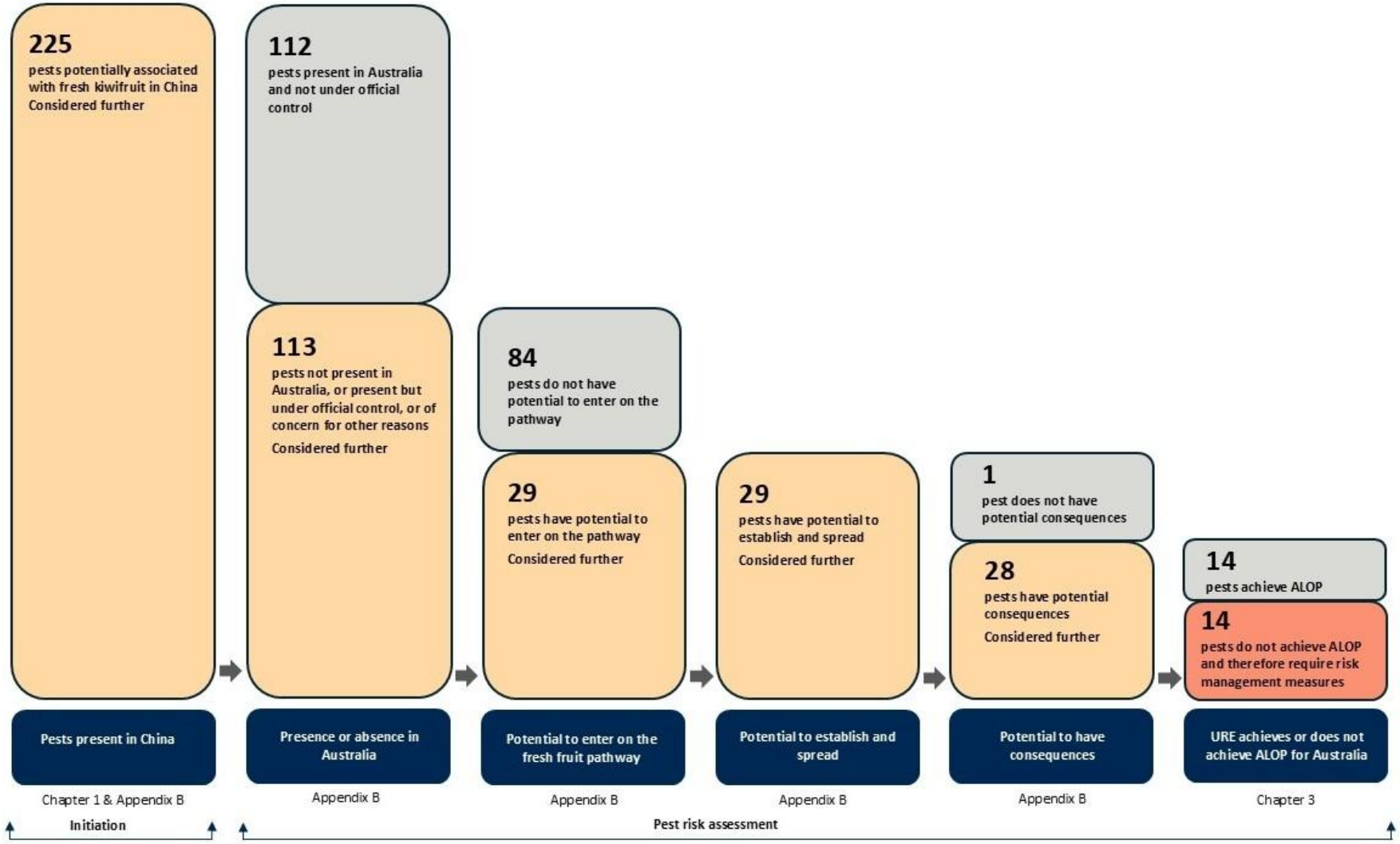
Table 3.11 Pest risk assessment conclusions for pests, and pest groups, associated with the pathway of kiwifruit from China

Pest name	Likelihood of						Consequences	URE
	Importation	Distribution	Entry	Establishment	Spread	EES		
Oriental fruit fly [Diptera: Tephritidae]								
Bactrocera dorsalis (EP)	Moderate	High	**Moderate**	High	High	Moderate	High	**High**
Moths [Lepidoptera: Tortricidae]								
Adoxophyes orana (EP)	Low	Moderate	**Low**	High	High	Low	Moderate	**Low**
Lobesia botrana (EP)	Low	Moderate	**Low**	High	Moderate	Low	Moderate	**Low**
Mealybugs [Hemiptera: Pseudococcidae]								
Planococcus minor (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Pseudococcus calceolariae (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Pseudococcus maritimus (GP)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Soft scale insects [Hemiptera: Coccidae]								
Parthenolecanium corni (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Hard scale insects [Hemiptera: Diaspididae]								
Parlatoria pergandii (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Pseudaulacaspis pentagona (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Spider mites [Trombidiformes: Tetranychidae]								
Amphitetranychus viennensis (GP)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Eotetranychus kankitus (GP)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Thrips [Thysanoptera: Thripidae]								
Frankliniella intonsa (GP) **a**	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Frankliniella occidentalis (GP, RA)	High	Moderate	**Moderate**	Not applicable	Not applicable	Not applicable	Not applicable	**Not applicable**
Scirtothrips dorsalis (GP, RA)	High	Moderate	**Moderate**	Not applicable	Not applicable	Not applicable	Not applicable	**Not applicable**

Pest name	Likelihood of						Consequences	URE
	Importation	Distribution	Entry	Establishment	Spread	EES		
Soft rot [Diaporthales: Diaporthaceae]								
Diaporthe amygdali (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe apiculata (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe eres (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe eucommiae (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe ganjae (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe liupanshuiensis (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe passiflorae (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe shuichengensis (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Diaporthe xiuwenensis (EP)	High	Low	**Low**	High	Moderate	Low	Low	**Very Low**
Fruit rot [Botryosphaeriales: Botryosphaeriaceae]								
Neofusicoccum actinidiae	Low	Low	**Very Low**	Moderate	Moderate	Very Low	Low	**Negligible**
Neofusicoccum guttatum	Low	Low	**Very Low**	Moderate	Moderate	Very Low	Low	**Negligible**
Sooty spot and dimple disease [Mycosphaerellales: Mycosphaerellaceae]								
Pseudocercospora actinidiae	Moderate	Low	**Low**	Moderate	Moderate	Low	Very Low	**Negligible**
Pseudocercospora hangzhouensis	Moderate	Low	**Low**	Moderate	Moderate	Low	Very Low	**Negligible**
Turnip vein-clearing virus [Martellivirales: Virgaviridae]								
Tobamovirus rapae	Moderate	Very Low	**Very Low**	High	High	Very Low	Very Low	**Negligible**
Orthotospoviruses [Bunyavirales: Tospoviridae] vectored by *Frankliniella intonsa*, *Frankliniella occidentalis* and *Scirtothrips dorsalis*								
Listed in the thrips group PRA (GP)	Moderate	Moderate	**Low**	Moderate	High	Low	Moderate	**Low**

a: Quarantine thrips species that is also identified as a regulated article for Australia as it vectors quarantine orthotospoviruses; this table also presents the risk estimates for these viruses from the thrips Group PRA (DAWR 2017b). **EP:** Species has been assessed previously and import policy already exists. **GP:** Species has been assessed previously in a Group PRA, and the Group PRA has been applied. **RA:** Regulated article. **WA:** Regional quarantine pest for Western Australia. **EES:** Overall likelihood of entry, establishment and spread. **URE:** Unrestricted risk estimate.

Figure 3.1 Overview of the decision process for the pest risk assessment for kiwifruit from China



4 Pest risk management

Pest risk management evaluates and selects options for measures for quarantine pests and regulated articles identified, in Chapter 3, as posing biosecurity risks that do not achieve the ALOP for Australia. This chapter proposes specific risk management measures for those quarantine pests and regulated articles (section 4.1). It also proposes an operational system for the assurance, maintenance and verification of phytosanitary status (section 4.2). Both specific risk management measures (section 4.1) and the operational system (section 4.2) are required to reduce the risk of introduction of these quarantine pests and regulated articles to achieve the ALOP for Australia. The specific measures and operational system are in addition to existing commercial production practices for kiwifruit in China, as described in Chapter 2, as these practices have been considered in the pest risk assessments presented in Chapter 3.

4.1 Pest risk management measures and phytosanitary procedures

Section 4.1.1 provides an overview of the proposed measures and section 4.1.2 outlines the measures for specific pests or pest groups.

4.1.1 Overview of proposed measures

The department has established specific risk management measures for the pests or pest groups assessed in Chapter 3 as posing biosecurity risks that do not achieve the ALOP for Australia. These measures have been determined by the department to be effective to mitigate the biosecurity risk of the pests or pest groups to achieve the ALOP for Australia for similar commodities from China and other countries. There is no available information to suggest that these measures will not manage the biosecurity risk of the pests or pest groups associated with fresh kiwifruit from China to achieve the ALOP for Australia. Therefore, the established measures are proposed for the pests or pest groups associated with fresh kiwifruit from China as described in section 4.1.2.

It is important to note that multiple risk management measure options are proposed in section 4.1.2 for management of Oriental fruit fly (*Bactrocera dorsalis*) and European grapevine moth (*Lobesia botrana*). China will need to propose which of the options it intends to use for consideration by the department. In addition, China may propose an alternative option, i.e. different from those proposed in section 4.1.2. If this occurs, the department is obliged to consider the alternative option in line with the principle of equivalence as outlined in section 4.1.3.

When reviewing risk management measures proposed by China, the department will ensure that the proposal aligns with the relevant ISPMs (as specified in section 4.1.2).

Before trade can commence, the department will require assurance that China has appropriate systems in place to effectively apply all the required phytosanitary measures in accordance with Australia's requirements. The department obtains assurance via a range of activities including an assessment of the exporting country's historic compliance, desk and/or site audit, and bilateral agreements.

Following trade commencement, the department monitors trade performance on an ongoing basis as part of its assurance and will take appropriate action where non-compliance is identified (see section 4.2.8). The department also regularly monitors for new scientific information and will review its import policy if there is information to suggest that the biosecurity risk associated with fresh

kiwifruit from China has changed, or where alternative risk management options become available (see section 4.4.2).

4.1.2 Risk management measures for quarantine pests and regulated articles associated with fresh kiwifruit from China

Proposed specific risk management measures for the 12 quarantine pests (including 1 quarantine pest that is also a regulated article) and 2 regulated articles associated with fresh kiwifruit from China are listed in Table 4.1.

Table 4.1 Proposed risk management measures for quarantine pests and regulated articles potentially associated with fresh kiwi fruit from China

Pest/pest group	Scientific name	Common name	Measures
Fruit flies [Diptera: Tephritidae]	*Bactrocera dorsalis* [EP]	Oriental fruit fly	PFA, PFPP or PFPS **a** OR Fruit treatment considered effective against all life stages of *B. dorsalis* associated with fresh kiwifruit, such as cold treatment or irradiation
Moths [Lepidoptera: Tortricidae]	*Adoxophyes orana* [EP]	summer fruit tortrix	Pre-export visual inspection and, if found remedial action **b**
	Lobesia botrana [EP]	European grapevine moth	PFA, PFPP or PFPS **a** OR Pre-export visual inspection and, if found remedial action **b**
Mealybugs [Hemiptera: Pseudococcidae]	*Planococcus minor* [GP, WA]	Pacific mealybug	Pre-export visual inspection and, if found, remedial action **b**
	Pseudococcus calceolariae [GP, WA]	citrophilus mealybug	
	Pseudococcus maritimus [GP]	American grape mealybug	
Soft scale insect [Hemiptera: Coccidae]	*Parthenolecanium corni* [GP, WA]	European fruit lecanium	
Hard scale insects [Hemiptera: Diaspididae]	*Parlatoria pergandii* [GP, WA]	black parlatoria scale	
	Pseudaulacaspis pentagona [GP, WA]	mulberry scale	
Spider mites [Trombidiformes: Tetranychidae]	*Amphitetranychus viennensis* [GP]	Hawthorn spider mite	
	Eotetranychus kankitus [GP]	spider mite	
Thrips [Thysanoptera: Thripidae]	*Frankliniella intonsa* [GP] **c**	European flower thrips	
	Frankliniella occidentalis [GP, RA]	Western flower thrips	
	Scirtothrips dorsalis [GP, RA]	chilli thrips	

a: PFA is pest free areas, PFPP is pest free places of production or PFPS is pest free production sites. **b:** Remedial action may include treatment of the consignment to ensure that the pest is no longer viable or withdrawal of the consignment from export to Australia. **c:** Quarantine pest species that is also identified as a regulated article for Australia as it vectors quarantine viruses. **EP:** Species has been assessed previously and import policy already exists. **RA:** Regulated article. **GP:** Species has been assessed previously in a Group PRA, and the Group policy has been applied. **WA:** Regional quarantine pest for Western Australia.

The department proposes the following specific risk management measures for the identified quarantine pests and regulated articles:

- for Oriental fruit fly
  - pest free areas, pest free places of production or pest free production sites, or
  - fruit treatment considered to be effective against Oriental fruit fly, such as cold treatment or irradiation
- for European grapevine moth
  - pest free areas, pest free places of production or pest free production sites, or
  - pre-export visual inspection and, if detected, remedial action
- for summer fruit tortrix, mealybugs, scale insects, spider mites and thrips
  - pre-export visual inspection and, if detected, remedial action.

Measures for Oriental fruit fly (*Bactrocera dorsalis*)

For Oriental fruit fly (*B. dorsalis*), the department proposes the options of pest free areas, pest free places of production, or pest free production sites; or fruit treatment considered to be effective against all life stages associated with fresh kiwifruit, such as cold disinfestation or irradiation. The objective of each of the proposed measures is to reduce the risk associated with this pest to achieve the ALOP for Australia when applied in combination with the operational system outlined in section 4.2.

Option 1: Pest free areas, pest free places of production or pest free production sites

The requirements for establishing a pest free area (PFA) are set out in ISPM 4: *Requirements for the establishment of pest free areas* (IPPC Secretariat 2024b) and, more specifically, ISPM 26: *Establishment of pest free areas for fruit flies (Tephritidae)* (IPPC Secretariat 2026a). The requirements for establishing pest free places of production (PFPP) and pest free production sites (PFPS) are set out in ISPM 10: *Requirements for the establishment of pest free places of production and pest free production sites* (IPPC Secretariat 2016b).

The department recognises that *B. dorsalis* is absent to the north of latitude 33 degrees in China, based on trapping and regulation (AQSIQ 2010), consistent with PFA principles and requirements. To maintain the PFA for *B. dorsalis*, China's existing National Fruit Flies Trapping Network would be required to be maintained in all areas, including production areas where fresh kiwifruit are to be sourced for export to Australia, consistent with the procedures recommended in ISPM 26 (IPPC Secretariat 2026a).

If an outbreak of *B. dorsalis* was to occur, China is required to notify the department within 48 hours. National emergency action plans for outbreaks are then required to be activated, which include establishing a delimiting survey by setting up additional traps to identify the site and extent of the fruit fly outbreak, and determine the surrounding area and buffer zone. Fruit sampling is also conducted.

Exports of fresh kiwifruit from the fruit fly outbreak areas must be suspended or undergo a disinfestation treatment approved by the department.

Option 2: Fruit treatment

For fresh kiwifruit sourced from areas south of latitude 33 degrees, or where any approved *B. dorsalis* PFA, PFPP or PFPS has been suspended (north of latitude 33 degrees), a treatment approved by the department for management of *B. dorsalis* must be undertaken.

Cold treatment

The department considers cold disinfestation to be an effective treatment for *B. dorsalis* on the fresh kiwifruit from China pathway. This treatment may be applied prior to export or in-transit, subject to approval and certification. The requirements for using cold disinfestation treatment as a phytosanitary measure are set out in ISPM 42: Requirements for the use of temperature treatments as phytosanitary measures (IPPC Secretariat 2018).

The department proposes that the following cold disinfestation treatment schedules will effectively manage *B. dorsalis* on fresh kiwifruit from China. These cold disinfestation treatment schedules are in accordance with the USDA treatment schedule T107-f and the generic cold treatment at 3°C or below for 18 days for *Bactrocera* fruit flies, agreed between GACC and the department, based on the findings of Myers et al. (2016). These cold disinfestation treatment schedules have been recommended for managing the risk of *B. dorsalis* and other fruit flies in previous import policies including stone fruits (DAWR 2016a, 2017a) and fresh Chinese jujubes (Department of Agriculture 2020) from China.

- pulp temperature of 0°C or below for 10 consecutive days, or
- pulp temperature of 0.56°C or below for 11 consecutive days, or
- pulp temperature of 1.11°C or below for 12 consecutive days, or
- pulp temperature of 1.67°C or below for 14 consecutive days, or
- pulp temperature of 3°C or below for 18 consecutive days.

Irradiation

The department considers irradiation to be an effective treatment for *B. dorsalis* on the kiwfruit from China pathway. The requirements for using irradiation as a phytosanitary measure are set out in ISPM 18: Requirements for the use of irradiation as a phytosanitary measure (IPPC Secretariat 2026c). Irradiation is recognised as an effective method for pest risk management when performed in approved facilities and at specific dose rates recognised as effective for target pest groups. Irradiation dose rates up to a maximum of 1000 Gy are permitted for quarantine purposes for fresh fruit and vegetables, including kiwifruit, by Food Standards Australia New Zealand (FSANZ 2021).

The department proposes a treatment schedule of 150 Gy minimum absorbed dose, consistent with ISPM 28 Annex 7: Irradiation treatment for fruit flies of the family Tephritidae (generic) (IPPC Secretariat 2021) for *B. dorsalis*.

The use of irradiation as a phytosanitary measure is subject to the Australian Government Department of Agriculture's approval of the irradiation facilities identified by GACC. Should China wish to use irradiation as a phytosanitary measure, GACC would need to provide a submission to the

Australian Government Department of Agriculture. The submission must fulfil requirements as set out in ISPM 18: *Guidelines for the use of irradiation as a phytosanitary measure* (FAO 2019).

Other fruit treatments

The department recognises other treatments such as fumigation may also be effective against *B. dorsalis* on the fresh kiwifruit from China pathway. The use of any such treatment option is subject to its approval by the department as an efficacious measure against these fruit flies. Should China wish to propose an alternative treatment option, GACC would need to provide a submission, which includes suitable information to support the claimed efficacy of the treatment to manage *B. dorsalis* on the fresh kiwifruit from China pathway, for consideration by the department.

Measures for European grapevine moth (*Lobesia botrana*)

For *L. botrana*, the department proposes the options of PFA, PFPP or PFPS; or pre-export visual inspection and, if found, remedial action. The objective of each of the proposed measures is to reduce the risk associated with this pest to achieve the ALOP for Australia when applied in combination with the operational system outlined in section 4.2.

Option 1: Pest free areas, pest free places of production or pest free production sites

The requirements for establishing a PFA are set out in ISPM 4: *Requirements for the establishment of pest free areas* (IPPC Secretariat 2024b). The requirements for establishing a PFPP and PFPS are set out in ISPM 10: *Requirements for the establishment of pest free places of production and pest free production sites* (IPPC Secretariat 2016b).

The department recognises that *L. botrana* has only been recorded from the Turpan region in Xinjiang province (GACC 2024; Wang & Satter 2023) and is absent from all other parts of China. Should China wish to use PFA, PFPP or PFPS as a measure to manage the risk posed by *L. botrana*, GACC would need to provide a submission demonstrating the establishment of these to the department. The submission demonstrating PFA must fulfil requirements as set out in ISPM 4 (IPPC Secretariat 2024b), and the submission demonstrating PFPP or PFPS must fulfil requirements as set out in ISPM 10 (IPPC Secretariat 2016b). The submission is subject to approval by the department.

Option 2: Pre-export visual inspection and, if found, remedial action

For fresh kiwifruit sourced from the Turpan region or from any approved *L. botrana* PFA, PFPP or PFPS that has been suspended, the department proposes the option of pre-export visual inspection and, if found, remedial action. All fresh kiwifruit consignments for export to Australia from areas of China must be inspected by technical officers from GACC. The inspection should be consistent with ISPM 23*: Guidelines for inspection* (IPPC Secretariat 2019b) and ISPM 31: *Methodologies for sampling of consignments* (IPPC Secretariat 2016a) and provide a 95% level of confidence that infestation greater than 0.5% will be detected. The method used for visual inspection must be able to detect all life stages of this pest, for example using visual aids such as a hand lens, where necessary.

Each consignment must be found free of *L. botrana*. Export consignments found to contain *L. botrana* must be subjected to remedial action. Remedial action may include withdrawing the consignment from export to Australia, or application of an approved treatment to ensure that the pest is no longer viable.

Measure for summer fruit tortrix moth, mealybugs, scale insects, spider mites and thrips

The department proposes the option of pre-export visual inspection and, if found, remedial action for summer fruit tortrix moth (*Adoxophyes orana*); mealybugs (*Planococcus minor*, *Pseudococcus calceolariae* and *P. maritimus*); scale insects (*Parlatoria pergandii*, *Parthenolecanium corni* and *Pseudaulacaspis pentagona*); spider mites (*Amphitetranychus viennensis* and *Eotetranychus kankitus*); and thrips (*Frankliniella intonsa*, *F. occidentalis* and *Scirtothrips dorsalis*) on the fresh kiwifruit from China pathway. The method used for visual inspection must be able to detect all life stages of these pests, for example by using visual aids such as hand lens, where necessary. The inspection should be consistent with ISPM 23*: Guidelines for inspection* (IPPC Secretariat 2019b) and ISPM 31: *Methodologies for sampling of consignments* (IPPC Secretariat 2016a) and provide a 95% level of confidence that infestation greater than 0.5% will be detected. The objective of this measure is to reduce the risk associated with these pests to achieve the ALOP for Australia when applied in combination with the operational system outlined in section 4.2.

Proposed measure: Pre-export visual inspection and, if found, remedial action

All fresh kiwifruit consignments for export to Australia from China must be inspected by technical officers from GACC in accordance with ISPM 23 (IPPC Secretariat 2019b) and ISPM 31 (IPPC Secretariat 2016a). Each consignment must be found free of summer fruit tortrix moth, mealybugs, scale insects, spider mites and thrips. Export consignments found to contain these pests must be subjected to remedial action. Remedial action may include withdrawing the consignment from export to Australia, or application of an approved treatment to ensure that the pests are no longer viable.

4.1.3 Consideration of alternative measures

Consistent with the principle of equivalence detailed in ISPM 11: *Pest risk analysis for quarantine pests* (IPPC Secretariat 2019c) and ISPM 24: *Guidelines for the determination and recognition of equivalence of phytosanitary measures* (FAO 2017), the department will consider any alternative measure proposed by GACC. Alternative measures must demonstrably manage the target pests to achieve the ALOP for Australia. Evaluation of any such measure will require a technical submission from GACC that details the proposed measure, including suitable information to support the claimed efficacy, for consideration by the department.

4.2 Operational system for the assurance, maintenance and verification of phytosanitary status

A system of operational procedures is necessary to ensure proposed specific risk management measures (section 4.1) are effectively applied, the phytosanitary status of fresh kiwifruit from China is maintained, and these can be verified.

4.2.1 A system of traceability to source orchards

The objectives of this procedure are to ensure that:

- kiwifruit are sourced only from orchards producing commercial quality fruit

- orchards from which kiwifruit are sourced can be identified, so that any investigation and corrective action can be targeted in the event that pests of biosecurity concern to Australia are intercepted
- where kiwifruit are grown/produced in an approved PFA, PFPP or PFPS, it can be verified that all fruit was sourced from the approved area, place or site and produced and exported under the conditions for that pathway.

China must establish a system to enable traceability to where kiwifruit for export to Australia are sourced. GACC must ensure that export kiwifruit growers are aware of pests of biosecurity concern for Australia and have systems in place to produce export quality fruit that meet Australia's requirements.

Where a pest risk management measure involving pest monitoring and controls during production and at harvest (such as PFA, PFPP, PFPS or systems approach) is used, export orchards must be registered with China against the requirement of the measure being used. Records of registered orchards and GACC audits must be kept by GACC and must be made available to the department.

4.2.2 Registration of packing houses and treatment providers, and auditing of procedures

The objectives of this procedure are to ensure that:

- commercial quality kiwifruit are sourced only from packing houses that are approved by GACC
- where applicable, treatment providers are approved by GACC and capable of applying a treatment that suitably manages the target pests.

Kiwifruit export packing houses must be registered with GACC. GACC is required to ensure that the registered packing houses are suitably equipped and have a system in place to carry out the specified phytosanitary activities. The list of registered packing houses and records of GACC audits must be kept by GACC and must be made available to the department.

In circumstances where kiwifruit undergo pre-export treatment, this process must be undertaken by treatment providers that have been registered with and audited by GACC for that purpose. Records of GACC registration requirements and audits must be made available to the department.

The approval of treatment providers by GACC must include verification that suitable systems are in place to ensure compliance with treatment requirements. This may include:

- documented procedures to ensure kiwifruit are appropriately treated and safeguarded post treatment
- staff training to ensure compliance with procedures
- record-keeping procedures
- suitability of facilities and equipment
- GACC‘s system of oversight of treatment application.

The department provides final approval of facilities, following review of regulatory oversight provided by GACC and the capability demonstrated by the facility. Site visits may be required for the department to have assurance that treatment can be applied accurately and consistently.

4.2.3 Packaging, labelling and containers

The objectives of this procedure are to ensure that:

- kiwifruit intended for export to Australia, and associated packaging, are not contaminated by quarantine pests or regulated articles (as defined in ISPM 5: *Glossary of phytosanitary terms* (IPPC Secretariat 2026b).
- unprocessed packaging material is not imported with kiwifruit from China. Unprocessed packaging material is not permitted as it may vector pests identified as not being on the pathway, or pests not known to be associated with kiwifruit
- all wood material associated with the consignment used in packaging and transport of kiwifruit complies with the department's import requirements, as published on BICON
- secure packaging is used for export of kiwifruit from China to Australia, to prevent re-infestation during storage and transport and prevent escape of pests during clearance procedures on arrival in Australia. Packaging must meet Australia's secure packaging options published on BICON
- consignments are made insect proof and secure, by using at least one of the following secure consignment options:
  - **integral cartons**: produce may be packed in integral (fully enclosed) cartons (packages) with boxes having no ventilation holes and lids tightly fixed to the bases
  - **ventilation holes of cartons covered:** cartons (packages) with ventilation holes must have the holes covered/sealed with a mesh/screen of no more than 1.6 mm pore size and not less than 0.16mm strand thickness. Alternatively, the vent holes may be taped over
  - **polythene liners:** vented cartons (packages) with sealed polythene liners/bags within are acceptable (folded polythene bags are acceptable). This option is not permitted for irradiation
  - **meshed or shrink-wrapped pallets or Unit Load Devices (ULDs):** ULDs transporting cartons with open ventilation holes/gaps, or palletised cartons with ventilation holes/gaps must be fully covered or wrapped with polyethylene/plastic/foil sheet or mesh/screen of no more than 1.6 mm diameter pore size and not less than 0.16mm strand thickness. This option is not permitted for irradiation
  - **produce transported in fully enclosed containers:** cartons (packages) with holes as loose boxes or on pallets may be transported in fully enclosed containers. Enclosed containers include 6-sided containers with solid sides, or ULDs with tarpaulin sides that have no holes or gaps. The container must be transported to the inspection point intact. This option is not permitted for irradiation
- packaged kiwifruit from China must be labelled with sufficient identification for the purposes of traceability. This may include:
  - for treated product: the treatment facility name/number and treatment identification reference/number
  - for kiwifruit where the measures include orchard freedom or a system approach: the orchard reference number
  - for all kiwifruit consignments: the packing house reference/number
- where applicable, packaged kiwifruit from China that has undergone irradiation treatment is labelled with a statement that the kiwifruit has been treated with ionising radiation.

Export packing houses and treatment providers (where applicable) must ensure packaging and labelling are suitable to maintain phytosanitary status of the export consignments.

4.2.4 Specific conditions for storage and movement

The objective of this procedure is to ensure that the quarantine integrity of the kiwifruit is maintained during storage and movement.

Treated and/or inspected kiwifruit for export to Australia must be kept secure and segregated at all times from any fruit for domestic or other markets, and from untreated/un-inspected product, to prevent mixing or cross-contamination. The area set aside for goods to Australia must be clearly identified with signage.

4.2.5 Freedom from trash

The objective of this procedure is to ensure that kiwifruit for export are free from trash (for example, loose stem and leaf material, seeds, soil, animal matter/parts or other extraneous material) and foreign matter.

Freedom from trash will be confirmed by the inspection procedures. Export lots or consignments found to contain trash or foreign matter must be withdrawn from export unless approved remedial action, such as reconditioning, is available and applied to the export consignment and then re-inspected.

4.2.6 Pre-export phytosanitary inspection and certification by GACC

The objective of these procedures is to ensure that Australia's import conditions have been met. All consignments of kiwifruit from China for export to Australia must be inspected by GACC and found free of pests of biosecurity concern for Australia. Pre-export visual inspection must be undertaken by GACC in accordance with ISPM 23: *Guidelines for inspection* (IPPC Secretariat 2019b) and consistent with the principles of ISPM 31: *Methodologies for sampling of consignments* (IPPC Secretariat 2016a). Any netting or artificial wrapping material must be removed during the inspection.

All consignments must be inspected prior to export in accordance with official procedures for all visually-detectable quarantine pests and regulated articles (including trash). Sampling and inspection methods should be consistent with ISPM 23 (IPPC Secretariat 2019b) and ISPM 31 (IPPC Secretariat 2016a) and provide a 95% level of confidence that infestation greater than 0.5% will be detected. For a consignment equal to or greater than 1,000 units (one unit being a single fresh kiwifruit), this is equivalent to a 600-unit sample randomly selected across the consignment. Any netting or artificial wrapping material must be removed during the inspection.

A phytosanitary certificate must be issued for each consignment upon completion of pre-export inspection and treatment to certify that the required risk management measures have been undertaken prior to export and that the consignment meets Australia's import requirements.

Each phytosanitary certificate must include:

- a description of the consignment (including traceability information)

- details of disinfestation treatments (if required) which includes approved facility name and address, date of treatment and, where irradiation is used, absorbed dose (target and measured)
- additional declarations that may be required such as identification of the consignment as being sourced from a recognised pest free area, pest free place of production or pest free production site.

Some treatments (such as irradiation) may also require treatment certificates that accompany the phytosanitary certificate. BICON will describe when treatment certificates are required.

4.2.7 Phytosanitary inspection by the Department of Agriculture, Fisheries and Forestry

The objectives of this procedure are to ensure that:

- consignments comply with Australian import requirements
- consignments are as described on the phytosanitary certificate
- quarantine integrity has been maintained.

On arrival in Australia, the department will:

- assess documentation to verify that the consignment is as described on the phytosanitary certificate, that required phytosanitary actions have been undertaken, and that product security has been maintained
- verify that the biosecurity status of consignments of kiwifruit from China meet Australia's import requirements. When inspecting consignments, the department will randomly sample 600 units, or equivalent per phytosanitary certificate and apply an inspection method suitable for the commodity.

4.2.8 Remedial action(s) for non-compliance

The objectives of remedial action(s) for non-compliance are to ensure that:

- any quarantine pest or regulated article, including trash, is addressed by remedial action, as appropriate
- non-compliance with import requirements is addressed, as appropriate.

Any consignment that fails to meet Australia's import requirements will be subject to suitable remedial treatment where an effective treatment is available for the identified biosecurity risks. Where an effective treatment is not available, the imported consignment will be exported or destroyed.

Other actions, including partial or complete suspension of the import pathway, may be taken depending on the identity and/or importance of the pest intercepted, for example, fruit flies of economic importance, or pests for which PFAs, PFPPs or PFPSs or a systems approach are established.

In the event that consignments of kiwifruit from China are repeatedly non-compliant, the department may require enhanced risk management measures beyond a standalone visual inspection. Options may include mandatory in-field controls or a combination of measures including a systems approach or methyl bromide fumigation, to manage pests including mealybugs, scale insects, spider mites and thrips. The department reserves the right to suspend imports and to

conduct an audit of the risk management measures and systems in place. Imports will recommence only when the department is satisfied that appropriate corrective action has been undertaken.

4.3 Uncategorised pests

If an organism that has not been categorised, including a contaminant pest, is detected on kiwifruit on arrival in Australia, it will require assessment by the department to determine its quarantine status and whether phytosanitary action is required.

Assessment is also required if the detected species was categorised as not having the potential to be on the import pathway. If the detected species was categorised as being on the pathway but assessed as having an unrestricted risk that achieves the ALOP for Australia, then it may require reassessment. The detection of any pests of biosecurity concern not already identified in the analysis may result in remedial action and/or temporary suspension of trade while a review is conducted to ensure that existing measures continue to provide the ALOP for Australia.

4.4 Review of processes

4.4.1 Verification of protocol

Prior to or during the first season of trade, the department will verify the implementation of the required import requirements including registration, operational procedures and treatment providers, where applicable. This may involve representatives from the department visiting areas in China that produce kiwifruit for export to Australia.

4.4.2 Review of policy

The department will review the import policy after a suitable volume of trade has been achieved to ensure import requirements continue to be appropriate to manage the biosecurity risk of the pathway. In addition, the department reserves the right to review the import policy as deemed necessary. This may include if there is reason to believe that the pest or phytosanitary status in China has changed, or where alternative risk management or compliance-based intervention options become available.

GACC must inform the department immediately on the detection of any new pests of kiwifruit in China that might be of potential biosecurity concern to Australia.

4.5 Meeting Australia’s food laws

In addition to meeting Australia's biosecurity laws, food imported for sale for human consumption must comply with the requirements of the *Imported Food Control Act 1992*, as well as Australian state and territory food laws. Among other things, these laws require all food, including imported food, to be safe and meet the standards set out in the Australia New Zealand Food Standards Code (the Code).

Food Standards Australia New Zealand (FSANZ) is responsible for developing and maintaining the Code. The Code is available at foodstandards.gov.au/code/Pages/default.aspx.

The department administers the *Imported Food Control Act 1992* which supports the inspection and testing of imported food to verify its safety and compliance with Australia's food standards, including the Code. This is undertaken through a risk-based border inspection program, the Imported Food

Inspection Scheme. More information about this scheme is available at agriculture.gov.au/biosecurity-trade/import/goods/food/inspection-testing/ifis.

Standards 1.1.1, 1.1.2 and 1.4.4 of the Code specify that a food for sale must not consist of, or have as an ingredient or a component, a prohibited or restricted plant or fungus; unless expressly permitted by the Code. The prohibited and restricted plants and fungi are listed in Schedules 23 and 24 of the Code, respectively.

Standard 1.4.2 and Schedules 20, 21 and 22 of the Code set out the maximum residue limits and extraneous residue limits for agricultural or veterinary chemicals that are permitted in foods for sale, including imported food. Standard 1.1.1 of the Code specifies that a food must not have, as an ingredient or a component, a detectable amount of an agvet chemical, or a metabolite or a degradation product of the agvet chemical; unless expressly permitted by the Code.

Certain imported food, including some minimally processed horticulture products, must be covered by a food safety management certificate to be imported into Australia. The certificate provides evidence that a food has been produced through a food safety management system. This system must have appropriate controls in place to manage food safety hazards. More information about the foods that require a food safety management certificate and how to comply is available at agriculture.gov.au/biosecurity-trade/import/goods/food/certification/safety-management-certificates.

5 Conclusion

This draft risk analysis report was conducted to assess the proposal by China for market access to Australia for fresh kiwifruit for human consumption. It was conducted in accordance with Australia's method for pest risk analysis (Appendix A), which is consistent with the International Standards for Phytosanitary Measures (ISPMs), including ISPM 2: *Framework for pest risk analysis* (IPPC Secretariat 2019a) and ISPM 11: *Pest risk analysis for quarantine pests* (IPPC Secretariat 2019c), and the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (WTO 1995).

In conclusion, this draft report proposes that the importation of commercially produced kiwifruit to Australia from all commercial production areas of China be permitted, subject to a range of biosecurity requirements outlined in Chapter 4.

The findings of this draft report are based on a comprehensive analysis of scientific literature and other relevant information.

The department considers that the risk management measures proposed in this report will provide an appropriate level of protection against the quarantine pests and regulated articles identified as associated with the trade of kiwifruit from China.

All fresh fruit, including kiwifruit from China, have been determined by the Director of Biosecurity to be conditionally non-prohibited goods under s174 of the *Biosecurity Act 2015*. Conditionally non-prohibited goods cannot be brought or imported into Australia unless they meet specific import conditions.

This report, upon its finalisation, provides the basis for import conditions for kiwifruit from China for human consumption. The import conditions will be communicated on BICON. The publication of import conditions on BICON is subject to China being able to demonstrate that processes and procedures are in place to implement the required risk management measures.

Appendix A: Method for pest risk analysis

This section sets out the method for the pest risk analysis (PRA) used by the Department of Agriculture, Fisheries and Forestry (the department). This method is consistent with the International Standards for Phytosanitary Measures (ISPMs), including ISPM 2: *Framework for pest risk analysis* (IPPC Secretariat 2019a) and ISPM 11: *Pest risk analysis for quarantine pests* (IPPC Secretariat 2019c) and the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (WTO 1995).

A PRA is 'the process of evaluating biological or other scientific and economic evidence to determine whether an organism is a pest, whether it should be regulated, and the strength of any phytosanitary measures to be taken against it' (FAO 2025). A pest is 'any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products' (FAO 2025). A 'quarantine pest' is 'a pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled' (FAO 2025).

Biosecurity risk consists of 2 major components: the likelihood of a pest entering, establishing and spreading in Australia for a defined import pathway; and the consequences should this happen. These 2 components are combined to give an overall estimate of the pest risk for the defined import pathway.

Unrestricted risk is estimated taking into account, where applicable, the existing commercial production practices of the exporting country.

Restricted risk is estimated with phytosanitary measure(s) applied. A phytosanitary measure is 'any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests' (FAO 2025).

A PRA is conducted in 3 consecutive stages: initiation (A1), pest risk assessment (A2) and pest risk management (A3).

A1 Stage 1: Initiation

Initiation identifies the pest(s) and pathway(s) that are of biosecurity concern and should be considered for risk analysis in relation to the identified PRA area.

A pathway is 'any means that allows the entry or spread of a pest' (FAO 2025). For this risk analysis, the 'pathway' being assessed is defined in Chapter 1 (section 1.2.2).

For this risk analysis, the 'PRA area' is defined as Australia for pests that are absent, or of limited distribution and under official control. For areas with regional freedom from a pest, the 'PRA area' may be defined based on a state or territory of Australia or may be defined as a region of Australia consisting of parts of a state or territory or several states or territories.

According to ISPM 11 (IPPC Secretariat 2019c), the PRA process may be initiated because of:

- the identification of a pathway that presents a potential pest hazard. For example, international trade is requested for a commodity not previously imported into the country or a commodity from a new area or new country of origin

- the identification of a pest that may require phytosanitary measures. For example, a new pest risk is identified by scientific research, a pest is repeatedly intercepted, a request is made to import an organism, or an organism is identified as a vector of other pests
- the review or revision of a policy. For example, a country's decision is taken to review phytosanitary regulations, requirements or operations or a new treatment or loss of a treatment system, a new process, or new information impacts on an earlier decision.

The basis for the initiation of this risk analysis is defined in Chapter 1 (section 1.2.1).

The primary elements in the initiation stage are:

- identity of the pests
- potential association of each pest with the pathway being assessed.

The identity of the pests is presented at species level by the species' scientific name in most instances, but a lower taxonomic level may be used where appropriate. Synonyms are provided where the current scientific name differs from that provided by the exporting country's National Plant Protection Organisation (NPPO) or where the cited literature used a different scientific name.

The potential association of each pest with the pathway being assessed considers information on:

  - association of the pest with the host plant/commodity and
  - the presence or absence of the pest in the exporting country/region relevant to the pathway being assessed.

A2 Stage 2: Pest risk assessment

The process for pest risk assessment includes 2 sequential steps:

- pest categorisation (A2.1)
- further pest risk assessment, which includes evaluation of the likelihoods of the introduction (entry and establishment) and spread of a pest (A2.2), and evaluation of the magnitude of the associated potential consequences (A2.3).

A2.1 Pest categorisation

Pest categorisation examines the pests identified in the initiation stage (A1) to determine which of these pests meet the definition of a quarantine pest and require further pest risk assessment.

ISPM 11 (IPPC Secretariat 2019c) states that '*The opportunity to eliminate an organism or organisms from consideration before in-depth examination is undertaken is a valuable characteristic of the categorisation process. An advantage of pest categorisation is that it can be done with relatively little information; however information should be sufficient to adequately carry out the categorisation*'. In line with ISPM 11, the department utilises the pest categorisation step to screen out some pests from further consideration where appropriate. For each pest that is not present in Australia, or is present but under official control, the department assesses its potential to enter (importation and distribution) on the pathway being assessed and, if having potential to enter, its potential to establish and spread in the PRA area. For a pest to cause economic consequences, the pest will need to enter, establish and spread in the PRA area. Therefore, pests that do not have potential to enter on the pathway being assessed, or have potential to enter but do not have potential to establish and spread in the PRA area, are not considered further. The potential for economic consequences is then

assessed for pests that have potential to enter, establish and spread in the PRA area. Further pest risk assessments are then undertaken for pests that have potential to cause economic consequences, i.e., pests that meet the criteria for a quarantine pest.

Pest categorisation uses the following primary elements to identify the quarantine pests and to screen out some pests from further consideration where appropriate for the pathway being assessed:

- presence or absence and regulatory status in the PRA area
- potential for entry, establishment and spread in the PRA area
- potential for economic consequences in the PRA area.

A2.2 Assessment of the likelihood of entry, establishment and spread

ISPM 11 (IPPC Secretariat 2019c) provides details of how to assess the 'probability of entry', 'probability of establishment' and 'probability of spread' of a pest. The SPS Agreement (WTO 1995) uses the term 'likelihood' rather than 'probability' for these estimates. In qualitative PRAs, the department uses the term 'likelihood' as the descriptor. The use of the term 'probability' is limited to the direct quotation of ISPM definitions.

A summary of the assessment process is given here, followed by a description of the qualitative methodology used in this risk analysis.

A2.2.1 Likelihood of entry

The likelihood of entry describes the likelihood that a quarantine pest will enter Australia when a given commodity is imported, be distributed in a viable state in the PRA area and subsequently be transferred to a host.

For the purpose of considering the likelihood of entry, the department divides this step into 2 components:

- **Likelihood of importation** – the likelihood that a pest will arrive in Australia in a viable state when a given commodity is imported
- **Likelihood of distribution** – the likelihood that the pest will be distributed in a viable state, as a result of the processing, sale or disposal of the commodity, in the PRA area and subsequently transfer to a susceptible part of a host.

Factors to be considered in the likelihood of importation may include:

- likelihood of the pest being associated with the pathway at origin
  - prevalence of the pest in the source area
  - occurrence of the pest in a life-stage that would be associated with the commodity
  - mode of trade (for example, bulk, packed)
  - volume and frequency of movement along each pathway
  - seasonal timing of imports
  - pest management, cultural and commercial procedures applied at the place of origin (for example, application of plant protection products, handling, culling, and grading)

- likelihood of survival of the pest during transport or storage
  - speed and conditions of transport and duration and conditions of storage compared with the duration of the life cycle of the pest
  - vulnerability of the life-stages of the pest during transport or storage
  - prevalence of the pest likely to be associated with a consignment
  - commercial procedures (for example, refrigeration) applied to consignments during transport and storage in the country of origin, and during transport to Australia
- likelihood of pest surviving existing pest management procedures.

Factors to be considered in the likelihood of distribution may include:

- commercial procedures (for example, refrigeration) applied to consignments during distribution in Australia
- dispersal mechanisms of the pest, including vectors, to allow movement from the pathway to a suitable host
- whether the imported commodity is to be sent to a few or many destination points in the PRA area
- proximity of entry, transit and destination points to suitable hosts
- time of year at which import takes place
- intended use of the commodity (for example, for planting, processing or consumption)
- risks from by-products and waste.

A2.2.2 Likelihood of establishment

Establishment is defined as the 'perpetuation, for the foreseeable future, of a pest within an area after entry' (FAO 2025). In order to estimate the likelihood of establishment of a pest, reliable biological information (for example, lifecycle, host range, epidemiology, survival) is obtained from the areas where the pest currently occurs. The situation in the PRA area can then be compared with that in the areas where it currently occurs and expert judgement used to assess the likelihood of establishment.

Factors to be considered in the likelihood of establishment in the PRA area may include:

- availability of suitable hosts, alternate hosts and vectors in the PRA areas
  - prevalence of hosts and alternate hosts in the PRA area
  - whether hosts and alternate hosts occur within sufficient geographic proximity to allow the pest to complete its life cycle
  - whether there are other plant species, which could prove to be suitable hosts in the absence of usual host species
  - whether a vector, if needed for dispersal of the pest, is already present in the PRA area or likely to be introduced
- suitability of environment in the PRA area
  - factors in the environment in the PRA area (for example, suitability of climate, soil, pest and host competition) that are critical to the development of the pest, its host and if

applicable its vector, and to their ability to survive periods of climatic stress and complete their life cycles

- cultural practices and control measures in the PRA area that may influence the ability of the pest to establish
- other characteristics of the pest
  - reproductive strategy of the pest and method of pest survival
  - potential for adaptation of the pest
  - minimum population needed for establishment.

A2.2.3 Likelihood of spread

Spread is defined as 'the expansion of the geographical distribution of a pest within an area' (FAO 2025). The likelihood of spread considers the factors relevant to the movement of the pest, after establishment on a host plant or plants, to other susceptible host plants of the same or different species in other areas. In order to estimate the likelihood of spread of the pest, reliable biological information is obtained from areas where the pest currently occurs. The situation in the PRA area is then carefully compared with that in the areas where the pest currently occurs and expert judgement used to assess the likelihood of spread.

Factors to be considered in the likelihood of spread may include:

- suitability of the natural and/or managed environment for natural spread of the pest
- presence of natural barriers
- potential for movement with commodities, conveyances or by vectors
- intended use of the commodity
- potential vectors of the pest in the PRA area
- potential natural enemies of the pest in the PRA area.

A2.2.4 Assigning likelihoods for entry, establishment and spread

Likelihoods are assigned to each step of entry, establishment and spread. Six qualitative likelihood descriptors are used: High; Moderate; Low; Very Low; Extremely Low; and Negligible. Definitions for each of these likelihoods are given in Table A.1.

Table A.1 Nomenclature of likelihoods

Likelihood	Descriptive definition
High	The event would be very likely to occur
Moderate	The event would occur with an even likelihood
Low	The event would be unlikely to occur
Very Low	The event would be very unlikely to occur
Extremely Low	The event would be extremely unlikely to occur
Negligible	The event would almost certainly not occur

A2.2.5 Combining likelihoods

The likelihood of entry is determined by combining the likelihood that the pest will be imported into the PRA area and the likelihood that the pest will be distributed within the PRA area, using a matrix

of rules (Table A.2). This matrix is then used to combine the likelihood of entry and the likelihood of establishment, and the likelihood of entry and establishment is then combined with the likelihood of spread to determine the overall likelihood of entry, establishment and spread.

For example, if a descriptor of Low is assigned for the likelihood of importation, Moderate for the likelihood of distribution, High for the likelihood of establishment and Very Low for the likelihood of spread, then the likelihood of importation of Low and the likelihood of distribution of Moderate are combined to give a likelihood of Low for entry. The likelihood for entry is then combined with the likelihood assigned for establishment of High to give a likelihood for entry and establishment of Low. The likelihood for entry and establishment is then combined with the likelihood assigned for spread of Very Low to give the overall likelihood for entry, establishment and spread of Very Low. This can be summarised as:

importation x distribution = entry [E]	**Low x Moderate = Low**
entry x establishment = [EE]	**Low x High = Low**
[EE] x spread = [EES]	**Low x Very Low = Very Low**

Table A.2 Matrix of rules for combining likelihoods

	High	Moderate	Low	Very Low	Extremely Low	Negligible
High	High	Moderate	Low	Very Low	Extremely Low	Negligible
Moderate	–	Low	Low	Very Low	Extremely Low	Negligible
Low	–	–	Very Low	Very Low	Extremely Low	Negligible
Very Low	–	–	–	Extremely Low	Extremely Low	Negligible
Extremely Low	–	–	–	–	Negligible	Negligible
Negligible	–	–	–	–	–	Negligible

Time and volume of trade

One factor affecting the likelihood of entry is the volume and duration of trade. If all other conditions remain the same, the likelihood of entry will increase as time passes and the overall volume of trade increases.

The department normally considers the likelihood of entry on the basis of the estimated volume of one year's trade. This is a convenient value for the analysis that is relatively easy to estimate and allows for expert consideration of seasonal variations in pest presence, incidence and behaviour to be taken into account. The consideration of the likelihood of entry, establishment and spread and subsequent consequences takes into account events that might happen over a number of years even though only one year's volume of trade is being considered. This difference reflects biological and ecological facts, for example where a pest or disease may establish in the year of import but spread may take many years.

The use of a one-year volume of trade has been taken into account when setting up the matrix that is used to estimate the risk. Policy decisions that are based on the department's method that uses the estimated volume of one year's trade are consistent with Australia's policy on appropriate level of protection and meet the Australian Government's requirement for ongoing quarantine protection. If there are substantial changes in the volume and nature of the trade in specific commodities then the department will review the risk analysis and, if necessary, provide updated policy advice.

In assessing the volume of trade in this risk analysis, the department assumed that a substantial volume of trade will occur.

A2.3 Assessment of potential consequences

In estimating the potential consequences of a pest if the pest were to enter, establish and spread in Australia, the department uses a 2-step process. In the first step, a qualitative descriptor of the impact is assigned to each of the direct and indirect criteria in terms of the *level of impact* and the *magnitude of impact*. The second step involves combining the impacts for each of the criteria to obtain an 'overall consequences' estimation.

Step 1: Assessing direct and indirect impacts

Direct pest impacts are considered in the context of the impacts on:

- the life or health of plants and plant products

  This may include pest impacts on the life or health of the plants and production effects (yield or quality) either at harvest or during storage.

  - Where applicable, pest impacts on the life or health of humans or of animals and animal products may also be considered.
- other aspects of the environment.

Indirect pest impacts are considered in the context of the impacts on:

- eradication and control

  This may include pest impacts on new or modified eradication, control, surveillance or monitoring and compensation strategies or programs.
- domestic trade

  This may include pest impacts on domestic trade or industry, including changes in domestic consumer demand for a product resulting from quality changes and effects on other industries supplying inputs to, or using outputs from, directly affected industries.
- international trade

  This may include pest impacts on international trade, including loss of markets, meeting new technical requirements to enter or maintain markets and changes in international consumer demand for a product resulting from quality changes.
- non-commercial and environment

  This may include pest impacts on the community and environment, including reduced tourism, reduced rural and regional economic viability, loss of social amenity, and any 'side effects' of control measures.

For each of these direct and indirect criteria, the level of impact is estimated over 4 geographic levels, defined as:

- **Local**–an aggregate of households or enterprises (a rural community, a town or a local government area)
- **District**–a geographically or geopolitically associated collection of aggregates (generally a recognised section of a state or territory, such as 'Far North Queensland')
- **Regional**–a geographically or geopolitically associated collection of districts in a geographic area (generally a state or territory, although there may be exceptions with larger states such as Western Australia)
- **National**–Australia wide (Australian mainland states and territories and Tasmania).

For each criterion, the magnitude of impact at each of these geographic levels is described using 4 categories, defined as:

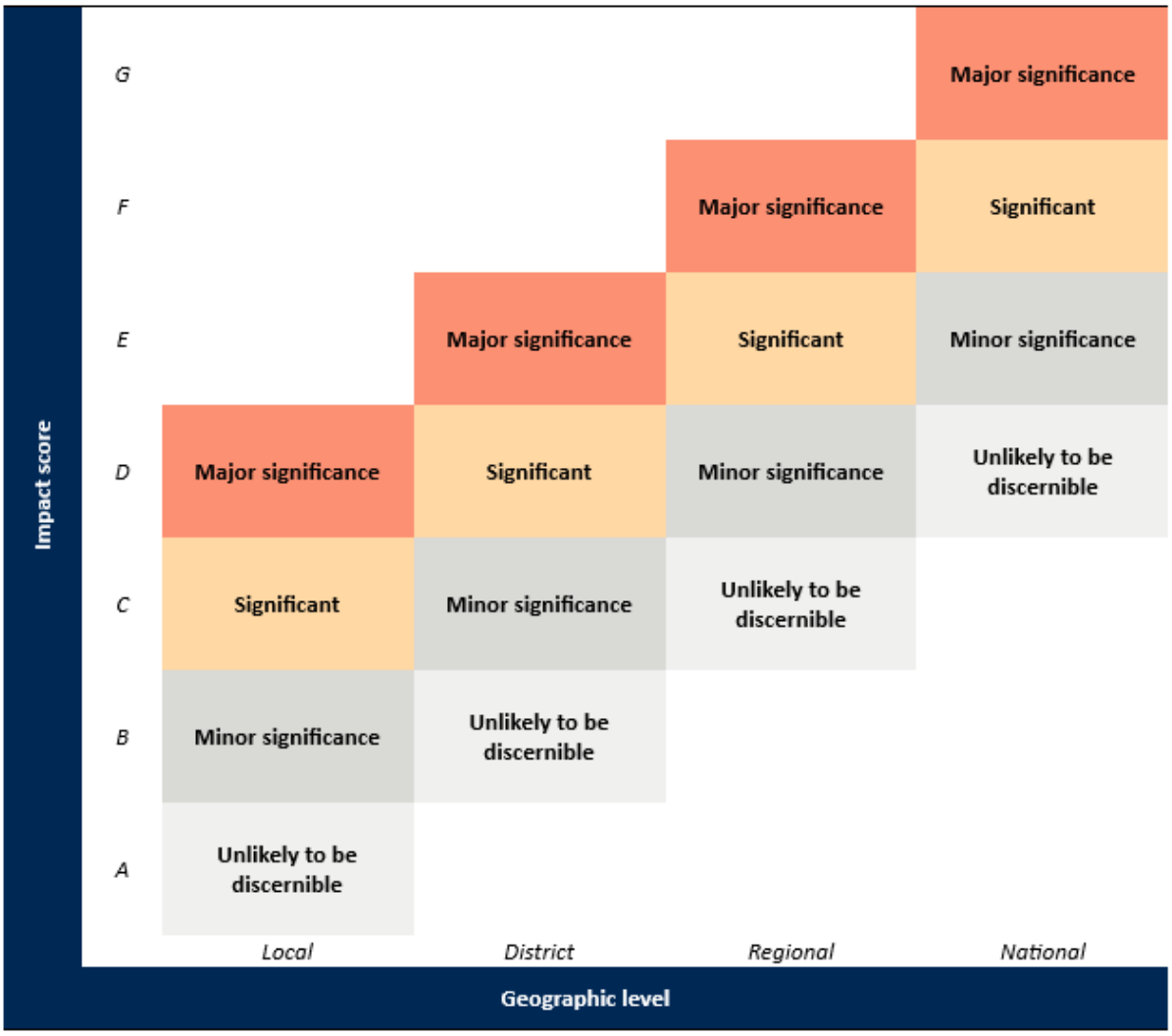
- **Unlikely to be discernible**–pest impact is not usually distinguishable from normal day-to-day variation in the criterion
- **Minor significance**–expected to lead to a minor increase in mortality/morbidity of hosts or a minor decrease in production but not expected to threaten the economic viability of production. Expected to decrease the value of non-commercial criteria but not threaten the criterion's intrinsic value. Effects would generally be reversible.
- **Significant**–expected to threaten the economic viability of production through a moderate increase in mortality/morbidity of hosts, or a moderate decrease in production. Expected to significantly diminish or threaten the intrinsic value of non-commercial criteria. Effects may not be reversible.
- **Major significance**–expected to threaten the economic viability through a large increase in mortality/morbidity of hosts, or a large decrease in production. Expected to severely or irreversibly damage the intrinsic 'value' of non-commercial criteria.

Each individual direct or indirect impact is given an impact score (A–G) using the decision rules in Figure A.1. This is done by determining which of the shaded cells with bold font in Figure A.1 correspond to the level and magnitude of the particular impact.

The following are considered during this process:

- At each geographic level below 'National', an impact more serious than 'Minor significance' is considered at least 'Minor significance' at the level above. For example, a 'Significant' impact at the state or territory level is considered equivalent to at least a 'Minor significance' impact at the national level.
- If the impact of a pest at a given level is in multiple states or territories, districts or regions or local areas, it is considered to represent at least the same magnitude of impact at the next highest geographic level. For example, a 'Minor significance' impact in multiple states or territories represents a 'Minor significance' impact at the national level.
- The geographic distribution of an impact does not necessarily determine the impact. For example, an outbreak could occur on one orchard/farm, but the impact could potentially still be considered at a state or national level.

Figure A.1 Decision rules for determining the impact score for each direct and indirect criterion, based on the *level of impact* and the *magnitude of impact*



For each criterion:

- the *level of impact* is estimated over 4 geographic levels: local, district, regional and national
- the *magnitude of impact* at each of the 4 geographic levels is described using 4 categories: unlikely to be discernible, minor significance, significant and major significance
- an impact score (A–G) is assigned by determining which of the shaded cells with bold font correspond to the level and magnitude of impact.

Step 2: Combining direct and indirect impacts

The overall consequence for each pest or each group of pests is achieved by combining the impact scores (A–G) for each direct and indirect criterion using the decision rules in Table A.3. These rules are mutually exclusive, and are assessed in numerical order until one applies. For example, if the first rule does not apply, the second rule is considered, and so on.

Table A.3 Decision rules for determining the overall consequence rating for each pest

Rule	The impact scores for consequences of direct and indirect criteria	Overall consequence rating
1	Any criterion has an impact of 'G'; or more than one criterion has an impact of 'F'; or a single criterion has an impact of 'F' and each remaining criterion an 'E'.	Extreme
2	A single criterion has an impact of 'F'; or all criteria have an impact of 'E'.	High
3	One or more criteria have an impact of 'E'; or all criteria have an impact of 'D'.	Moderate
4	One or more criteria have an impact of 'D'; or all criteria have an impact of 'C'.	Low
5	One or more criteria have an impact of 'C'; or all criteria have an impact of 'B'.	Very Low
6	One or more but not all criteria have an impact of 'B', and all remaining criteria have an impact of 'A'; or all criteria have an impact of 'A'.	Negligible

A2.4 Estimation of the unrestricted risk

Once the assessment of the likelihood of entry, establishment and spread and for potential consequences are completed, the unrestricted risk can be determined for each pest or each group of pests. This is determined by using a risk estimation matrix (Table A.4) to combine the estimates of the likelihood of entry, establishment and spread and the overall consequences of pest establishment and spread.

When interpreting the risk estimation matrix, note the descriptors for each axis are similar (for example, Low, Moderate, High) but the vertical axis refers to likelihood and the horizontal axis refers to consequences. Accordingly, a Low likelihood combined with High consequences, is not the same as a High likelihood combined with Low consequences—the matrix is not symmetrical. For example, the former combination would give an unrestricted risk rating of Moderate, whereas the latter would give a Low rating.

Table A.4 Risk estimation matrix

Likelihood of pest entry, establishment and spread	Consequences of pest entry, establishment and spread					
	Negligible	Very Low	Low	Moderate	High	Extreme
High	Negligible risk	Very Low risk	Low risk	Moderate risk	High risk	Extreme risk
Moderate	Negligible risk	Very Low risk	Low risk	Moderate risk	High risk	Extreme risk
Low	Negligible risk	Negligible risk	Very Low risk	Low risk	Moderate risk	High risk
Very Low	Negligible risk	Negligible risk	Negligible risk	Very Low risk	Low risk	Moderate risk
Extremely Low	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very Low risk	Low risk
Negligible	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very Low risk

A2.5 The appropriate level of protection (ALOP) for Australia

The SPS Agreement defines the concept of an 'appropriate level of sanitary or phytosanitary protection (ALOP)' as the level of protection deemed appropriate by the WTO Member establishing a

sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory.

Like many other countries, Australia expresses its ALOP in qualitative terms. The ALOP for Australia, which reflects community expectations through government policy, is currently expressed as providing a high level of sanitary or phytosanitary protection aimed at reducing risk to a very low level, but not to zero. The band of cells in Table A.4 marked 'Very Low risk' represents the ALOP for Australia.

A2.6 Adoption of outcomes from previous assessments

Outcomes of previous risk assessments have been adopted in this assessment for pests for which the risk profile is assessed as comparable to previously assessed situations.

The prospective adoption of previous risk assessment ratings for the likelihood of importation and the likelihood of distribution is considered on a case-by-case basis by comparing factors relevant to the pathway being assessed with those assessed previously. For assessment of the likelihood of importation, factors considered/compared include the commodity type, the prevalence of the pest and commercial production practices in the exporting country/region. For assessment of the likelihood of distribution of a pest the factors considered/compared include the commodity type, the ways the imported produce will be distributed within Australia as a result of the processing, sale or disposal of the imported produce, and the time of year when importation occurs and the availability and susceptibility of hosts at that time. After comparing these factors and reviewing the latest literature, previously determined ratings may be adopted if the department considers the likelihoods for the pathway being assessed to be comparable to those assigned in the previous assessment(s), and there is no new information to suggest that the ratings assigned in the previous assessment(s) have changed.

The likelihoods of establishment and of spread of a pest species in the PRA area will be comparable between risk assessments, regardless of the import pathway through which the pest has entered the PRA area. This is because these likelihoods relate specifically to conditions and events that occur in the PRA area, and are independent of the import pathway. Similarly, the estimate of potential consequences associated with a pest species is also independent of the import pathway. Therefore, the likelihoods of establishment and of spread of a pest, and the estimate of potential consequences, are directly comparable between assessments. If there is no new information available that would significantly change the ratings for establishment or spread or the consequences the pests may cause, the ratings assigned in the previous assessments for these components may be adopted with confidence.

A2.7 Application of Group policy to this risk analysis

The Group PRAs that were applied to this risk analysis are:

- the *Final group pest risk analysis for thrips and orthotospoviruses on fresh fruit, vegetable, cut-flower and foliage imports* (thrips Group PRA) (DAWR 2017b)
- the *Final group pest risk analysis for mealybugs and the viruses they transmit on fresh fruit, vegetable, cut-flower and foliage imports* (mealybugs Group PRA) (DAWR 2019)

- the *Final group pest risk analysis for soft and hard scale insects on fresh fruit, vegetable, cut-flower and foliage imports* (scales Group PRA) (DAWE 2021a)
- the *Final report for a review of pest risk assessments for spider mites (Acari: Trombidiformes: Tetranychidae)* (spider mites Group PRA) (DAFF 2024a).

The Group PRA approach is consistent with relevant international standards and requirements–including ISPM 2: *Framework for Pest Risk Analysis* (IPPC Secretariat 2019a), ISPM 11: Pest Risk Analysis for Quarantine Pests (IPPC Secretariat 2019c) and the SPS Agreement (WTO 1995). ISPM 2 states that 'Specific organisms may be analysed individually, or in groups where individual species share common biological characteristics.'

Risk estimates derived from a Group PRA are 'indicative' in character. This is because the likelihood of entry (the combined likelihoods of importation and distribution) can be influenced by a range of pathway-specific factors, as explained in section A2.6. Therefore, the indicative likelihood of entry from a Group PRA needs to be verified on a case-by-case basis.

In contrast, and as noted in section A2.6, the risk factors considered in the likelihoods of establishment and spread, and the potential consequences associated with a pest species are not pathway-specific, and are therefore comparable across all import pathways within the scope of the Group PRA. This is because at these latter stages of the risk analysis the pest is assumed to have already found a host within Australia at or beyond its point of entry. Therefore, unless there is specific evidence to suggest otherwise, a Group PRA assessment can be applied as the default outcome for any pest species on a plant import pathway once the previously assigned likelihood of entry has been verified.

In a scenario where the likelihood of entry for a pest species on a commodity is assessed as different to the indicative estimate, the Group PRA-derived likelihoods of establishment and spread and the estimate of consequences can still be used, but the overall risk rating (the URE) may change.

Application of Group policy involves identifying the species of each relevant group determined to be associated with the import pathway based on currently available scientific literature. If any other quarantine pests or regulated articles not included in this risk analysis and/or in the relevant group policies are detected at pre-export or on arrival in Australia, the relevant Group policy will also apply.

A3 Stage 3: Pest risk management

Pest risk management describes the process of identifying and implementing phytosanitary measures to manage risks to achieve the ALOP for Australia, while ensuring that any negative effects on trade are minimised.

The conclusions from pest risk assessment are used to decide whether risk management is required and if so, the appropriate measures to be used. Where the unrestricted risk estimate does not achieve the ALOP for Australia, risk management measures are required to reduce this risk to a very low level. The guiding principle for risk management is to manage risk to achieve the ALOP for Australia. The effectiveness of any proposed/recommended phytosanitary measures (or combination of measures) is evaluated, using the same approach as used to evaluate the unrestricted risk. This ensures the restricted risk for the relevant pest or pests achieves the ALOP for Australia.

ISPM 11 (IPPC Secretariat 2019c) provides details on the identification and selection of appropriate risk management options and notes that the choice of measures should be based on their effectiveness in reducing the likelihood of entry of the pest.

Examples given of measures commonly applied to traded commodities include:

- options for consignments—for example, inspection or testing for freedom from pests, prohibition of parts of the host, a pre-entry or post-entry quarantine system, specified conditions on preparation of the consignment, specified treatment of the consignment, restrictions on end-use, distribution and periods of entry of the commodity
- options preventing or reducing infestation in the crop—for example, treatment of the crop, restriction on the composition of a consignment so it is composed of plants belonging to resistant or less susceptible species, harvesting of plants at a certain age or specified time of the year, production in a certification scheme
- options ensuring that the area, place or site of production or crop is free from the pest—for example, pest-free area, pest-free place of production or pest-free production site
- options for other types of pathways—for example, consider natural spread, measures for human travellers and their baggage, cleaning or disinfestations of contaminated machinery
- options within the importing country—for example, surveillance and eradication programs
- prohibition of commodities—if no satisfactory measure can be found.

Appendix B: Initiation and categorisation for pests of fresh kiwifruit from China

The pest categorisation table does not represent a comprehensive list of all the pests associated with the entire kiwifruit plant, grown in China. Reference to soil-borne nematodes, soil-borne pathogens, wood-borer pests, root pests or pathogens, and secondary pests has not been made, as they are not directly related to the export pathway of fresh kiwifruit and would be addressed by Australia's current approach to contaminating pests.

The steps in the initiation and categorisation processes are considered sequentially, with the assessment terminating at 'Yes' for column 3 (except for pests that are present, but under official control), or at the first 'No' for columns 4, 5, 6 or 7. In the final column of the table (column 8) the acronyms 'EP', 'GP' and 'WA' are used. The acronym 'EP' (existing policy) is used for pests that have been assessed by Australia and for which a policy exists. The acronym 'GP' (Group policy) is used for pests that have been assessed by Australia in a Group policy. The acronym for the state or territory for which regional pest status is considered, such as 'WA' (Western Australia), is used to identify organisms that have been recorded in some regions of Australia, and due to interstate quarantine regulations are considered regional quarantine pests.

The *Final group pest risk analysis for thrips and orthotospoviruses on fresh fruit, vegetable, cut-flower and foliage imports* (DAWR 2017b), the *Final group pest risk analysis for mealybugs and the viruses they transmit on fresh fruit, vegetable, cut-flower and foliage imports* (DAWR 2019), the *Final group pest risk analysis for soft and hard scale insects on fresh fruit, vegetable, cut-flower and foliage imports* (DAWE 2021a), and the *Final report for a review of pest risk assessments for spider mites (Acari: Trombidiformes: Tetranychidae)* (spider mites Group PRA) (DAFF 2024a) have been applied in this risk analysis.

Application of Group policy involves identification of the species of each relevant group associated with the commodity pathway. If any other quarantine pests or regulated articles not included in this risk analysis and/or in the relevant Group policies are detected pre-export or on-arrival in Australia, the relevant Group policy will also apply.

Taxonomic classifications and species nomenclature are subject to ongoing revision. This pest categorisation table uses generally accepted names and taxonomy, current at the time of publication of this report.

A detailed description of the method used for a pest risk analysis is provided in Appendix A.

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
ARTHROPODS							
Coleoptera							
Adoretus sinicus Burmeister, 1855 Synonym: *Adoretus tenuimaculatus* Waterhouse, 1875 [Scarabaeidae] Chinese rose beetle; brown chafer	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adult *A. sinicus* beetles are 10 mm in length (McQuate & Jameson 2011) and feed on leaves, flowers and young fruit of kiwifruit (Yu et al. 2013). Eggs are laid in the soil (Hill 2008). Larvae feed on roots (Hill 2008). *Adoretus sinicus* is not reported to be associated with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.	Assessment not required	Assessment not required	Assessment not required	No
Anomala corpulenta Motschulsky, 1854 [Scarabaeidae] Scarab beetle; flower beetle	Yes (GACC 2024; Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adult *A. corpulenta* beetles are 14 to 18 mm in length (Kim 2011), metallic green coloured (Li et al. 2023) and feed on kiwifruit leaves, flowers and young fruit (GACC 2024; Yu et al. 2013). Eggs are laid in the soil (Hill 2008). Larvae feed on roots	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			(Hill 2008). *Anomala corpulenta* is not reported to be associated with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.				
Anomala cupripes (Hope, 1839) [Scarabaeidae] Large green chafer beetle	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adult *Anomala cupripes* feed on kiwifruit leaves, flowers and young fruit (Yu et al. 2013). Eggs are laid in the soil (Hill 2008). Larvae feed on roots (Hill 2008). *Anomala cupripes* adults can grow up to 30mm in length (Lucid 2025) and are green in colour (Hongsuwong & Sanguansub 2024). *Anomala cupripes* is not reported to be associated with mature fruit of kiwifruit. However, if the large and brightly coloured adult beetles were present on harvested fruit, they would likely be removed during packing house processes.	Assessment not required	Assessment not required	Assessment not required	No
Cortinicara gibbosa (Herbst, 1793) Synonym: *Corticaria gibbosa* (Herbst, 1793)	Yes (GACC 2024; KVH 2022)	Yes (GBIF Secretariat 2026; PaDIL 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
[Latridiidae] Minute brown scavenger beetle							
Gametis jucunda (Faldermann, 1835) Synonyms: *Oxycetonia jucunda* subsp. formosana Nomura, 1959; *Gametis jucunda* subsp. *fallax* Miksic, 1982 [Scarabaeidae] Smaller green flower chafer	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adults of *G. jucunda* are colourful and 12 to 15 mm in length (Perissinotto & Clennell 2021), and feed on kiwifruit leaves, flowers and young fruit (Yu et al. 2013). Eggs are laid in soil where the larvae also live (Baidu 2024; Hill 2008; Perissinotto & Clennell 2021). *Gametis jucunda* is not reported to be associated with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.	Assessment not required	Assessment not required	Assessment not required	No
Holotrichia parallela (Motschulsky, 1854) Synonym: *Pedinotrichia parallela* (Motschulsky, 1854) [Scarabaeidae] Chafer beetle; white grub	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adults of *H. parallela* are 18 to 21 mm in length (Bhawane et al. 2011) and feed on kiwifruit leaves, flowers and young fruit (Yu et al. 2013). Larvae feed on roots (Chuno, Chyi & Wai 1960). Eggs are laid in soil (Bhawane et al. 2011). *Holotrichia parallela* is not reported to be associated	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.				
Nigrotrichia gebleri Faldermann, 1835 Synonyms: *Holotrichia diomphalia* Bates, 1888; *Holotrichia oblita* (Faldermann, 1835) [Scarabaeidae] Chafer beetle; white grub	Yes (GACC 2024; Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adults of *N. gebleri* are shiny black, 16 to 21 mm in length (Kim 2011). Adults feed on kiwifruit leaves, flowers and young fruit (Yu et al. 2013) and larvae feed on roots (Chuno, Chyi & Wai 1960). Eggs are laid in soil (Bhawane et al. 2011). *Nigrotrichia gebleri* is not reported to be associated with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.	Assessment not required	Assessment not required	Assessment not required	No
Popillia japonica Newman, 1838 [Scarabaeidae] Japanese beetle	Yes. *Popillia japonica* is reported as present in China (CAAS 1992; GAAS 2010; Yu et al. 2013).	No records found	No. Unlikely to be present on imported fruit. Adult *P. japonica* beetles are metallic green coloured (Hill 2008; Pfeiffer & Schultz 1986), 8 to 15 mm in length (Lucid 2025), and feed on kiwifruit leaves, flowers and	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
	However, it is also listed as a quarantine pest for China (MOA 2022).		young fruit (Yu et al. 2013). Eggs are laid in soil (Hill 2008). Larvae feed on roots (Hill 2008). *Popillia japonica* is not reported to be associated with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.				
Popillia pustulata Fairmaire, 1887 [Scarabaeidae] Scarab beetle	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adult *P. pustulata* beetles are shiny and are similar to the size of *P. japonica* beetles (Lucid 2025). Adults feed on kiwifruit leaves, flowers and young fruit (Yu et al. 2013). Eggs are laid in soil (Hill 2008). Larvae feed on roots (Hill 2008). *Popillia pustulata* is not reported to be associated with mature fruit of kiwifruit However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Proagopertha lucidula (Faldermann, 1835) [Scarabaeidae] Chafer	Yes (GACC 2024; Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adults of *P. lucidula* are brightly coloured, about 10 mm in length (Baidu 2024), and feed on kiwifruit leaves, flowers and young fruit (GACC 2024; Yu et al. 2013). Eggs are laid in soil (Baidu 2024; Hill 2008). Larvae feed on roots (Baidu 2024; Hill 2008). *Proagopertha lucidula* is not reported to be associated with mature fruit of kiwifruit. However, if the relatively large adult beetles were present on harvested fruit, they would likely be removed during packing house processes.	Assessment not required	Assessment not required	Assessment not required	No
Protaetia brevitarsis (Lewis, 1879) [Scarabaeidae] Flower beetle; white-spotted flower chafer	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. Adults of *P. brevitarsis* are around 30mm in length (Harris 2010) and feed on kiwifruit leaves, flowers and young fruit. Larvae feed on roots of kiwifruit (Yu et al. 2013). Eggs are laid in soil (Hwang et al. 2023). *Protaetia brevitarsis* is not reported to be associated with mature fruit of kiwifruit. However, if the large beetles	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			were present on harvested fruit, they would likely be removed during packing house processes.				
Diptera							
Bactrocera correcta (Bezzi, 1916) [Tephritidae] Guava fruit fly	Yes, limited distribution in south and southwest China (AQSIQ 2017; Guo et al. 2023; Li, Wang & Waterhouse 1997b; Lu et al. 2010). *Bactrocera correcta* has been listed as a quarantine pest for China and is under official control for northern China (AQSIQ 2007).	No records found	No. Unlikely to be present on imported fruit. *Bactrocera correcta* was trapped in a kiwifruit orchard in Guizhou province in China (Guo et al. 2023). However, *Actinidia* spp. are not reported to be a host of *B. correcta* in China (CDFA 2016; Guo et al. 2023; He, Xu & Chen 2024; Steck 2002).	Assessment not required	Assessment not required	Assessment not required	No
Bactrocera dorsalis (Hendel, 1912)	Yes (AQSIQ 2017; Guo et al. 2023;	No records found	Yes. *Bactrocera dorsalis* is associated with kiwifruit in China (Guo et al. 2023; KVH	Yes. Imported kiwifruit will likely be	Yes. It is highly polyphagous, with over 239 recorded	Yes. This species is a very serious pest of a wide variety of	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway: Potential for importation	Potential to enter on pathway: Potential for distribution	Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
Synonym: *Dacus dorsalis* Hendel, 1912; *Bactrocera invadens* Drew et al., 2005; *Bactrocera papayae* Drew & Hancock, 1994; *Bactrocera philippinensis* Drew & Hancock, 1974 [Tephritidae] Oriental fruit fly	Huang 2006; Li, Wang & Waterhouse 1997b; Ye et al. 2022). *Bactrocera dorsalis* has been listed as quarantine pest for China and is under official control for northern China (AQSIQ 2007).		2022; WTO 2020). Female flies oviposit eggs into fruit and larvae feed within the fruit (AQSIQ 2017; Azam-Ali et al. 2006; Bugti et al. 2015). Follett et al. (2019a) showed that *B. dorsalis* can oviposit in both unpunctured and punctured yellow and green kiwifruit under laboratory conditions, albeit at very low rates. Puncturing fruit significantly increased the recovery of puparia in both types of kiwifruit. In the field study, *B. dorsalis* was recovered from yellow kiwifruit, but not green kiwifruit. Therefore, green kiwifruit is considered a poor host for *B. dorsalis* (Follett, Haynes & Dominiak 2021; Follett et al. 2019a). However, Guo, Chen and Zhao (2022) reported that *B. dorsalis* is a major pest of Hong Yang kiwifruit, a red-core yellow kiwifruit cultivar, in China.	distributed throughout Australia. *Bactrocera dorsalis* is highly polyphagous, with at least 239 recorded larval hosts, including apple, pear, table grapes, cherry, peach, plum, nectarines, mangoes, jujube, capsicum, citrus and melon (Allwood et al. 1999; Stibick 2004). Fruit flies emerging from infested kiwifruit could potentially disperse to a new host nearby.	hosts, including apple, pear, table grapes, cherry, peach, plum, nectarines, mangoes, jujube, capsicum, citrus and melon (Allwood et al. 1999; CABI 2024a; Stibick 2004), which occur commonly throughout Australia. This species is distributed in Asia (Bangladesh, Bhutan, Cambodia, China (southern), Hong Kong, India (numerous states), Indonesia, Laos, Malaysia, Myanmar, Nepal, Ogasawara Islands, Pakistan, the Philippines, Sri Lanka, Taiwan, Thailand, Vietnam), Africa (most countries of sub-Saharan Africa), Pacific Islands (Mariana Islands, Tahiti, Hawaii) (Qin et al. 2018; Stibick 2004; Weems et al. 2016). Similar climates are present in parts of Australia, indicating	fruit and vegetables, and damage levels can reach up to 100% of unprotected fruits (CABI 2024a).	

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
					that the species could establish and spread in parts of Australia.		
Drosophila suzukii (Matsumura, 1931) [Drosophilidae] Spotted wing drosophila	Yes (Damus 2009; Kai, Zhang & Carson 1993; Kaneshiro 1983; Toda 1991)	No records found	No. Unlikely to be present on imported fruit. Existing policy for *D. suzukii* for all commodities from all countries considers *Actinidia chinensis* and *A. deliciosa* not to be hosts of *D. suzukii* (DAFF 2013b). *Actinidia chinensis* and *A. deliciosa* have been listed as potential hosts of *D. suzukii* based on trapping results of kiwifruit orchards, or rearing from soft fruit (Kenis et al. 2016) and decomposing fallen fruit (Andreazza et al. 2017; Garcia et al. 2022; KVH 2022; Özbek Çatal, Çalişkan Keçe & Ulusoy 2021; Ribeiro, Proença & Tidon 2023). However, there are no reports of undamaged mature kiwifruit being attacked by *D. suzukii* (KVH 2022) despite *D. suzukii* being present in many countries where kiwifruit is grown. Therefore, it is unlikely for *D. suzukii* to enter on commercially produced, export quality kiwifruit.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			Actinidia arguta has been assessed as a host of *D. suzukii* (DAFF 2013b). China has some commercial production of *A. arguta*, but China has not requested to export *A. arguta* to Australia.				
Zeugodacus cucurbitae (Coquillett, 1899) Synonym: *Bactrocera cucurbitae* (Coquillett, 1899) [Tephritidae] Melon fly	Yes (AQSIQ 2017; Guo et al. 2023; Ye et al. 2022)	No records found	No. Unlikely to be present on imported fruit. Although Follett et al. (2019a) showed that *Z. cucurbitae* can oviposit into intact (unpunctured) and punctured yellow and green kiwifruit and develop through to pupation at very low levels under laboratory conditions, no *Z. cucurbitae* pupae were recovered from yellow or green kiwifruit under semi-natural field trials in Hawaii. Based on these results, Follett et al. (2019b) and Follett, Haynes and Dominiak (2021) concluded that kiwifruit is a very poor host for *Z. cucurbitae*. However, under ISPM 37 (IPPC Secretariat 2024a), fruit fly host status confirmation requires fruit infestation and development through to a viable adult under natural or semi-natural conditions, whereas laboratory studies	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			can only be used to confirm non-host status. As there is no evidence for infestation and development of *Z. cucurbitae* in kiwifruit under natural or semi-natural conditions, kiwifruit is not considered to be a host for *Z. cucurbitae*.				
Hemiptera							
Aleurocanthus woglumi Ashby, 1915 [Aleyrodidae] Citrus blackfly	Yes (Li, Wang & Waterhouse 1997b)	No records found. Recorded from Australian territories of Christmas and Cocos Islands (Bellis et al. 2004).	No. Not known to be associated with fresh kiwifruit. *Actinidia* species have been listed as hosts of *A. woglumi* (Dubey & Ko 2012). Eggs, nymphs and adults are associated with leaves of hosts (Enkerlin 1976; Hill 2008; Nguyen, Hamon & Fasulo 2010).	Assessment not required	Assessment not required	Assessment not required	No
Aonidiella aurantii (Maskell, 1879) Synonym: *Aspidiotus aurantii* Maskell, 1879 [Diaspididae] Red scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aphis fabae Scopoli, 1763 [Aphididae] Black bean aphid	Yes (Cheng et al. 2011)	No records found	No. Not known to be associated with fresh kiwifruit. Nymphs and adults of *Aphis* spp. feed externally on leaves	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			by sucking plant sap (Kedar, Kumerang & Thodsare 2013).				
Aphis gossypii Glover, 1877 [Aphididae] Cotton aphid	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025; CABI 2024a). Aphids can transmit the following viruses of kiwifruit in China: *Actinidia citrivirus*, *Vitivirus alphactinidiae, Vitivirus betactinidiae, Potexvirus ecsplantagonis, Tombusvirus cucumis* and *Tobamovirus rapae* (Blouin et al. 2013; Shang et al. 2022). These viruses are not present in Australia. Therefore, the potential to enter on the pathway needs to be assessed.	No. Not known to be associated with fresh kiwifruit. *Aphis gossypii* feeds on the underside of leaves or growing tips of its host plants. It is not considered to feed directly on mature reproductive structures (fruits, berries, nuts) even if infestation levels are high (CABI 2024a).	Assessment not required	Assessment not required	Assessment not required	No
Aphis spiraecola Patch, 1914 [Aphididae] Apple aphid	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025). Aphids can transmit the following viruses of kiwifruit in	No. Not known to be associated with fresh kiwifruit. *Aphis spiraecola* feeds on phloem of leaves, stems	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
		China: *Actinidia citrivirus*, *Vitivirus alphactinidiae*, *Vitivirus betactinidiae*, *Potexvirus ecsplantagonis, Tombusvirus cucumis* and *Tobamovirus rapae* (Blouin et al. 2013; Shang et al. 2022). These viruses are not present in Australia. Therefore, the potential to enter on the pathway needs to be assessed.	(Capinera 2018; Nalam et al. 2021), buds or roots (Mahr 2022) of host plants. It has been reported to feed on developing nectarine fruits when populations are high (Beers, Hoyt & Willett 1993). However, no report of association with fruit of kiwifruit was found.				
Arboridia (Arboridia) apicalis (Nawa, 1913) Synonym: *Zygina apicalis* Nawa, 1913 [Cicadellidae]	Yes (GACC 2024; Shi et al. 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Arboridia (Arboridia) apicalis* feeds on leaves *o*f kiwifruit (AQSIQ 2006b; CAAS 1992; GACC 2024; Shi et al. 2022).	Assessment not required	Assessment not required	Assessment not required	No
Aspidiotus destructor Signoret, 1869 [Diaspididae] Coconut scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2024; Donaldson & Tsang 2019; Poole 2010)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Aspidiotus nerii Bouché, 1833 [Diaspididae] Oleander scale	Yes (Klein Koch & Waterhouse 2000)	Yes (APPD 2025; García Morales et al. 2024; Government of Western Australia 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Baguoidea rufa (Melichar, 1903) [Cicadellidae] Leafhopper	Yes (Shi et al. 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Baguoidea rufa* feeds on kiwifruit leaves (Shi et al. 2022).	Assessment not required	Assessment not required	Assessment not required	No
Bothrogonia acuminata Yang & Li, 1980 [Cicadellidae] Leafhopper	Yes (GACC 2024)	No records found	No. Not known to be associated with fresh kiwifruit. *Bothrogonia acuminata* feeds on kiwifruit leaves (GACC 2024).	Assessment not required	Assessment not required	Assessment not required	No
Bothrogonia ferruginea (Fabricius, 1787) [Cicadellidae] Black-tipped leafhopper	Yes (EPPO 2024; KVH 2022; Li, Wang & Waterhouse 1997b)	No records found	No. Not known to be associated with fresh kiwifruit. *Bothrogonia ferruginea* feeds on the underside of kiwifruit leaves (KVH 2022).	Assessment not required	Assessment not required	Assessment not required	No
Ceroplastes japonicus Green, 1921 Synonym: *Ceroplastes floridensis japonicus* Green 1921 [Coccidae] Japanese fig wax scale	Yes (GACC 2024; García Morales et al. 2024)	No records found	No. Not known to be associated with fresh kiwifruit. *Ceroplastes japonicus* adults and nymphs feed on stems, branches, leaves and buds of	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			kiwifruit in China (GACC 2024).				
Ceroplastes rusci Linnaeus, 1758 [Coccidae] Fig wax scale	Yes (García Morales et al. 2024)	Yes (APPD 2025; CSIRO 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Cicadella viridis (Linnaeus, 1758) [Cicadellidae] Green leafhopper	Yes (Shi et al. 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Cicadella viridis* feeds on kiwifruit leaves *(Shi et al. 2022).*	Assessment not required	Assessment not required	Assessment not required	No
Coccus hesperidum Linnaeus, 1758 [Coccidae] Brown soft scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaspidiotus perniciosus (Comstock, 1881) Synonyms: *Aspidiotus perniciosus* Comstock, 1881; *Aonidiella perniciosa* (Comstock) Balachowsky & Mesnil, 1935; *Hemiberlesia perniciosa* (Comstock) Lindinger, 1957 [Diaspididae] San José scale	Yes (García Morales et al. 2024)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Dolycoris baccarum (Linnaeus, 1758) [Pentatomidae] Stink bug	Yes (KVH 2022; Li, Wang & Waterhouse 1997b)	No records found	No. Unlikely to be present on imported fruit. *Dolycoris baccarum* adults and nymphs suck on the sap from young leaves, shoots	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			and fruit of kiwifruit (KVH 2022). Eggs are laid on leaf surfaces, stems and other structures nearby (Endo & Numata 2020; Mohammed, Abdulla & Abdurrahman 2017). Adults and nymphs are unlikely to remain on harvested fruit as pentatomid bugs characteristically drop from their hosts or move when disturbed (Alcock 1971).				
Drosicha corpulenta (Kuwana, 1902) Synonyms: *Drosicha corpulenta* Cockerell, 1902*; Monophlebus corpulenta* Kuwana, 1902 [Margarodidae] Giant mealybug	Yes (CIQSA 2001; Feng & Wang 2004; Xu et al. 1999)	No records found	No. Not known to be associated with fresh kiwifruit. *Drosicha corpulenta* has been recorded on kiwifruit plants (Shi et al. 2022). Eggs overwinter in the soil (Xu et al. 1999), and adults and nymphs feed on stems and branches of host plants (Feng & Wang 2004).	Assessment not required	Assessment not required	Assessment not required	No
Edwardsiana flavescens (Fabricius, 1794) [Cicadellidae] Small green leafhopper	Yes (Shi et al. 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Edwardsiana flavescens* feeds on kiwifruit leaves (Shi et al. 2022).	Assessment not required	Assessment not required	Assessment not required	No
Erthesina fullo (Thunberg, 1783) [Pentatomidae]	Yes (GACC 2024; KVH	No records found	No. Unlikely to be present on imported fruit.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Yellow-spotted stink bug	2022; Mi et al. 2020)		*Erthesina fullo* has been identified as a major pest of kiwifruit in China (Teulon & Xu 2018). *Erthesina fullo* adults and nymphs suck sap from kiwifruit stem, leaves and fruit (GACC 2024; KVH 2022; Mi et al. 2020). Eggs are typically laid on the undersides of kiwifruit leaves or the base of fruit (Mi et al. 2020). In the event eggs are laid on fruit, they would likely have hatched by July based on the seasonal lifecycle of *E. fullo* in China (Mi et al. 2020) and prior to the kiwifruit harvest period from late August to early November (GACC 2024). Although adults and nymphs may be present on fruit at the time of harvest, pentatomid bugs characteristically drop from their hosts or move when disturbed (Alcock 1971).				
Erythroneura sudra (Distant, 1908) [Cicadellidae] Leafhopper	Yes (Shi et al. 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Erythroneura sudra* feeds on leaves of its host plants including kiwifruit (AQSIQ 2006b; CAAS 1992; Shi et al. 2022).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Halyomorpha halys (Stål, 1855) [Pentatomidae] Brown marmorated stink bug	Yes (Francati et al. 2021; Teulon & Xu 2018)	No records found	No. Unlikely to be present on imported fruit. *Halyomorpha halys* has been identified as a major pest of kiwifruit in China (Teulon & Xu 2018). Eggs of *Halyomorpha halys* are typically laid in masses (light green to white colour) on the underside of leaves (KVH 2023a). *Halyomorpha halys* has been reported to occasionally lay eggs on grapes in the USA (Mi et al. 2020; MPI 2012). However, *H. halys* is not known to lay eggs on fruit of kiwifruit. In the unlikely event harvested fruit have egg masses, fruit are likely to be discarded during packing procedures as the egg mass is distinct and each individual fruit is manually inspected during pre-export packing. Adults and nymphs are sap suckers that are known to feed on fruit of citrus (Gyeltshen, Bernon & Hodges 2010) and other hosts. Although adults and nymphs may be present on fruit at the time of harvest, pentatomid bugs are easily disturbed and characteristically drop from	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			their hosts or move when disturbed (Alcock 1971).				
Hebata vitis (Göthe, 1875) [Cicadellidae] *Grape leafhopper*	Yes (KVH 2022; Shi et al. 2022; Wei et al. 2015)	No records found	No. Not known to be associated with fresh kiwifruit. *Empoasca vitis* feeds on kiwifruit leaves (Aguin-Pombo & Freitas 2020; KVH 2022; Shi et al. 2022).	Assessment not required	Assessment not required	Assessment not required	No
Hemiberlesia lataniae (Signoret, 1869) [Diaspididae] Latania scale; palm scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (ABRS 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Hemiberlesia rapax (Comstock, 1881) [Diaspididae] Greedy scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Hygia lativentris (Motschulsky, 1866). Synonym: *Hygia touchei* (Distant, 1901) (Yu et al. 2013); *Pachycephalus touchei* Distant, 1901 [Coreidae] Coreid bug	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. *Hygia lativentris* adults and nymphs suck sap from the kiwifruit stem, leaves and fruit (Yu et al. 2013). Eggs are laid on leaf surfaces, stems and other substrates (Mead 2017). Although adults and nymphs may be present on fruit at the time of harvest, coreid bugs characteristically drop from their hosts or	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			move when disturbed (Mead 2017).				
Lycorma delicatula (White, 1845) [Fulgoridae] Spotted lanternfly	Yes (GACC 2024; KVH 2022; Shi et al. 2022)	No records found	No. Unlikely to be present on imported fruit. *Lycorma delicatula* adults and nymphs feed on the leaves, canes and trunks of kiwifruit vines (Mauchline & McKenna 2019). Females indiscriminately lay eggs on the canes, trunks and on support structures such as wooden beams and trellises in orchards (Mauchline & McKenna 2019; Urban & Leach 2023). Eggs may also be laid on fruit, but fruit is not a preferred oviposition site. Eggs are laid in batches of 30-50, with each batch covered with an ootheca (protective case). The ootheca is brown coloured and approximately 25 mm in length (Mauchline & McKenna 2019; OEPP/EPPO 2020). In the event harvested fruit have egg masses, fruit are likely to be discarded during packing procedures as the egg mass is large and obvious, and each individual fruit is manually inspected during packing.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Macrosiphum euphorbiae (Thomas, 1878) [Aphididae] Potato aphid	Yes (Klein Koch & Waterhouse 2000)	Yes (APPD 2025; CSIRO 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Membranacea stenoprocessa Yu & Yang, 2013 [Cicadellidae] Chinese leafhopper	Yes (Shi et al. 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Membranacea stenoprocessa* feeds on kiwifruit leaves (Shi et al. 2022).	Assessment not required	Assessment not required	Assessment not required	No
Nezara viridula (Linnaeus, 1758) [Pentatomidae] Green vegetable bug	Yes (Jones 1988)	Yes (ALA 2023; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Nysius ericae (Schilling, 1829) [Lygaeidae] False chinch bug	Yes (Zhang 2005b)	No records found	No. Unlikely to be present on imported fruit. *Nysius ericae* adults suck sap from flowers, young fruits and leaves of host plants (Zhang 2005b). Eggs are laid at the base of the plants or in gaps in the soil (Zhang et al. 2016b). Although adults and nymphs may be present on fruit at the time of harvest, lygaeid bugs are highly mobile and are likely to drop off or fly away when disturbed.	Assessment not required	Assessment not required	Assessment not required	No
Orosanga japonica (Melichar, 1898)	Yes (Ismaylova 2021; KVH	No records found	No. Not known to be associated with fresh kiwifruit.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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Synonym: *Ricania japonica* Melichar, 1898 [Ricaniidae] Brown planthopper	2022; Öztemiz 2018)		*Orosanga japonica lay their* eggs on young branches or shoots (Akiner, Öztürk & Sevgılı 2022). Both nymphs and adults of *O. japonica* feed on the sap of young shoots (Ismaylova 2021; KVH 2022; Öztemiz 2018).				
Parlatoria pergandii Comstock, 1881 Synonym: *Parlatoria sinensis* Maskell, 1897 [Diaspididae] Black parlatoria scale; chaff scale	Yes (GACC 2024; García Morales et al. 2024; Li, Wang & Waterhouse 1997b)	Yes. Under official control (regional) for WA. Present in NT, Qld and Vic. (APPD 2025).	Yes. *Parlatoria pergandii* is associated with branches, leaves and fruit of kiwifruit (GACC 2024).	Yes. Imported kiwifruit will likely be distributed throughout Australia. This pest is a polyphagous species that has been recorded from hosts belonging to 72 genera in 17 plant families (Davidson & Miller 1990). Many of these host plants are available in Western Australia.	Yes. Assessed in the scales Group PRA (DAWE 2021a)	Yes. Assessed in the scales Group PRA (DAWE 2021a)	Yes (GP, WA)
Parthenolecanium corni (Bouché, 1844) Synonyms: *Lecanium corni* Bouché, 1844; *Lecanium vini* Bouché, 1851	Yes (García Morales et al. 2024)	Yes. Under official control (regional) for WA. Present in NSW, Tas. and Vic. (APPD 2025;	Yes. *Parthenolecanium corni* is a pest of kiwifruit (García Morales et al. 2024). This species sucks sap from	Yes. Imported kiwifruit will likely be distributed throughout	Yes. Assessed in the scales Group PRA (DAWE 2021a)	Yes. Assessed in the scales Group PRA (DAWE 2021a)	Yes (GP, WA)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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[Coccidae] European fruit lecanium		CSIRO 2025; Snare 2006).	branches, leaves and fruit of host plants (Zhang 2005a).	Australia. This pest is highly polyphagous, attacking about 350 plant species across 40 families (CABI 2024a; García Morales et al. 2023). Many of these host plants are available in Western Australia.			
Parthenolecanium persicae (Fabricius, 1776) [Coccidae] European peach scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Planococcus minor (Maskell, 1897) [Pseudococcidae] Pacific mealybug	Yes (EPPO 2024; García Morales et al. 2024)	Yes. Under official control (regional) for WA. Present in ACT, NSW, NT, Qld and SA (APPD 2025).	Yes. *Planococcus minor* is commonly found on flowers, leaves, twigs and fruits of its host plants including kiwifruit (Roda et al. 2013; Venette & Davis 2004). It is possible that *P. minor* on kiwifruit may remain undetected due to their small size *and cryptic nature*.	Yes. Imported kiwifruit will likely be distributed throughout Australia. This pest is highly polyphagous, attacking more than 250 plant species in 80 families (CABI 2024a; García Morales et al. 2023; Lit, Caasi-Lit & Calilung	Yes. Assessed in the mealybugs Group PRA (DAWR 2019)	Yes. Assessed in the mealybugs Group PRA (DAWR 2019)	Yes (GP, WA)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				1998; Sugimoto 1994; Venette & Davis 2004). Many of these host plants are available in Western Australia.			
Plautia stali Scott, 1874 [Pentatomidae] Brown-winged green stink bug	Yes (GBIF Secretariat 2024)	No records found	No. Unlikely to be present on imported fruit. *Plautia stali* adults and nymphs suck on sap from the young leaves, shoots and fruit. Fruit can be prone to attack at the time of harvest (KVH 2022); however, adults and nymphs are unlikely to remain on harvested fruit because pentatomid bugs characteristically drop from their hosts or move when disturbed (Alcock 1971).	Assessment not required	Assessment not required	Assessment not required	No
Pseudaulacaspis cockerelli (Cooley, 1897) Synonyms: *Chionaspis cockerelli* Cooley 1897; *Phenacaspis cockerelli* (Cooley, 1897) [Diaspididae] Mango scale; Magnolia white scale	Yes (García Morales et al. 2024; KVH 2022; Shi et al. 2022)	Yes (APPD 2025; García Morales et al. 2023; Government of Western Australia 2023)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Pseudaulacaspis pentagona (Targioni Tozzetti, 1886) Synonyms: *Aulacaspis pentagona* (Targioni Tozzetti) Cockerell, 1902; *Diaspis amygdali* Tryon, 1889 [Diaspididae] Mulberry scale	Yes (CABI 2024a; GACC 2024; KVH 2022)	Yes. Under official control (Regional) for WA (Government of Western Australia 2022). Present in NSW and Qld (APPD 2025; CABI 2024a).	Yes. *Pseudaulacaspis pentagona* is associated with kiwifruit (DOA 2020; GACC 2024; Güncan 2015; WTO 2020). *Pseudaulacaspis pentagona* sucks sap from the host plant, feeding primarily on the bark and occasionally on the leaves and fruit (Malumphy et al. 2016). Infested fruits are likely to be removed during packing house processes. However, it is possible that *P. pentagona* on kiwifruit may remain undetected due to their small size.	Yes. Imported kiwifruit will likely be distributed throughout Australia. This species has a broad host range of crop plants and ornamentals, including *Citrus* species, apple, capsicum, cotton, eggplant, geranium, grape, magnolia, mango, mulberry, oleander, okra, passionfruit, pear, pittosporum and plum (García Morales et al. 2023; Malumphy et al. 2016), many of which are available in Australia. First instar crawlers present on fruit could potentially transfer to a new host nearby as	Yes. Assessed in the scale Group PRA (DAWE 2021a)	Yes. Assessed in the scales Group PRA (DAWE 2021a)	Yes (GP, WA)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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				they have the ability to crawl or be passively transferred via wind (DAWE 2021a).			
Pseudococcus calceolariae (Maskell, 1879) [Pseudococcidae] Citrophilus mealybug	Yes (García Morales et al. 2024; Li, Wang & Waterhouse 1997b)	Yes. Under official control (Regional) for WA. Present in ACT, Qld, NSW, Vic., SA and Tas. (García Morales et al. 2024).	Yes. *Pseudococcus calceolariae* is known to be associated with kiwifruit (García Morales et al. 2024; Gazette of India 2019). *Pseudococcus calceolariae* sucks sap from the host plant, feeding primarily on the bark and occasionally on the leaves and fruit (CABI 2025). Infested fruit are likely to be removed during packing house processes. However, it is possible that *P. calceolariae* on fruit may remain undetected due to their small size and cryptic nature.	Yes. García Morales et al. (2024) lists an extensive host range for *P. calceolariae*, many of which are grown in WA (DAFWA 2015). Imported kiwifruit will be distributed throughout WA via the wholesale and retail trade pathway. Mealybugs present on kiwifruit could potentially disperse to a new host nearby.	Yes. Assessed in the mealybugs Group PRA (DAWR 2019)	Yes. Assessed in the mealybugs Group PRA (DAWR 2019)	Yes (GP, WA)
Pseudococcus longispinus (Targioni Tozzetti, 1867) [Pseudococcidae] Long-tailed mealybug	Yes (García Morales et al. 2024)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Pseudococcus maritimus (Ehrhorn, 1900) [Pseudococcidae] American grape mealybug	Yes (GACC 2024; García Morales et al. 2024)	No records found	Yes. *Pseudococcus maritimus* is a pest of kiwifruit in China (GACC 2024; WTO 2020). The species can be associated with fruit (Burts & Dunley 1993). Although fruit infested with mealybugs are likely to be removed in the packing house, some mealybugs may not be detected due to their small size and cryptic nature (Burts & Dunley 1993).	Yes. Imported kiwifruit will likely be distributed throughout Australia. Over 90 genera of plants in 52 families are reported as hosts for *P. maritimus* including several agricultural crops such as citrus, apple, pear, avocado, coffee, cassava, walnut, eggplant and grapes (CABI 2024a; García Morales et al. 2023). Many of these host plants are available in Australia. Mealybugs present on kiwifruit could potentially disperse to a new host nearby.	Yes. Assessed in the mealybugs Group PRA (DAWR 2019)	Yes. Assessed in the mealybugs Group PRA (DAWR 2019)	Yes (GP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Pseudococcus viburni (Signoret, 1875) [Pseudococcidae] Obscure mealybug	Yes (EPPO 2024; García Morales et al. 2024)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Ricania speculum (Walker, 1851) [Ricaniidae] Planthopper	Yes (GACC 2024; Li, Wang & Waterhouse 1997b)	No records found	No. Not known to be associated with fresh kiwifruit. *Ricania speculum* adults and nymphs suck plant sap from kiwifruit stems and shoots (GACC 2024).	Assessment not required	Assessment not required	Assessment not required	No
Saissetia oleae (Olivier, 1791) [Coccidae] Black olive scale	Yes (Li, Wang & Waterhouse 1997b)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Trialeurodes vaporariorum Westwood, 1856 [Aleyrodidae] Glasshouse whitefly	Yes (CABI 2024a; DOA 2020)	Yes (ABRS 2024; APPD 2025; Government of Western Australia 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Tuberolachnus salignus (Gmelin, 1790) [Aphididae] Giant willow aphid	Yes (Bochniarz 2020)	Yes (ABRS 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Lepidoptera							
Adoxophyes orana (Fischer von Röslerstamm, 1834) Synonym: *Adoxophyes fasciata* Walsingham, 1900	Yes (AQSIQ 2006b; CIQSA 2001; GACC 2024)	No records found	Yes. *Adoxophyes orana* is a pest of kiwifruit in China (GACC 2024; Richardson, Burdon & Ferguson 2024; WTO 2020). *Adoxophyes*	Yes. Imported kiwifruit will likely be distributed throughout	Yes. Feeds on a wide range of plant families (Davis, French & Venette 2005; Zhou & Deng 2005), many of	Yes. *Adoxophyes orana* is a major pest of fruit tree crops in China and elsewhere in the	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
[Tortricidae] Summer fruit tortrix			*orana* females lay eggs on the surface of leaves or fruit of host plants (Byun, Yan & Li 2003). Larvae mainly feed on leaves, young shoots and flower buds, but may also feed on the surface of the young fruit causing visible external damage (PPQ 2024). Although infested fruit are likely to be removed in the packing house, early instar larvae may not be detected due to their small size.	Australia. *Adoxophyes orana* is a polyphagous species that feeds on more than 50 different plant species from multiple families (DAWE 2021b). Host plants of this species are widely distributed throughout Australia. *Adoxophyes orana* present on kiwifruit could potentially disperse to a new host nearby.	which occur commonly throughout Australia. It is widely distributed in Asia and Europe (CABI 2024a). Climates similar to these regions exist in various parts of Australia. This species has established and spread in areas where it has been introduced, for example, Greece (Savopoulou-Soultani et al. 1985). Its host range and demonstrated ability to establish and spread in new environments suggests that it could establish and spread in Australia.	world where it has been reported to cause up to 50% crop loss (Davis, French & Venette 2005). The polyphagous nature of *A. orana* indicates the potential for consequences across a wide range of fruit growing industries.	
Ampelophaga rubiginosa Bremer & Grey, 1853 [Sphingidae] Vine hawk moth	Yes (KVH 2022; Pittaway & Kitching 2024)	No records found	No. Not known to be associated with fresh kiwifruit. *Ampelophaga rubiginosa* larvae feed on kiwifruit leaves (KVH 2022).	Assessment not required	Assessment not required	Assessment not required	No
Antipercnia albinigrata (Warren, 1896) Synonym: *Percnia albinigrata* (Warren, 1896)	Yes (Yu et al. 2013)	No records found	No. Not known to be associated with fresh kiwifruit.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
[Geometridae]			Eggs of *Antipercnia albinigrata* are laid on leaves and larvae feed on kiwifruit leaves (Yu et al. 2013). Geometrid adults feed on nectar or pollen (Krenn 2010).				
Conogethes punctiferalis (Guenée, 1854) [Crambidae] Yellow peach moth	Yes (KVH 2022; Molet 2015)	Yes (APPD 2025; Poole et al. 2001)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diplocalyptis congruentana (Kennel, 1901) Synonyms: *Argyrotaenia congruentana* Liu and Shen, 1992; *Tortrix congruentana* Kennel, 1901 [Tortricidae] Leafroller	Yes (Yu et al. 2013)	No records found	No. Unlikely to be present on imported fruit. *Diplocalyptis congruentana* is known to be associated with kiwifruit plants (Yu et al. 2013). *Diplocalyptis* spp. lay eggs on leaves and trunks of its host plants (Kryzhanovskii 1988). Larvae mainly damage leaves. Superficial damage to fruit may occur when mature larvae attach a feeding nest to fruit. However, the larval feeding nest and damage to fruit are very conspicuous, and therefore infested fruit are likely to be discarded during harvesting or packing house procedures.	Assessment not required	Assessment not required	Assessment not required	No
Estigmene acrea (Drury, 1773) [Erebidae]	Yes (Zhang, Liu & Liu 2015)	No records found	No. Unlikely to be present on imported fruit.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Salt marsh moth; acrea moth			*Estigmene acrea* lays its eggs on leaves (Capinera 2013). Larvae are colourful and hairy and mainly feed on leaves. Occasionally it may cause visible external feeding damage to fruit under sepals or where two or more fruits touch (BugGuide 2024; Capinera 2013; Plantwise 2018; Zhang, Liu & Liu 2015). As the larvae and damage to fruits are obvious, infested fruit are likely to be removed during harvesting or packing house procedures.				
Eudocima phalonia (Linnaeus, 1763) Synonym: *Eudocima fullonia* (Clerck, 1764); *Phalaena phalonia* Linnaeus, 1763 [Erebidae] Fruit-piercing moth	Yes (ZDCBIC 2005)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Eudocima tyrannus (Guenée, 1852) Synonyms: *Adris tyrannus* (Guenée, 1852); *Othreis tyrannus* Guenée, 1852 [Erebidae] Fruit-piercing moth	Yes (AQSIQ 2006a)	No records found	No. Unlikely to be present on imported fruit. *Eudocima tyrannus* is a pest of kiwifruit (Richardson, Burdon & Ferguson 2024) as adults can feed on overripe or fermenting fruit at night (Common 1990; Reddy, Cruz & Muniappan 2007). Adult moths shelter elsewhere	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			during the day and are unlikely to be associated with fruit during daytime harvest. Eggs are usually laid in clusters on the underside of leaves (Picture Insect 2024a). Larvae are primarily foliage feeders but may feed externally on fruit of kiwifruit (Plantwise 2018). The larvae are large and colourful (Picture Insect 2024a). As the larvae and damage to fruit are obvious, infested fruit are likely to be detected and removed during harvesting or packing house procedures.				
Euproctis flava (Fabricius, 1775) [Erebidae] Oriental tussock moth	Yes (Yu et al. 2013)	No records found	No. Not known to be associated with fresh kiwifruit. *Euproctis flava* larvae mainly feed on leaves of kiwifruit (Yu et al. 2013).	Assessment not required	Assessment not required	Assessment not required	No
Herpetogramma luctuosalis (Guenée, 1854) [Crambidae] Greater sweet potato webworm moth	Yes (Yu et al. 2013)	No records found	No. Not known to be associated with fresh kiwifruit. Eggs of *H. luctuosalis* are usually laid on the underside of leaves of host plants (Picture Insect 2024b). Larvae feed on kiwifruit leaves (Li 2004; Yu et al. 2013). Adults feed on nectar (Krenn 2010).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Hyphantria cunea (Drury, 1773) [Erebidae] Mulberry moth, Fall web worm	Yes (KVH 2022; Zhang et al. 2023a)	No records found	No. Unlikely to be present on imported fruit. Larvae of *H. cunea* feed on leaves but may also feed on the surface of maturing fruit, which causes considerable visible damage (KVH 2022). Eggs are laid on both sides of leaves (Brunner & Zack 1993) and pupation occurs in bark crevices, leaf litter or just beneath the soil surface (Schowalter & Ring 2017). Because the larvae are distinct with long white hairs arising from black and orange spots on the body, and cause visible feeding damage, infested fruit are likely to be removed during harvesting or packing house procedures.	Assessment not required	Assessment not required	Assessment not required	No
Lobesia botrana (Denis & Schiffermuller, 1775) Synonyms: *Grapholita botrana* Heinemann, 1863*; Tortrix botrana* Denis & Schiffermüller, 1775 [Tortricidae] European grapevine moth	Yes. Present in the city of Turpan in Xinjiang province (Wang & Satter 2023). *Lobesia botrana* has been listed as a quarantine	No records found	Yes. Although grapes are the preferred host, *L. botrana* is recorded as a pest of kiwifruit in Japan (KVH 2022) and Italy (Moleas 1988). Eggs are typically laid on leaves but can be laid on fruit. First generation larvae feed on flowers, and later generations feed on fruit (KVH 2022). Although infested and damaged fruit would likely be removed	Yes. Imported fresh kiwifruit, without obvious signs of infestation, will be distributed throughout Australia. *Lobesia botrana* has a wide range of host plants in more than 27 families with	Yes. *Lobesia botrana* has been recorded feeding on host plants in more than 27 families with berry and berrylike fruit (Gutierrez et al. 2012; Venette et al. 2003), including olives, blueberries and plums (Simmons et al. 2021). Some of these hosts are present and	Yes. *Lobesia botrana* is likely to cause economic consequences if introduced into Australia. Feeding damage to fruit results in decreased fruit yield and quality (Gilligan et al. 2011; Ioriatti, Lucchi & Varela 2012). Additional	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway: Potential for importation	Potential to enter on pathway: Potential for distribution	Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
	pest for China and is under official control to prevent spread of *L. botrana* from Turpan to the rest of China (MOA 2022).		during harvest or packing house procedures, it is possible that young larvae and eggs may not be detected.	berry and berrylike fruit (Gutierrez et al. 2012; Venette et al. 2003), and some of these hosts are present and widespread in Australia. Larvae of *L. botrana* on imported kiwifruit may disperse to a new host nearby or pupate and emerge as an adult moth at a later time.	widespread in Australia. *Lobesia botrana* occurs in Africa, Asia, Europe, North America and South America (CABI 2024a). Parts of Australia have climates similar to these regions, suggesting that *L. botrana* has the potential to establish and spread in Australia.	yield losses are incurred through infection of damaged fruit by opportunistic saprophytes or pathogens, particularly *Botrytis cinerea* (Fermaud & Le Menn 1992; Roehrich & Boller 1991). In addition to being an economically important pest of wine and table grapes, the species is reported to have caused economic damage to fruit crops such as persimmon, pome and stone fruit (Ben-Yehuda et al. 1993).	
Marumba gaschkewitschii (Bremer & Grey, 1853) Synonym: *Smerinthus gaschkewitschii* Bremer & Grey, 1853 [Sphingidae]	Yes (Hua 2005; Yu et al. 2013)	No records found	No. Not known to be associated with fresh kiwifruit. Eggs of *M. gaschkewitschii* are laid on the underside of leaves and larvae feed on leaves of kiwifruit (Yu et al. 2013). Adults feed on nectar (Krenn 2010).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Oraesia excavata (Butler, 1878) [Erebidae] Fruit piercing moth	Yes (Liu 2002; Zhang, Liu & Liu 2015)	No records found	No. Unlikely to be present on imported fruit. Eggs of *O. excavata* are laid on leaves. Larvae feed on kiwifruit leaves and damage the fruit under the sepals or create holes where two or more fruits touch (Zhang, Liu & Liu 2015). Larvae are light brown to dark brown in colour and easy to spot (Zhang, Liu & Liu 2015). Because the larvae are distinct and cause visible feeding damage, infested fruit are likely to be removed during harvesting or packing house procedures. The adult is a nocturnal fruit piercing moth that sucks juice from ripe or ripening fruit, and shelters in foliage during the day (Li 2004). Adult moths are unlikely to be associated with fresh kiwifruit during daytime harvest.	Assessment not required	Assessment not required	Assessment not required	No
Paranthrene regalis (Butler, 1878) Synonym: *Nokona regalis* (Butler, 1878) [Sesiidae] Grape clearwing moth	Yes (Richardson, Burdon & Ferguson 2024)	No records found	No. Not known to be associated with fresh kiwifruit. Eggs of *P. regalis* are laid on shoots and larvae bore into the tender shoots of the host plants after hatching. They develop, overwinter and	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			pupate within the stem of host plants (Wu & Huang 1986; Zhou 1999).				
Spodoptera frugiperda (Smith, 1797) Synonym: *Phalaena frugiperda* (Smith, 1797) [Noctuidae] Fall armyworm	Yes (Benjamin 2021; EPPO 2022)	Yes (APPD 2025; Government of Western Australia 2020; IPPC 2020)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Spodoptera litura (Fabricius, 1775) Synonym: *Prodenia litura* (Fabricius, 1775) [Noctuidae] Tobacco cutworm; cotton leafworm	Yes (GACC 2024)	Yes (ABRS 2024; ALA 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Stathmopoda auriferella (Walker, 1864) Synonym: *Stathmopoda crocophanes* Meyrick, 1897 [Oecophoridae] Apple heliodinid	Yes (KVH 2022; Shanghai Insects Online 2014)	Yes (ABRS 2024; ALA 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Taikona actinidiae (Yang & Wang, 1989) [Sesiidae] Clearwing moth	Yes (Yu et al. 2013)	No records found	No. Not known to be associated with fresh kiwifruit. *Taikona actinidiae* females lay eggs mainly on the petiole bases of *Actinidia* spp. plants and after hatching, the larvae bore into the shoots at the	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			base of the petiole, and larvae feed on stems, branches and leaves (Kubota et al. 2017; Naka et al. 2018; Yu et al. 2013).				
Thysanoptera							
Frankliniella intonsa (Trybom, 1895) Synonyms: *Thrips intonsa* Trybom, 1895; *Frankliniella breviceps* Bagnall, 1911 [Thripidae] European flower thrips; Eurasian flower thrips; Eastern flower thrips; intonsa thrips	Yes (GACC 2024)	No records found	Yes. *Frankliniella intonsa* adults and nymphs feed on leaves, flowers and fruit of kiwifruit (GACC 2024). *Frankliniella intonsa* has been routinely intercepted at the US ports on *Actinidia* fruit (Nickle 2003).	Yes. Imported fresh kiwifruit will likely be distributed throughout Australia. *Frankliniella intonsa* has a wide host range including crop plants and ornamentals (CABI 2024a), and many hosts are available in Australia. Thrips present on imported kiwifruit could potentially disperse to a new host nearby.	Yes. Assessed in the thrips Group PRA (DAWR 2017b)	Yes. Assessed in the thrips Group PRA (DAWR 2017b)	Yes (GP)
Frankliniella occidentalis (Pergande, 1895) [Thripidae] Western flower thrips	Yes (Lu et al. 2007)	Yes (APPD 2025). *Frankliniella occidentalis* was previously	Yes. *Frankliniella occidentalis* is associated with kiwifruit (Zhang et al. 2021b). The species can be found on flowers, fruit, stems and	Yes. Imported fresh kiwifruit will likely be distributed throughout	Yes. Assessed in the thrips Group PRA (DAWR 2017b)	Yes. Assessed in the thrips Group PRA (DAWR 2017b)	Yes (GP)

Pest	Present in China	Present within Australia	Potential to enter on pathway: Potential for importation	Potential to enter on pathway: Potential for distribution	Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
		assessed in the thrips Group PRA as a vector of quarantine orthotospoviruses. Therefore, it is a regulated article for Australia (DAWR 2017b).	leaves of host plants, often hiding under the calyx on the fruit or in places of contact between fruit and stems or leaves (Demirozer et al. 2012). It is possible that *F. occidentalis* on kiwifruit may remain undetected due to their small size. *Frankliniella* spp. are routinely intercepted on horticultural products at the Australian border (DAWR 2017b).	Australia. *Frankliniella occidentalis* has a wide host range including crop plants and ornamentals (CABI 2024a), and many hosts are available in Australia. Thrips present on imported kiwifruit could potentially disperse to a new host nearby.			
Scirtothrips dorsalis Hood, 1919 [Thripidae] Chilli thrips	Yes (CSL 2006)	Yes (Plant Health Australia 2018; Poole 2010). *Scirtothrips dorsalis* was previously assessed in the thrips group PRA as a vector of quarantine orthotospoviruses. Therefore, it is a regulated article for Australia (DAWR 2017b).	Yes. Kiwifruit is known to be a host of *S. dorsalis* (KVH 2022). *Scirtothrips dorsalis* occurs on flowers, fruit, stems and leaves of host plants, often hiding under the calyx on the fruit or in places of contact between fruit and stems or leaves (Demirozer et al. 2012). It is possible that *S. dorsalis* on kiwifruit may remain undetected due to their small size. *Scirtothrips* spp. are routinely intercepted on horticultural products at the Australian border (DAWR 2017b).	Yes. Imported fresh kiwifruit will likely be distributed throughout Australia. *Scirtothrips dorsalis* has a wide host range including crop plants and ornamentals (CABI 2024a), and many hosts are available in Australia. Thrips present on	Yes. Assessed in the thrips Group PRA (DAWR 2017b)	Yes. Assessed in the thrips Group PRA (DAWR 2017b)	Yes (GP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				imported kiwifruit could potentially disperse to a new host nearby.			
Trombidiformes							
Amphitetranychus viennensis (Zacher, 1920) Synonym: *Tetranychus viennensis* Zacher, 1920 [Tetranychidae] Hawthorn spider mite	Yes (AQSIQ 2006c)	No records found	Yes. *Amphitetranychus viennensis* occurs on buds, fruit, stems and leaves of kiwifruit (GACC 2024; Richardson, Burdon & Ferguson 2024). It is possible that *A. viennensis* on fruit of kiwifruit may remain undetected due to their small size.	Yes. Imported fresh kiwifruit will likely be distributed throughout Australia. Hosts of *A. viennensis* include *Arachis hypogaea*, *Cydonia oblonga*, *Ficus carica, Fragaria* spp. *Arachis hypogaea*, *Gossypium hirsutum*, *Malus domestica*, *Prunus* spp., *Pyrus* spp., and *Rubus* sp. (CABI 2024a; Migeon & Dorkeld 2024), which are widely available in Australia. Mites present on imported	Yes. Assessed in the spider mites Group PRA (DAFF 2024a)	Yes. Assessed in the spider mites Group PRA (DAFF 2024a)	Yes (GP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				kiwifruit could potentially disperse to a new host nearby.			
Brevipalpus californicus (Banks, 1904) [Tenuipalpidae] Bunch mite	Yes (Li, Wang & Waterhouse 1997b)	Yes (ALA 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Brevipalpus lewisi McGregor, 1949 [Tenuipalpidae] Citrus flat mite	Yes (Li, Wang & Waterhouse 1997b)	Yes (ALA 2024; APPD 2025; Government of Western Australia 2022)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Brevipalpus obovatus Donnadieu, 1875 [Tenuipalpidae] Scarlet mite	Yes (Li, Wang & Waterhouse 1997b)	Yes (ALA 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Eotetranychus kankitus Ehara, 1955 [Tetranychidae] Spider mite	Yes (GACC 2024)	No records found	Yes. *Eotetranychus kankitus* occurs on buds, fruit, stems and leaves of kiwifruit (GACC 2024). It is possible that *E. kankitus* on kiwifruit may remain undetected due to their small size.	Yes. Imported fresh kiwifruit will likely be distributed throughout Australia. Hosts of *E. kankitus* include *Actinidia chinensis*, *Alnus* sp., *Celtis sinensis*, *Alangium chinense*, *Elaeagnus bockii*,	Yes. Assessed in the spider mites Group PRA (DAFF 2024a)	Yes. Assessed in the spider mites Group PRA (DAFF 2024a)	Yes (GP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				Elaeagnus pungens, *Litsea auriculata*, *Eleusine indica*, *Prunus armeniaca*, *Pyrus communis*, *Rosa chinensis*, *Citrus medica*, *Citrus reticulata*, *Salix* sp. and *Vitis vinifera* (CABI 2024a; GACC 2024; Migeon & Dorkeld 2023), with many of these hosts commonly available in Australia. Mites present on fresh kiwifruit could potentially disperse to a new host nearby.			
Panonychus ulmi (Koch, 1835) [Tetranychidae] European red spider mite	Yes (AQSIQ 2006d)	Yes (APPD 2025; Botha & Learmonth 2005; Poole 2010)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Tetranychus ludeni Zacher, 1913 [Tetranychidae] Bean spider mite	Yes (GACC 2024)	Yes (ALA 2024; APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Tetranychus urticae Koch, 1835 Synonym: *Tetranychus cinnabarinus* (Boisduval, 1867) [Tetranychidae] Two-spotted spider mite	Yes (GACC 2024; KVH 2022)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
BACTERIA							
Agrobacterium radiobacter (Beijerinck & van Delden 1902) Conn 1942 Synonyms: *Agrobacterium tumefaciens* (E.F. Smith & Townsend 1907) Conn 1942; *Rhizobium radiobacter* (Beijerinck & van Delden 1902) Young et al. 2001 [Hyphomicrobiales: Rhizobiaceae] Crown gall disease	Yes (AQSIQ 2017; GACC 2024)	Yes (Cook & Dubé 1989; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pectobacterium actinidiae Portier et al. 2019 Synonym: *Pectobacterium carotovorum* subsp. *actinidiae* (Pca) Koh et al. 2012 [Enterobacterales: Pectobacteriaceae] Summer canker	Yes (Zhang et al. 2023c)	No records found	No. Not known to be associated with fresh kiwifruit. *Pectobacterium actinidiae* is known to infect the trunk, branches, leaves and buds of kiwifruit (Zhang et al. 2023c).	Assessment not required	Assessment not required	Assessment not required	No
Pseudomonas fluorescens Migula 1895 [Pseudomonadales: Pseudomonadaceae]	Yes (Zhang et al. 2014)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Pink eye							
Pseudomonas savastanoi (Janse 1982) Gardan, et al. 1992 [Pseudomonadales: Pseudomonadaceae] Bacterial blight	Yes (Zhong et al. 2022)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pseudomonas syringae pv. *actinidiae* Takikawa et al. 1989 Biovar 3 Synonym: *Pseudomonas syringae* pv. *actinidifoliorum* Cunty et al. 2014 [Pseudomonadales: Pseudomonadaceae] Kiwifruit bacterial canker	Yes (GACC 2024; Pei et al. 2023; Yao et al. 2024)	Yes (Agriculture Victoria 2018, 2021a; DAFF 2023)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pseudomonas syringae pv. *syringae* van Hall 1902 [Pseudomonadales: Pseudomonadaceae] Bacterial canker	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pseudomonas viridiflava (Burkholder 1930) Dowson 1939 [Pseudomonadales: Pseudomonadaceae] Bacterial leaf blight	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Ralstonia pseudosolanacearum Safni et al. (Phylotype I) [Pseudomonadales: Pseudomonadaceae]	Yes (Ji et al. 2024)	Yes (Ray et al. 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Bacterial wilt							
FUNGI							
Agroathelia rolfsii (Sacc.) Redhead & Mullineux Synonym: *Athelia rolfsii* (Sacc.) C.C. Tu & Kimbr [Agaricales: Amylocorticiaceae] Sclerotium rot	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Alternaria alternata (Fr.) Keissl. [Pleosporales: Pleosporaceae] Alternaria brown spot	Yes (Li et al. 2017a)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Alternaria tenuissima (Kunze) Wiltshire [Pleosporales: Pleosporaceae] Brown spot	Yes (GACC 2024; Li et al. 2019)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Armillaria mellea (Vahl) P. Kumm. [Agaricales: Physalacriaceae] Honey fungus	Yes (GACC 2024)	No records found. *Armillaria mellea* is considered to be absent from Australia. While there are historic Australian records of *A. mellea* (Simmonds 1966), current records show Armillaria root rot in Australia is predominantly caused by	No. Not known to be associated with fresh kiwifruit. *Armillaria mellea* is a soil-borne fungus associated with root rot in kiwifruit (Donati et al. 2020; KVH 2022).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
		Armillaria leuteobubalina (Donovan 2007; Washington 2010).					
Armillaria novae-zelandiae (G. Stev.) Boesew. [Agaricales: Physalacriaceae] Armillaria root rot	Yes (Coetzee, Wingfield & Wingfield 2018)	Yes (APPD 2024; Coetzee, Wingfield & Wingfield 2018)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspergillus aculeatus Iizuka [Eurotiales: Aspergillaceae] Soft rot	Yes (Li et al. 2017b)	Yes (APPD 2025; Leong, Hocking & Pitt 2004)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspergillus flavus Link [Eurotiales: Aspergillaceae] Yellow mould	Yes (Zhu et al. 2022)	Yes (APPD 2025; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspergillus niger Tiegh. [Eurotiales: Aspergillaceae] Black mould	Yes (AQSIQ 2017; Tai 1979)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Boeremia exigua (Desm.) Aveskamp, Gruyter & Verkley [Pleosporales: Didymellaceae] Fruit rot	Yes (Guo et al. 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Botryosphaeria dothidea (Moug.) Ces. & De Not. [Botryosphaeriales: Botryosphaeriaceae] Canker	Yes (GACC 2024; Wang et al. 2021)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Botryosphaeria kuwatsukai (Hara) G.Y. Sun & E. Tanaka Synonyms: *Physalospora piricola* Nose*; Botryosphaeria berengeriana* f. sp. *pyricola* Kogan. & Sakuma*; Guignardia piricola* (Nose) Yamamoto [Botryosphaeriales: Botryosphaeriaceae] Apple ring rot	Yes (Jeger et al. 2017; KVH 2022)	No records found	No. Not known to be associated with fresh kiwifruit. The main hosts of *B. kuwatsukai* are pears (*Pyrus* spp.) and apples (*Malus* spp.) (Jeger et al. 2017). *Botryosphaeria kuwatsukai* also infects kiwifruit vines, causing vine blight (EPPO 2023; MPI 2020).	Assessment not required	Assessment not required	Assessment not required	No
Botryosphaeria obtusa (Schwein.) Shoemaker Synonyms: *Diplodia seriata* De Not.; *Peyronellaea obtusa* (Fuckel) Aveskamp et al.; *Phoma obtusa* (Fuckel) [Botryosphaeriales: Botryosphaeriaceae] Black rot	Yes (Yan et al. 2011)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Botrytis cinerea Pers. [Helotiales: Sclerotiniaceae] Damping-off	Yes (GACC 2024; Pei et al. 2019)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Cadophora malorum (Kidd & Beaumont) W. Gams Synonyms: *Sporotrichum malorum* Kidd & Beaumont; *Phialophora malorum* (Kidd & Beaumont) McColloch; [Helotiales: Ploettnerulaceae] Side rot	Yes (Chen et al. 2010)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Cadophora melinii Nannf. Synonym: *Phialophora melinii* (Nannf.) Conant [Helotiales: Ploettnerulaceae] Softwood stain	Yes (Zhang et al. 2017)	No records found	No. Not known to be associated with fresh kiwifruit. *Cadophora melinii* is associated with the kiwifruit vine and trunk causing vine decay or abnormal increase in trunk diameter (elephantiasis), and longitudinal bark cracks (Prodi et al. 2008; Richardson, Burdon & Ferguson 2024).	Assessment not required	Assessment not required	Assessment not required	No
Calonectria ilicicola Boedijn & Reitsma [Hypocreales: Nectriaceae] Leaf spot	Yes (Fei et al. 2018)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Ceratocystis fimbriata Ellis & Halst. [Microascales: Ceratocystidaceae] Brazilian wilt; kiwifruit ceratocystis wilt	Yes (Han et al. 2015)	No. *Ceratocystis fimbriata* has several host specific strains known as 'types', 'races', or forms (Baker et al. 2003; Harrington 2000; Vogelzang & Scott 1990). *Ceratocystis fimbriata* isolates reported in Australia are all from *Syngonium* and are not	No. Not known to be associated with fresh kiwifruit. *Ceratocystis fimbriata* is a soil-borne pathogen. Strains associated with kiwifruit affect woody xylem tissue and cause kiwifruit ceratocystis wilt (Ferreira et al. 2017; Oliveira et al. 2020; Piveta et al. 2016).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
		known to be pathogenic to kiwifruit (Vogelzang & Scott 1990).					
Cercospora iteodaphnes (Thüm.) Sacc. Synonym: *Helminthosporium iteodaphnes* Thüm. [Mycosphaerellales: Mycosphaerellaceae] Leaf spot	Yes (BFP 2019; KVH 2022; MyCoPortal 2024)	No records found	No. Not known to be associated with fresh kiwifruit. *Cercospora iteodaphnes* causes leaf mould of kiwifruit (KVH 2022).	Assessment not required	Assessment not required	Assessment not required	No
Cladosporium cladosporioides (Fresenius) De Vries [Cladosporiales: Cladosporiaceae] Leaf spot	Yes (Cui et al. 2023)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Cladosporium herbarum (Pers.) Link. [Cladosporiales: Cladosporiaceae] Cladosporium rot	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Cladosporium oxysporum Berk. & M.A. Curtis [Cladosporiales: Cladosporiaceae] Seedling blight	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Colletotrichum acutatum J.H. Simmonds [Glomerellales: Glomerellaceae]	Yes (He et al. 2018)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Black spot							
*Colletotrichum gloeosporioides (*Penz.) Penz. & Sacc. Synonym: *Glomerella cingulata* (Stonem.) Spauld. & Schrenk [Glomerellales: Glomerellaceae] Anthracnose	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Coniochaeta luteoviridis (J.F.H. Beyma) Z.U. Khan Gené & Guarro Synonym: *Lecythophora luteoviridis* (J.F.H. Beyma) E. Weber, Görke & Begerow [Coniochaetales: Coniochaetaceae] Elephantiasis	Yes (Zhou et al. 2014)	No records found	No. Not known to be associated with fresh kiwifruit. *Coniochaeta luteoviridis* is associated with the trunk and wood of kiwifruit plants causing elephantiasis (abnormal increase in trunk diameter and longitudinal bark cracks) (Prodi et al. 2008).	Assessment not required	Assessment not required	Assessment not required	No
Corynespora cassiicola (Berk. & M.A. Curtis) C.T. Wei [Pleosporales: Corynesporascaceae] Brown leaf spot	Yes (GACC 2024; Zhu et al. 2023)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Dematophora necatrix R. Hartig Synonyms: *Rosellinia necatrix* Berl. Ex Prill.; *Hypoxylon necatrix* (Berl. ex Prill.) [Xylariales: Xylariaceae] White root rot	Yes (GACC 2024)	Yes (Agriculture Victoria 2021b; APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Desarmillaria tabescens (Scop.) R.A. Koch & Aime [Agaricales: Physalacriaceae]	Yes (Lee et al. 2019)	No records found	No. Not known to be associated with fresh kiwifruit. *Desarmillaria tabescens* is associated with kiwifruit vine decline syndrome. Symptoms include disappearance of feeding roots, blocking of stele and xylem vessels, root cortex breakdown, leaf necrosis, twig wilting and plant death (Donati et al. 2020).	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe actinidiae N.F. Sommer & Beraha Synonym: *Cytospora actinidiae* (Hennings) Diedicke [Diaporthales: Diaporthaceae] Stem-end rot, fruit rot	Yes (Bai et al. 2017)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe ambigua Nitschke [Diaporthales: Diaporthaceae] Canker	Yes (Zhang et al. 2025)	Yes (Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe amygdali (Delacr.) Udayanga, Crous & K.D. Hyde [Diaporthales: Diaporthaceae]	Yes (Feng et al. 2026)	No records found	Yes. *Diaporthe amygdali* is associated with postharvest fruit rot in kiwifruit (Feng et al. 2026). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the	Yes. *Diaporthe amygdali* is a new species and *Actinidia* spp. are known hosts (Feng et al. 2026). Commercial orchards of *Actinidia* spp. are concentrated in temperate areas of Victoria and other	Yes. *Diaporthe amygdali* causes soft rot in kiwifruit (Feng et al. 2026), which can reduce marketability of fruit and lead to economic losses.	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				environment. *Diaporthe* species may transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). *Actinidia* spp. are occasionally grown as garden plants. This species is present in Hubei and Jiangxi in China (Feng et al. 2026) and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia, indicating that *D. amygdali* is likely to establish and spread in Australia.		
Diaporthe apiculata Y.H. Gao & L. Cai [Diaporthales: Diaporthaceae]	Yes (Feng et al. 2026)	No records found	Yes. *Diaporthe apiculata* is associated with fruit rot in kiwifruit (Feng et al. 2026). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. *Diaporthe* species may	Yes. *Actinidia* spp. are known hosts of *D. apiculata* (Feng et al. 2026). Commercial orchards of *Actinidia* spp. are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and	Yes. *Diaporthe apiculata* causes kiwifruit fruit rot (Feng et al. 2026), which can reduce marketability of fruit and lead to economic losses.	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	Queensland (Orchard Tech 2020). *Actinidia* spp. are occasionally grown as garden plants. This species is present in Jiangxi in China (Feng et al. 2026) and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia, indicating that *D. apiculata* is likely to establish and spread in Australia.		
Diaporthe arecae (H.C. Srivast., Zakia & Govindar.) R.R. Gomes, Glienke & Crous Synonym: *Diaporthe fraxini-angustifoliae* R.G. Shivas, J. Edwards & Y.P. Tan [Diaporthales: Diaporthaceae]	Yes (Feng et al. 2026; Zou et al. 2026)	Yes (APPD)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe eres Nitschke [Diaporthales: Diaporthaceae] Postharvest rot, Fruit fungus, branch fungus, apple leaf fungus	Yes (Du et al. 2021)	No current records found. While there were two reports of *Diaporthe eres* in Australia in 1914 and 1966 (ALA 2024; APPD 2024), *D. eres* is no longer	Yes. *Diaporthe eres* is one of the major causal agents of postharvest fruit rot in kiwifruit (Du et al. 2021; Ling et al. 2024; Yu et al. 2022b). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the	Yes. *Diaporthe eres* has been recorded from a number of commercially important crops, including *Actinidia* spp., *Camellia sinensis*, *Vitis vinifera*, *Pyrus* spp., *Citrus* spp. and *Prunus* spp. (Bai	Yes. *Diaporthe eres* is one of the important pests of kiwifruit in China and has been identified as the causal agent of 'HongYang' postharvest rot disease, a fruit rot	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway: Potential for importation	Potential to enter on pathway: Potential for distribution	Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
		considered present in Australia (Dissanayake et al. 2017b).		environment. *Diaporthe* species may transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	et al. 2015; Baumgartner et al. 2013; CABI 2024a; Dissanayake et al. 2017b; Du et al. 2021; Hongsanan et al. 2023). Most of the host species of *D. eres*, are widely present in Australia. *Diaporthe eres* is distributed in north-west USA, China, Italy, Lithuania, Poland and Serbia (Dissanayake et al. 2017b), and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia, indicating that *D. eres* is likely to establish and spread in Australia.	of a popular cultivar of kiwifruit. In South Korea among all other *Diaporthe* species, *D. eres* is responsible for three quarters of post-harvest rot (Gi, Kim & Yang 2022). *Diaporthe eres* infects kiwifruit both during cultivation and postharvest storage, leading to significant annual economic loss (Ling et al. 2024).	
Diaporthe eucommiae (F.X. Chao & P.K. Chi) Y.H. Gao & L. Cai Synonym: *Diaporthe hongkongensis* R.R. Gomes, Glienke & Crous; *Diaporthe lithocarpi* (Y.H. Gao, W. Sun & L. Cai) Y.H. Gao & L. Cai. [Diaporthales: Diaporthaceae] Fruit rot, stem-end rot	Yes (Du et al. 2021)	No records found	Yes. *Diaporthe eucommiae* is associated with stem-end rot of fruit of kiwifruit (Erper et al. 2017; Richardson, Burdon & Ferguson 2024). This pathogen is one of the major causal agents of postharvest fruit rot in kiwifruit (Du et al. 2021; Yu et al. 2022b). Fruit infected by *Diaporthe* spp.	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the	Yes. *Diaporthe eucommiae* has been recorded from several host plants, including *Actinidia* spp., *Camellia sinensis*, *Vitis vinifera*, *Prunus persica*, *Citrus* spp. and *Pyrus* spp. (Dissanayake et al.	Yes. *Diaporthe eucommiae* has been described as one of the economically important *Diaporthe* spp. affecting kiwifruit in China and Türkiye (Du et al. 2021; Erper et al.	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			are often symptomless at harvest (Fullerton et al. 2007).	environment. *Diaporthe* species may transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	2017b; Hongsanan et al. 2023). Most of the host species of *D. eucommiae* are present in parts of Australia. *Diaporthe eucommiae* is distributed in China, Hong Kong and Türkiye (Dissanayake et al. 2017b; Guo et al. 2020; Hongsanan et al. 2023), and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia, indicating that *D. eucommiae* is likely to establish and spread in Australia.	2017). Pear shoot canker caused by *D. eucommiae* is one of the devastating diseases in pear in China (Guo et al. 2020).	
Diaporthe ganjae (McPartl.) R.R. Gomes, Glienke & Crous Synonym: *Diaporthe compacta* Y.H. Gao & L. Cai [Diaporthales: Diaporthaceae] Fruit rot	Yes (Du et al. 2021; Hongsanan et al. 2023)	No records found	Yes. *Diaporthe ganjae* is one of the major causal agents of postharvest fruit rot in kiwifruit (Du et al. 2021; Yu et al. 2022b). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. *Diaporthe* spp. may transfer	Yes. *Diaporthe ganjae* has been recorded from *Actinidia* spp. and *Camellia sinensis* (Du et al. 2021; Hongsanan et al. 2023). These hosts are present in Australia. *Diaporthe ganjae* is present in China, Rwanda and the USA (Dissanayake et al. 2024; Hongsanan et	Yes. *Diaporthe ganjae* has been described as one of the most economically important *Diaporthe* species affecting kiwifruit in China (Du et al. 2021). *Diaporthe* spp. appear to infect fruit throughout the season, surviving as	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	al. 2023), and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia, indicating that *D. ganjae* is likely to establish and spread in Australia.	latent pathogens within the skin. Chilling injury during storage can facilitate the growth of rot, which can reduce marketability of fruit (Fullerton et al. 2007; Manning et al. 2016; Richardson, Burdon & Ferguson 2024).	
Diaporthe hispaniae Guarnaccia, Armengol & Crous [Diaporthales: Diaporthaceae] Leaf spot	Yes (Tan et al. 2025)	No records found	No. Not known to be associated with fresh kiwifruit. *Diaporthe hispaniae* is only reported to be associated with kiwifruit leaves causing leaf black spot disease (Tan et al. 2025).	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe liupanshuiensis C.G. Ren [Diaporthales: Diaporthaceae] Fruit rot, stem-end rot	Yes (Ren et al. 2025)	No records found	Yes. *Diaporthe liupanshuiensis* is associated with fruit causing soft rot lesions on the fruit surface that extend to the core (Ren et al. 2025). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. *Diaporthe* species may	Yes. *Diaporthe liupanshuiensis* has been recently reported from kiwifruit in Guizhou Province in China with no other host identified to date (Ren et al. 2025). Kiwifruit are cultivated in parts of Australia with comparable climatic conditions to those in	Yes. *Diaporthe liupanshuiensis* causes soft rot in kiwifruit (Ren et al. 2025), which can reduce marketability of fruit and lead to economic losses.	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	China. A number of *Diaporthe* spp. are already established in Australia, indicating that *Diaporthe liupanshuiensis* is likely to establish and spread in Australia.		
Diaporthe longicolla (Hobbs) J.M. Santos, Vrandecic & A.J.L. Phillips Synonym: *Phomopsis longicolla* Hobbs [Diaporthales: Diaporthaceae] Pod and stem blight	Yes (GACC 2024)	Yes (Allen et al. 1992; CABI 2021)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe novem J.M. Santos, Vrandečić & A.J.L. Phillip [Diaporthales: Diaporthaceae]	Yes (Zou et al. 2026)	Yes (APPD)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe passiflorae Crous & L. Lombard [Diaporthales: Diaporthaceae]	Yes (Feng et al. 2026; Zou et al. 2026)	No records found	Yes. *Diaporthe passiflorae* is associated with fruit rot in kiwifruit (Feng et al. 2026; Zou et al. 2026). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. *Diaporthe*	Yes. *Actinidia* spp. are known hosts of *D. passiflorae* (Feng et al. 2026; Zou et al. 2026). Commercial orchards of *Actinidia* spp. are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in	Yes. *Diaporthe passiflorae* causes kiwifruit rot (Feng et al. 2026; Zou et al. 2026), which can reduce marketability of fruit and lead to economic losses.	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				species may transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	subtropical regions of New South Wales and Queensland (Orchard Tech 2020). *Actinidia* spp. are occasionally grown as garden plants. This species is present in Sichuan in China (Feng et al. 2026) and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia, indicating that *D. passiflorae* is likely to establish and spread in Australia.		
Diaporthe phaseolorum (Cooke & Ellis) Sacc. [Diaporthales: Diaporthaceae] Fruit rot, pod blight	Yes (Du et al. 2021; Wang et al. 2022b)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe rudis (Fr.) Nitschke Synonym*: Diaporthe medusaea* Nitschke [Diaporthales: Diaporthaceae]	Yes (Zou et al. 2026)	Yes (APPD)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe shuichengensis C.G. Ren [Diaporthales: Diaporthaceae] Fruit rot, stem-end rot	Yes (Ren et al. 2025)	No records found	Yes. *Diaporthe shuichengensis* is associated with fruit causing soft rot lesions on the fruit surface that extend to core (Ren et al. 2025). Fruit infected by	Yes. Kiwifruit from China will likely be distributed throughout Australia.	Yes. *Diaporthe shuichengensis* has been recently reported from kiwifruit in Guizhou Province in China with	Yes. *Diaporthe shuichengensis* causes soft rot in kiwifruit (Ren et al. 2025), which can reduce	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			Diaporthe spp. are often symptomless at harvest (Fullerton et al. 2007).	Infected fruit may be discarded into the environment. *Diaporthe* species may transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	no other host identified to date (Ren et al. 2025). Kiwifruit are cultivated in parts of Australia with comparable climatic conditions to those in China. A number of *Diaporthe* spp. are already established in Australia, indicating that *Diaporthe shuichengensis* is likely to establish and spread in Australia.	marketability of fruit and lead to economic losses.	
Diaporthe sojae Lehman Synonyms: *Diaporthe melonis* var. *brevistylospora* Tak. Kobay. & Tak. Ohsawa *Diaporthe phaseolorum* var. *sojae* (Lehman) Wehm. [Diaporthales: Diaporthaceae] Pod blight, fruit rot	Yes (Du et al. 2021)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diaporthe tulliensis R.G. Shivas, Vawdrey & Y.P. Tan Synonym*: Diaporthe glabrae* (C.Q. Chang, Z.D. Jiang & P.K. Chi) Y.H. Gao & L. Cai *Diaporthe alangii* C.M. Tian & Q. Yang	Yes (Bai et al. 2017; Du et al. 2021)	Yes (APPD 2024, 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Diaporthe tectonae Doilom, Dissan. & K.D. Hyde; *Phomopsis glabrae* C.Q. Chang, Z.D. Jiang & P.K Chi [Diaporthales: Diaporthaceae] Fruit rot, stem-end rot							
Diaporthe xiuwenensis C.G. Ren [Diaporthales: Diaporthaceae] Fruit rot, soft rot	Yes (Ren et al. 2024)	No records found	Yes. *Diaporthe xiuwenensis* is one of the major causal agents of postharvest fruit rot of kiwifruit (Du et al. 2021; Yu et al. 2022b). Fruit infected by *Diaporthe* spp. are often symptomless at harvest (Fullerton et al. 2007).	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. *Diaporthe* species may transfer from infected waste onto a susceptible part of a host by wind-assisted ascospores (Funk 1986) or rain-assisted conidiospores (Chaisiri et al. 2022).	Yes. *Diaporthe xiuwenensis* is a new species and *Actinidia* spp. are the only known hosts (Ren et al. 2024). Commercial orchards of *Actinidia* spp. are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). *Actinidia* spp. are occasionally grown as garden plants. *Diaporthe xiuwenensis* is present in China (Ren et al. 2024) and similar climatic conditions exist in parts of Australia. A number of *Diaporthe* spp. are present in Australia,	Yes. *Diaporthe xiuwenensis* causes soft rot in kiwifruit (Ren et al. 2024), which can reduce marketability of fruit and lead to economic losses.	Yes (EP)

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
					indicating that *D. xiuwenensis* is likely to establish and spread in Australia.		
Didymella glomerata (Corda) Qian Chen & L. Cai Synonym: *Phoma glomerata* (Corda) Wollenw. & Hochapfel [Pleosporales: Didymellaceae] Stem rot	Yes (Ma et al. 2022)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Didymella bellidis (Neerg.) Qian Chen & L. Cai [Pleosporales: Didymellaceae] Leaf spot	Yes (Zou et al. 2020)	No records found	No. Not known to be associated with fresh kiwifruit. *Didymella bellidis* is associated with kiwifruit leaves causing leaf spot (Zou et al. 2020).	Assessment not required	Assessment not required	Assessment not required	No
Discosia artocreas (Tode) Fr. Synonym: *Sphaerella artocreas* (Tode) Quél. [Amphisphaeriales: Sporocadaceae]	Yes (GACC 2024)	No records found	No. Not known to be associated with fresh kiwifruit. *Discosia artocreas* is associated with kiwifruit leaves (Andrianova & Minter 2012; GACC 2024; Vanev 1992). Vanev (1992) suggested that *D. artocreas* is a saprobe.	Assessment not required	Assessment not required	Assessment not required	No
Epicoccum sorghinum (Sacc.) Aveskamp, Gruyter & Verkley Synonyms: *Peyronellaea stemphylioides* Kusnezowa;	Yes (Zhang et al. 2021a)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Peyronellaea indianensis K.B. Deshp. & Mantri; *Phoma indianensis* (K.B. Deshp. & Mantri) Boerema, Dorenb. & Kesteren*; Phoma insidiosa* Tassi [Pleosporales: Didymellaceae] Leaf spot							
Fomitiporia punctata (P. Karst.) Murrill Synonyms: *Fomitiporia tsugina* Murrill; *Fomes platincola* Speg.; *Fomitiporia lloydii* Murrill [Hymenochaetales: Hymenochaetaceae] Elbowpatch crust	Yes (Dai, Cui & Decock 2008)	No records found. *Fomitiporia punctata* has been recorded associated with grapevines however, these records have been attributed to *Fomitiporia mediterranea* (Fischer 2002).	No. Not known to be associated with fresh kiwifruit. *Fomitiporia punctata* infects leaves, shoot and twigs of kiwifruit causing drop of fruits before reaching maturity (Elena & Paplomatas 2002).	Assessment not required	Assessment not required	Assessment not required	No
Fusarium acuminatum Ellis & Everh. [Hypocreales: Nectriaceae] Fusarium rot	Yes (Wang et al. 2015a)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium avenaceum (Fr.) Sacc. [Hypocreales: Nectriaceae] Canker	Yes (Sun et al. 2022; Tai 1979)	Yes (Summerell et al. 2011)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium fujikuroi Nirenberg Synonyms: *Gibberella fujikuro*i f. *oryzae* Saccas	Yes (Li et al. 2020; Pan et al. 2024)	Yes (Laurence et al. 2015; Liew et al. 2016)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
[Hypocreales: Nectriaceae] Brown leaf spot							
Fusarium graminearum Schwabe Synonym: *Gibberella zeae* (Schwein.) Petch [Hypocreales: Nectriaceae] Brown leaf spot; root rot	Yes (Chen et al. 2022)	Yes (APPD 2024; Summerell et al. 2011)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium incarnatum (Roberge ex Desm.) Sacc [Hypocreales: Nectriaceae] Leaf spot	Yes (Zhang et al. 2023b)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium odoratissimum kiwifruit strain Maryani, L. Lombard, Kema & Crous [Hypocreales: Nectriaceae]	Yes (Wang et al. 2026)	No. There are no records of *F. odoratissimum* infecting kiwifruit in Australia. There is doubt surrounding the identification of *F. odoratissimum* from kiwifruit. Wang et al. (2026) primarily based their molecular identification of *F. odoratissimum* on a single gene locus rpb2, instead of the multiple gene loci of rpb2, cmdA,	No. Unlikely to be associated with fresh kiwifruit from China. There is only a single report of *F. odoratissimum* being associated with fruit rot in a single kiwifruit orchard in Taibai County in Shaanxi province, China, in 2019 and 2021 (Wang et al. 2026). Testing of fruit showing rot symptoms from across Shaanxi province have not detected *F. odoratissimum* in any other commercial kiwifruit orchards since monitoring commenced in 2019 (M. Wang et al 2026, personal communication). Although numerous studies of fruit rots in kiwifruit have	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway: Potential for importation	Potential to enter on pathway: Potential for distribution	Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
		TEF1 and TUB2 recommended for distinguishing species of the *F. oxysporum* species complex (FOSC) (Lombard et al. 2019; Nozawa et al. 2024; Sakane et al. 2024). While Bayesian analysis of the rpb2 gene in Wang et al. (2026) supports molecular identification of *F. odoratissimum* in kiwifruit, single-gene analyses alone cannot be relied upon for molecular identification within FOSC (Bugingo et al. 2025; van Diepeningen et al. 2015). Using the gene loci rpb1, rpb2 and EF1-α, Wang et al. (2026) reported that the *F. odoratissimum* isolates from	been conducted in China, no other studies have reported *F. odoratissimum* being associated with the plant or fruit. It is also not clear if *F. odoratissimum* is a primary pathogen of kiwifruit or a secondary pathogen that requires kiwifruit to be infected by another pathogen or wounded. Although Wang et al. (2026) isolated *F. odoratissimum* from kiwifruit with rot symptoms, other pathogens were also isolated including *Botryosphaeria dothidea* and *Diaporthe* spp. (Wang et al. 2026), which are common causal agents of fruit rot of kiwifruit in China (Díaz et al. 2017; Du et al. 2021; Li et al. 2015; Yu et al. 2022b). Similarly, it is not clear if *F. odoratissimum* can infect undamaged kiwifruit under field conditions as Wang et al. (2026) only demonstrated fruit infection and symptom development via laboratory inoculation of wounded kiwifruit. The department will continue to monitor reports of this pest in kiwifruit in China and				

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
		kiwifruit shared 98.18-100% genetic identity with the reference *F. odoratissimum* isolates LC13762, OR865337, OR865341 and PV613661. However, these results could not be confirmed, which highlights some uncertainty in the molecular identification of *F. odoratissimum* in kiwifruit based on the non-standard gene selections. Three of the 4 reference isolates are identified as *F. odoratissimum* from *Musa* sp. in Guangxi, China (LC13762) (Wang et al. 2022a) and from *Fritillaria taipaiensis* in China (OR865337 and OR865341), although no supporting journal	will reassess should information become available indicating this species is a more common and widespread pathogen causing fruit rot in kiwifruit.				

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
		publication could be found for the 2 latter isolates. While the fourth reference isolate PV613661 is identified in Genbank as *F. odoratissimum*, it has recently been proposed to be a new species, *Fusarium semanoti*, a causal agent of dieback in the *Taxodium* hybrid 'Zhongshanshan' (He et al. 2026).					
Fusarium oxysporum Schltdl. [Hypocreales: Nectriaceae] Wilt	Yes (Feng et al. 2018; GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium proliferatum (Matsush.) Nirenberg, Mitt. [Hypocreales: Nectriaceae] Fruit rot	Yes (Li et al. 2017a)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium solani (Mart.) Sacc. [Hypocreales: Nectriaceae] Fruit rot	Yes (Yang et al. 2018)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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Fusarium tricinctum (Corda) Sacc. [Hypocreales: Nectriaceae] Root rot	Yes (GACC 2024; Wang et al. 2022b)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Glomerella septospora Sivan. & W.H. Hsieh Synonym: *Colletotrichum taiwanense* Sivan. & W.H. Hsieh [Glomerellales: Glomerellaceae] Fruit stem blight	Yes (Li et al. 2013)	No records found	No. Unlikely to be present on imported kiwifruit. *Glomerella septospora* infects blossom stalks, causing early drop of blossoms and fruitlets (Li et al. 2013). There is no evidence that this pathogen infects mature fruit.	Assessment not required	Assessment not required	Assessment not required	No
Lasiodiplodia theobromae (Pat.) Griffon & Maubl. [Botryosphaeriales: Botryosphaeriaceae] Stem-end rot	Yes (Zhang et al. 2022a)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Monochaetia karstenii (Sacc. & P. Syd.) B. Sutton Basionym: *Sporocadus maculans* Corda Synonyms: *Pestalotiopsis maculans* (Corda) Nag Raj; *Pestalotia maculans* (Corda) S. Hughes; *Pestalotiopsis guepinii* Desmazières [Amphisphaeriales: Pestalotiopsidaceae] Leaf spot	Yes (GACC 2024)	Yes (APPD 2024; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Mucor piriformis A. Fisch. [Mucorales: Mucoraceae]	Yes (China Species 2000 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Neocosmospora solani (Mart.) L. Lombard & Crous Synonym: *Fusarium solani* (Mart.) Sacc. [Hypocreales: Nectriaceae] Fusarium rot	Yes (Richardson, Burdon & Ferguson 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Neofabraea actinidiae (P.R. Johnston, M.A. Manning & X. Meier) P.R. Johnston Synonym: *Cryptosporiopsis actinidia*e P.R. Johnst., M.A. Manning & X. Meier [Helotiales: Dermateaceae]	Yes (Yuan et al. 2011)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Neofusicoccum actinidiae Lu Feng and Y.P. Fu [Botryosphaeriales: Botryosphaeriaceae] Fruit rot	Yes (Feng et al. 2023)	No records found	Yes. *Neofusicoccum actinidae* causes fruit rot of kiwifruit (Feng et al. 2023). Infected fruit show sunken areas with a soft, light brown to brown, watery decay (Feng et al. 2023). Symptomatic infected fruit are likely to be discarded during packing house processes. However, asymptomatic infected fruit are likely to be undetected during packing house processes (Slippers & Wingfield 2007) and may be imported to Australia.	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit or fruit waste may be discarded into the environment. *Neofusicoccum* species may transfer from infected waste onto a	Yes. *Neofusicoccum actinidiae* is a newly reported *Neofusicoccum* species and a pathogenicity test demonstrated that this pathogen could infect apple and orange (Feng et al. 2023), which are widely grown throughout parts of Australia. In general, *Neofusicoccum* species are associated	Yes. *Neofusicoccum* spp., including *N. actinidiae* and *N. guttatum*, accounted for over 8% of postharvest rot cases on kiwifruit in Hubei and Jiangxi provinces in China (Feng et al. 2023). *Neofusicoccum* spp. are important pathogens of many fruit and woody hosts, including	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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				susceptible part of a host through conidia dispersed by rain splash (EFSA et al. 2025)	with a wide range of fruit and woody hosts, including *Eucalyptus*, blueberry, *Prunus*, *Cytisus*, almond (Candolfi-Arballo et al. 2010; Holland et al. 2021; McGregor, Sakalidis & Hamelin 2016; Nazar Pour et al. 2022). *Neofusicoccum actinidiae* is only reported in China (Feng et al. 2023), which shares similar climatic conditions with parts of Australia. Other *Neofusicoccum* spp. are present in Australia, indicating that *N. actinidiae* is likely to establish and spread in Australia.	*Eucalyptus*, blueberry, grapes, *Prunus*, almond and avocado (Candolfi-Arballo et al. 2010; Holland et al. 2021; McGregor, Sakalidis & Hamelin 2016; Nazar Pour et al. 2022), which are present in Australia. *Neofusicoccum* spp. survive as latent pathogens and can cause fruit rot during storage, which can reduce marketability of fruit.	
Neofusicoccum guttatum Lu Feng and Y.P. Fu Synonym: *Neofusicoccum guttata* Lu Feng and Y.P. Fu [Botryosphaeriales: Botryosphaeriaceae] Fruit rot	Yes (Feng et al. 2023)	No records found	Yes. *Neofusicoccum guttatum* causes fruit rot of kiwifruit (Feng et al. 2023). Infected fruit show sunken areas with a soft, light brown to brown, watery decay (Feng et al. 2023). Symptomatic fruit are likely to be discarded during packing house processes. However, asymptomatic	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit or fruit waste may be discarded into the environment. *Neofusicoccum*	Yes. *Neofusicoccum guttatum* is a newly reported *Neofusicoccum* species and a pathogenicity test demonstrated that this pathogen could infect apple and orange (Feng et al. 2023), which are widely grown	Yes. *Neofusicoccum* spp., including *N. actinidiae* and *N. guttatum* accounted for over 8% of cases of postharvest rots on kiwifruit in Hubei and Jiangxi provinces in China (Feng et al. 2023). *Neofusicoccum* spp. are regarded as	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			infected fruit are likely to be undetected during packing house processes (Slippers & Wingfield 2007) and may be imported to Australia.	species may transfer from infected waste onto a susceptible part of a host through conidia dispersed by rain splash (EFSA et al. 2025).	throughout parts of Australia. In general, *Neofusicoccum* species are associated with a wide range of fruit and woody hosts, including *Eucalyptus*, blueberry, *Prunus*, *Cytisus* and almond (Holland et al. 2021; McGregor, Sakalidis & Hamelin 2016; Nazar Pour et al. 2022). *Neofusicoccum guttatum* is only reported in China (Feng et al. 2023), which shares similar climatic conditions with parts of Australia. Other *Neofusicoccum* spp. are present in Australia, indicating that *N. guttaum* is likely to establish and spread in Australia.	important pests of many fruit and woody hosts, including *Eucalyptus*, blueberry, grapes, *Prunus*, almond and avocado (Candolfi-Arballo et al. 2010; Holland et al. 2021; McGregor, Sakalidis & Hamelin 2016; Nazar Pour et al. 2022), which are present in Australia. *Neofusicoccum* spp. appear to survive as latent pathogens and can develop into fruit rots during storage, which can reduce marketability of fruit.	
Neofusicoccum parvum (Pennycook & Samuels) Crous, Slippers & A.J.L. Phillips Synonym: *Botryosphaeria parva* Pennycook & Samuels [Botryosphaeriales: Botryosphaeriaceae] Canker	Yes (Zhou et al. 2015b)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Neonectria coccinea (Pers.) Rossman & Samuels Synonym: *Nectria coccinea* (Pers.) Fr., Summa vegetabilium; *Cylindrocarpon candidum* (Link) Wollenw.; *Sphaeria coccinea* Pers., Icon. & Descript. [Hypocreales: Nectriaceae] Beech bark disease	Yes (Booth 1977; CABI-EPPO 2006; Chen 2002)	Yes (APPD 2025; Booth 1977; CABI-EPPO 2006)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Neonectria microconidia J. Luo, P. Zhao & W.Y. Zhuang [Hypocreales: Nectriaceae] Kiwifruit neonectria canker	Yes (Zhao et al. 2011)	No records found	No. Not known to be associated with fresh kiwifruit. *Neonectria microconidia* is associated with the trunk and wood of kiwifruit plants causing cracking of trunks and leaders, and canker of wood (Richardson, Burdon & Ferguson 2024).	Assessment not required	Assessment not required	Assessment not required	No
Nigrospora oryzae (Berk. & Broome) Petch *Synonym: Khuskia oryzae* H.J. Hudson [Xylariales: Apiosporaceae] Leaf spot	Yes (Li et al. 2018)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Nigrospora sphaerica (Sacc.) E.W. Mason [Xylariales: Apiosporaceae] Leaf spot	Yes (Wang et al. 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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Nothopucciniastrum actinidiae (Hirats. f. ex Hirats. f.) P. Zhao & L. Cai Synonym: *Pucciniastrum actinidiae* Hirats. f. [Pucciniales: Nothopucciniastraceae] Rust disease	Yes (KVH 2022; Liu et al. 2024)	No records found	No. Not known to be associated with fresh kiwifruit. *Nothopucciniastrum actinidiae* is associated with leaves, causing rust disease (Cline & Farr 2006; KVH 2022).	Assessment not required	Assessment not required	Assessment not required	No
Penicillium expansum Link [Eurotiales; Aspergillaceae] Blue rot	Yes (GACC 2024; Wang et al. 2015b)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Penicillium oxalicum Currie & Thom [Eurotiales; Aspergillaceae] Root rot	Yes (Han et al. 2024)	Yes (ALA 2024; HerbIMI 2023)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pestalotiopsis neglecta (Thüm.) Steyaert [Amphisphaeriales: Pestalotiopsidaceae] Leaf blotch	Yes (Chen et al. 2020)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phaeoacremonium minimum (Tul. & C. Tul.) Gramaje, L. Mostert & Crous Synonym: *Phaeoacremonium aleophilum* W. Gams, Crous & M.J. Wingf. [Togniniales: Togniniaceae] Trunk disease	Yes (Ye et al. 2020)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Phaeoacremonium parasiticum (Ajello, Georg & C.J.K. Wang 1974) W. Gams, Crous & M.J. Wingf. 1996 Synonym: *Phialophora parasitica* Ajello, Georg & C.J.K. Wang 1974 [Togniniales: Togniniaceae]	Yes (Huang et al. 2018)	Yes (Gramaje et al. 2014)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phoma macrostoma Mont [Pleosporales: Didymellaceae]	Yes (Liu et al. 2011)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phyllactinia actinidiae (Jacz.) Bunkina [Helotiales: Erysiphaceae] Powdery mildew	Yes (Xu et al. 2017)	No records found	No. Not known to be associated with fresh kiwifruit. *Phyllactinia actinidiae* causes powdery mildew on kiwifruit leaves (Richardson, Burdon & Ferguson 2024; Xu et al. 2017).	Assessment not required	Assessment not required	Assessment not required	No
Phyllactinia imperialis Miyabe [Helotiales: Erysiphaceae] Powdery mildew	Yes (Chinese Academy of Forestry 1986; KVH 2022)	No records found	No. Not known to be associated with fresh kiwifruit. *Phyllactinia imperialis* causes powdery mildew on kiwifruit leaves (KVH 2022).	Assessment not required	Assessment not required	Assessment not required	No
Phyllactinia salmonii S. Blumer [Helotiales: Erysiphaceae] Powdery mildew	Yes (Spaulding 1961)	No records found	No. Not known to be associated with fresh kiwifruit. *Phyllactinia salmonii* causes powdery mildew on kiwifruit leaves (Richardson, Burdon & Ferguson 2024; Xu et al. 2017).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
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Phyllosticta actinidiae Ablakatova & Koval [Botryosphaeriales: Phyllostictaceae] Leaf spot	Yes (KVH 2022; Luo & Zhang 2000)	No records found	No. Not known to be associated with fresh kiwifruit. *Phyllosticta actinidiae* affects leaves of kiwifruit (KVH 2022; Luo & Zhang 2000; MPI 2018).	Assessment not required	Assessment not required	Assessment not required	No
Pseudocercospora actinidiae Deighton [Mycosphaerellales: Mycosphaerellaceae] Sooty spot, black spot, black mould, side rot	Yes (Ai 2007)	No records found	Yes. *Pseudocercospora actinidiae* causes sooty spot disease, which affects kiwifruit foliage and fruit and results in fruit lesions (Araujo et al. 2021; KVH 2022). Sometimes, symptoms on the fruit are not observed until harvest (Araujo et al. 2021). Symptomless fruit could be harvested and exported.	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. Spores of *P. actinidiae* may transfer from infected fruit waste onto a susceptible part of a host during rain events at suitable temperatures (MPI 2018; Yano et al. 2015b).	Yes. *Pseudocercospora actinidiae* has a limited range of hosts within the *Actinidia* genus (Braun, Crous & Nakashima 2015a). Commercial orchards of *Actinidia* spp. are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). *Actinidia* spp. are occasionally grown as a garden plant. *Pseudocercospora actinidiae* is present in China, Japan, Taiwan and Brazil (Araujo et al. 2021; Richardson, Burdon & Ferguson	Yes. Infection results in fruit softening and rotting, which occurs post-harvest (MPI 2018; Yano et al. 2015b). Sooty spot disease of kiwifruit, caused by *P. actinidiae*, is difficult to control and causes economic losses in parts of Asia (Araujo et al. 2021) and Brazil (Araujo et al. 2021).	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
					2024). Similar climatic conditions occur in many parts of Australia. Therefore, there is potential for *P. actinidiae* to establish and spread in Australia.		
Pseudocercospora fengxinensis Hu et al. sp nov [Mycosphaerellales: Mycosphaerellaceae] Leaf spot, Brown sooty spot	Yes (Hu et al. 2025)	No records found	No. Not known to be associated with fresh kiwifruit. *Pseudocercospora fengxinensis* is associated with leaf spot and blight in kiwifruit (Hu et al. 2025).	Assessment not required	Assessment not required	Assessment not required	No
Pseudocercospora hangzhouensis X.J. Liu & Y.L. Guo Synonym*: Pseudocercospora actinidiicola* Goh & W.H. Hsieh [Mycosphaerellales: Mycosphaerellaceae] Side rot, dimple	Yes (Braun, Crous & Nakashima 2015a; Guo 1992; Yano et al. 2015b)	No records found	Yes. *Pseudocercospora hangzhouensis* causes leaf spots and dimples or side rot on the fruit of *Actinidia* spp. (Yano et al. 2015b) but infected fruit are often symptomless with the symptoms developing mainly during postharvest storage (Yano et al. 2015b). Therefore, symptomless fruit could be harvested and exported.	Yes. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into the environment. Sporulation occurs mainly during rainy and cooler weather (Yano et al. 2015b) and spores may transfer from infected fruit	Yes. *Pseudocercospora hangzhouensis* has a limited range of hosts found only within the *Actinidia* genus (Braun, Crous & Nakashima 2015a). Commercial orchards of *Actinidia* spp. are concentrated in temperate areas of Victoria and other southern Australian states, with smaller plantings in subtropical regions of New South Wales and Queensland (Orchard Tech 2020). *Actinidia* spp. are occasionally	Yes. Side rot or dimple on the fruit of kiwifruit caused by *P. hangzhouensis*, is an important disease of kiwifruit (Ledesma et al. 2021; Yano et al. 2015b). Infection results in development of concavity, corky and brownish lesion on the flesh of the fruit, fruit softening and rotting, which occur through the period of maturation to post-harvest (MPI 2018; Yano et al.	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				waste onto a susceptible part of a host plant.	grown as a garden plant. *Pseudocercospora hangzhouensis* is present in China, Japan, Korea and Taiwan (Braun, Crous & Nakashima 2015a; MPI 2018; Yano et al. 2015b). Similar climatic conditions occur in many parts of Australia. Therefore, there is potential for *P. actinidiae* to establish and spread in Australia.	2015b). These could negatively impact fruit yield, quality and marketability.	
Rhizoctonia solani J.G. Kühn [Cantharellales: Ceratobasidiaceae] Damping off, seedling blight	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Rhizopus stolonifer (Enrenberg Ex. Fries) Lindau Synonym: *Rhizopus nigricans* Ehrenb. [Mucorales: Rhizopodaceae] Bread mould	(Tai 1979)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Sclerotinia sclerotiorum (Lib.) de Bary [Helotiales: Sclerotiniaceae] Blossom blight, twig blight	Yes (GACC 2024; Ruan et al. 2023)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Trichothecium roseum (Pers.) Link [Hypocreales: Myrotheciomycetaceae] Fruit rot of tomato	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Verticillium dahliae Kleb. [Trichosphaeriales: Trichosphaeriaceae] Verticillium wilt	Yes (Lu et al. 2013)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
OOMYCETES							
Phytophthora cactorum (Lebert & Cohn) J. Schröt. [Peronosporales: Peronosporaceae] Apple collar rot	Yes (GACC 2024)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora cinnamomi Rands [Peronosporales: Peronosporaceae] Dieback	Yes (GACC 2024)	Yes (APPD 2024; Burgess et al. 2021)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora citricola Sawada [Peronosporales: Peronosporaceae] Root rot	Yes (Tai 1979)	Yes (APPD 2025)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora citrophthora (R.H. Sm. & E. Sm.) Leonian [Peronosporales: Peronosporaceae] Brown rot of citrus	Yes (Wu et al. 2017)	Yes (Burgess et al. 2021)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Phytophthora cryptogea Pethybr. & Laff. [Peronosporales: Peronosporaceae] Tomato foot rot	Yes (Yu et al. 2020; Zeng, Ho & Zheng 2009)	Yes (APPD 2024; Burgess et al. 2021)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora drechsleri Tucker [Peronosporales: Peronosporaceae] Watermelom fruit rot	Yes (Wu et al. 2016)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora infestans (Mont.) de Bary [Peronosporales: Peronosporaceae] Potato late blight	Yes (Li et al. 2022a)	Yes (APPD 2026; Irwin, Cahill & Drenth 1995)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora lateralis Tucker & Milbrath [Peronosporales: Peronosporaceae] Port Orford cedar root disease	Yes (Li et al. 2022a)	No records found	No. Not known to be associated with fresh kiwifruit. *Phytophthora lateralis* causes kiwifruit root disease (Li et al. 2022a).	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora megasperma Drechsler [Peronosporales: Peronosporaceae] Root rot	Yes (Shen & Su 1991)	Yes (Burgess et al. 2021)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora palmivora (E. J. Butler) E. J. Butler [Peronosporales: Peronosporaceae]	Yes (Zhang et al. 2013)	Yes (APPD 2024; Burgess et al. 2021)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Coconut budrot							
Phytopythium helicoides (Drechsler) Abad, de Cock, Bala, Robideau, Lodhi & Lévesque Synonyms: *Ovatisporangium helicoides* (Drechsler) Uzuhashi, Tojo & Kakish.; *Pythium helicoides* Drechsler [Pythiales: Pythiaceae] Root and crown rot	Yes (Wang et al. 2015c)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
VIRUSES							
Alfamovirus AMV [*Martellivirales*: *Bromoviridae*] Former species name: *Alfalfa mosaic virus* Common name: alfalfa mosaic virus (AMV)	Yes (Wang et al. 2023)	Yes (APPD 2024)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Capillovirus mali [*Tymovirales*: *Betaflexiviridae*] Former species name: *Apple stem grooving virus* Common name: apple stem grooving virus (ASGV)	Yes (Wang et al. 2018; Zhang et al. 2022b)	Yes (APPD 2024; Constable, Joyce & Rodoni 2007)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Citrivirus citri [*Tymovirales*: *Betaflexiviridae*] Former species name: *Citrus leaf blotch virus* Common name: citrus leaf blotch virus (CLBV)	Yes (Liu et al. 2019a)	Yes (Guerri et al. 2007; Vives et al. 2002)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Citrivirus citri - Actinidia-infecting strain [*Tymovirales*: *Betaflexiviridae*]: Former species name: *Dweet mottle virus* Common name: citrus leaf blotch virus– Actinidia-infecting strain (CLBV-a)	Yes (Blouin et al. 2013; Chavan et al. 2013)	No records found	Yes. Citrus leaf blotch virus–Actinidia-infecting strain is associated with vein clearing, interveinal chlorosis and mild mottling on kiwifruit leaves (Blouin et al. 2013). There are no reports of symptoms on fruit. Virus infections in plants are systemic (Fermin 2018; Wang 2021) and CLBV-a infection can be asymptomatic (Liu et al. 2019a). Therefore, imported fruit may be infected with CLBV-a.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Citrus leaf blotch virus– Actinidia-infecting strain is not known to be seed- or vector-transmitted (Blouin et al. 2013). Mechanical transmission of *C. citri* - Actinidia-infecting strain to herbaceous indicator plants has been reported (Blouin et al. 2013), but mechanical transmission of CLBV-a from kiwifruit waste	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				to a new susceptible host is unlikely to occur.			
Cucumovirus CMV [*Martellivirales*: *Bromoviridae*] Former species name: *Cucumber mosaic virus* Common name: cucumber mosaic virus (CMV)	Yes (Shang et al. 2022)	Yes (Alberts, Hannay & Randles 1985; APPD 2024; Sulistyowati et al. 2004)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Emaravirus actinidiae [*Elliovirales*: *Fimoviridae*] Former species name: *Actinidia chlorotic ringspot-associated virus* Common name: Actinidia chlorotic ringspot-associated virus (AcCRaV)	Yes (Shang et al. 2022; Zheng et al. 2017)	No records found	Yes. Actinidia chlorotic ringspot-associated virus is associated with ringspots, vein yellowing and chlorotic spots on leaves in infected kiwifruit plants (Rehanek et al. 2022). There are no reports of symptoms on fruit. Because virus infections in plants are systemic (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), imported fruit may be infected with AcCRaV.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Actinidia chlorotic ringspot-associated virus is not known to be seed- or vector-transmitted. Mechanical transmission of	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				AcCRaV is reported (Patil, Latha & Priyanga 2023; Zheng et al. 2017), but mechanical transmission of AcCRaV from kiwifruit waste to a new susceptible host is unlikely to occur.			
Emaravirus kiwii [*Bunyavirales*: *Fimoviridae*] Former species name: *Actinidia emaravirus 2* Common name: Actinidia emaravirus 2 (AcEV-2)	Yes (Wang et al. 2020)	No records found	Yes. Actinidia emaravirus 2 is associated with chlorotic ringspot, mottle and vein yellowing of leaves of kiwifruit (Rehanek et al. 2022; Zhang et al. 2022b). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), fruit may be infected.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Actinidia emaravirus 2 is not known to be seed-transmitted. Although a number of emaraviruses are known to be	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				transmitted by an eriophyid mite (e.g., *Perilla mosaic virus* by perilla rust mite (*Shevtchenkella* sp.) (Kubota et al. 2020)), no vectors have been reported for ACeV-2. Actinidia emaravirus 2 is mechanically transmissible (KVH 2023b), but mechanical transmission from kiwifruit waste to a new susceptible host plant is unlikely to occur.			
Ilarvirus AYRSpV [*Martellivirales*: *Bromoviridae*] Former species name: *Actinidia yellowing ringspot virus* Common name: Actinidia yellowing ringspot virus (AYRSpV)	Yes (Wu et al. 2022)	No records found	Yes. Actinidia yellowing ringspot virus infects kiwifruit and causes leaf symptoms, including chlorotic ringspots, yellow spot, chlorosis and albinism (Wu et al. 2022). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), imported fruit	No. Unlikely to distribute to a new host. Kiwifruit from China will likely be distributed throughout Australia. Infected fruit may be discarded into	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			may be infected with AYRSpV.	the environment. Actinidia yellowing ringspot virus is not known to be seed- or vector-transmitted.			
Olivavirus actinidiae [*Martellivirales*: *Closteroviridae*] Former species name: *Actinidia virus 1* Common name: Actinidia virus 1 (AcV1)	Yes (Wen et al. 2020)	No records found	Yes. Actinidia virus 1 is associated with fruit (Feng et al. 2020) and leaves of kiwifruit causing chlorosis between veins, mosaic, ringspot, chlorotic spot, and/or fruit deformation (Wen et al. 2020). Actinidia virus 1 may also asymptomatically infect kiwifruit (Feng et al. 2020; Wen et al. 2020). Infected deformed fruits are likely to be discarded during packing house processes. However, asymptomatic infected fruit may still be imported.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Several genera within the family *Closteroviridae* are reported to be vector transmitted (Iglesias et al. 2008; Rubio, Guerri & Moreno 2013; Wen et al. 2020), but no vector has yet been identified for AcV1. AcV1 is	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				transmitted through mechanical sap inoculation (Sastry et al. 2019), but mechanical transmission from kiwifruit waste to a new susceptible host plant is unlikely to occur.			
Orthotospovirus tomatonecromaculae [*Elliovirales*: *Tospoviridae*] Former species name: *Tomato necrotic spot-associated virus* Common name: tomato necrotic spot-associated virus (TNSaV)	Yes (Wang et al. 2016)	No records found	Yes. Tomato necrotic spot-associated virus is associated with leaves of kiwifruit plants showing symptoms of brown ringspots and necrotic spots (Wang et al. 2016). Necrotic and concentric ringspots are known on fruits in tomato (Yin et al. 2014), but fruit symptoms in kiwifruit are not known. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), imported fruit may be infected.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Fruit infected with TNSaV may be discarded into the environment. Tomato necrotic spot-associated virus is not known to be seed- or mechanically transmitted in *Actinidia* spp. Thripidae	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				species are known to transmit orthotospoviruses, however presumptive vectors associated with TNSaV in nature are unidentified (Yin et al. 2014) and not known in *Actinidia* spp.			
Potexvirus ecspotati [*Tymovirales*: *Alphaflexiviridae*] Former species name: *Potato virus X* Common name: potato virus X (PVX)	Yes (Zhao et al. 2019)	Yes (Lambert et al. 2007)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Prunevirus actinidiae [*Tymovirales*: *Betaflexiviridae*] Former species name: *Actinidia seed-borne latent virus* Common name: Actinidia seed-borne latent virus (ASbLV)	Yes (Amponsah et al. 2022; Zhang et al. 2022b)	No records found	Yes. Actinidia seed-borne latent virus is associated with vein chlorosis and mottling of *Actinidia* spp. foliage, and its infection can also be symptomless (Amponsah et al. 2022; Veerakone et al. 2018; Zhang et al. 2022b). Actinidia seed-borne latent virus has been reported to be associated with kiwifruit seeds (Amponsah et al. 2022).	Yes. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. As ASbLV is seed-borne and seed-transmitted (Amponsah et al.	Yes. Hosts include *Actinidia* spp., which are grown commercially in several areas of Australia and occasionally as a garden plant. The virus is present in New Zealand (Veerakone et al. 2018) and China (Amponsah et al. 2022; Zhang et al. 2022b), which share similar climatic	No. Unlikely to cause economic consequences. Little information is available on the economic consequences of ASbLV despite it being reported present in the two largest kiwifruit producing countries of China and New Zealand. Symptoms include vein	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				2022), there is a possibility that infected seeds from imported kiwifruit may germinate in a new environment. Actinidia seed-borne latent virus is not mechanically transmitted (Amponsah et al. 2022).	conditions with parts of Australia. The virus is transmissible via seed and pollen (Amponsah et al. 2022), indicating the potential for the virus to establish and spread.	chlorosis and mottling of leaves, but there is no report of growth impacts or yield losses, and it is not listed as an economically damaging virus of kiwifruit (Everett & Xu 2020; Zhao et al. 2021).	
Tobamovirus plantagonis [*Martellivirales*: *Virgaviridae*] Former species name: *Ribgrass mosaic virus* Common name: Ribgrass mosaic virus (RMV)	Yes (Chavan et al. 2012)	Yes (Büchen-Osmond et al. 1988; Mahar et al. 2020)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Tobamovirus rapae [*Martellivirales*: *Virgaviridae*] Former species name: *Turnip vein-clearing virus* Common name: turnip vein-clearing virus (TVCV)	Yes (Cardin, Delecolle & Moury 2009)	No records found	Yes. Turnip vein-clearing virus causes symptoms including chlorotic mottling, mosaic and ring spots (Chavan, Pearson & Cohen 2009; Lartey et al. 1993) and can also be symptomless (Blouin et al. 2013). Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang	Yes. Kiwifruit from China are likely to be distributed throughout Australia. Fruit infected with TVCV may be discarded into the environment.	Yes. Turnip vein-clearing virus infects many important commercial and ornamental plants, including *Brassica rapa*, *Alliaria petiolata*, *Penstemon digitalis*, *Plantago* spp. and *Actinidia* spp. (Cohen et al. 2012;	Yes. Turnip vein-clearing virus is listed on the 2024 National Priority Plant Pests list (DAFF 2024b) and can cause significant damage to plants through reduction of both plant health and production of	Yes

Pest	Present in China	Present within Australia	Potential to enter on pathway: Potential for importation	Potential to enter on pathway: Potential for distribution	Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			2021), imported fruit may be infected.	Tobamoviruses are mainly mechanically transmitted and can also be seed-transmitted (Dombrovsky & Smith 2017; Ilyas et al. 2022). Tobamoviruses are highly contagious and can spread through mechanical transmission between plants (Mahar et al. 2020; Smith & Dombrovsky 2019), but mechanical transmission from kiwifruit waste to a new susceptible host plant is unlikely to occur. Turnip vein-clearing virus is possibly transmitted by seed in kiwifruit (Blouin et al. 2013). Although kiwifruit seed requires specific	Lartey et al. 1993; Lockhart et al. 2014; Lockhart et al. 2008; Zhang et al. 2022b), which are widely grown in many parts of Australia. The virus is distributed in many countries, including New Zealand, USA, France, Italy and China (Cardin, Delecolle & Moury 2009; Cohen et al. 2012; Lartey et al. 1993). Similar climatic conditions occur in many parts of Australia. Tobamoviruses are very stable and can survive for long periods of time on leaves, gardening implements, and on the surface of the soil, trellis, wires and stakes (Persley & Gambley 2017), and are known to be spread to new hosts through infected pollen (Broadbent 1965; Okada et al. 2000), indicating the potential for the virus	fruit and vegetables (DAFF 2022).	

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				conditions for germination (Maghdouri et al. 2021), there is a possibility that infected seeds from discarded kiwifruit may germinate in a new environment.	to establish and spread.		
Vitivirus alphactinidiae [*Tymovirales*: *Betaflexiviridae*] Former species name: *Actinidia virus A* Common name: Actinidia virus A (AcVA)	Yes (GACC 2024; Shang et al. 2022)	No records found	Yes. Actinidia virus A causes leaf and vein chlorosis, flecking and ringspot of kiwifruit plants (GACC 2024; Zheng et al. 2014). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021) and vitiviruses can be asymptomatic (Pearson et al. 2011), imported fruit may be infected with AcVA.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Actinidia virus A is not known to be seed- or vector-transmitted (Blouin et al. 2013).	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Vitivirus betactinidiae [*Tymovirales*: *Betaflexiviridae*] Former species name: *Actinidia virus B* Common name: Actinidia virus B (AcVB)	Yes (GACC 2024; Shang et al. 2022)	No records found	Yes. Actinidia virus B is associated with kiwifruit plants (Blouin et al. 2013; GACC 2024; Pearson et al. 2011). Leaves infected with AcVB show vein chlorosis (Shang et al. 2022) and also can be latent (Pearson et al. 2011; Zhang et al. 2022b). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021) and vitiviruses can be asymptomatic (Pearson et al. 2011), imported fruit may be infected with AcVB.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Actinidia virus B is not known to be seed- or vector-transmitted (Blouin et al. 2013).	Assessment not required	Assessment not required	No
Vitivirus gammactinidiae [*Tymovirales*: *Betaflexiviridae*] Former species name: *Actinidia virus C* Common name: Actinidia virus C (AcVC)	Yes (Zhao et al. 2021)	No records found	Yes. Actinidia virus C is associated with kiwifruit leaves causing chlorotic spots and wrinkles (Zhao et al. 2021). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021) and vitiviruses can be asymptomatic (Pearson et al. 2011), imported fruit may be infected with AcVC.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. AcVC is not	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
				known to be seed- or vector-transmitted.			
Waikavirus actinidiae [*Picornavirales*: *Secoviridae*] Former species name: *Actinidia yellowing virus 1* Common name: Actinidia yellowing virus 1 (AcYV1)	Yes (Zhao et al. 2021)	No records found	Yes. Actinidia yellowing virus 1 infects kiwifruit causing leaf yellowing and distortion (Zhao et al. 2021). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), imported fruit may be infected with AcYV1.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Actinidia yellowing virus 1 is not known to be mechanically-, seed- or vector-transmitted (Zhao et al. 2021).	Assessment not required	Assessment not required	No
Unassigned [*Tolivirales*: *Tombusviridae*] Common name: Actinidia tombus-like virus (AcTLV)	Yes (Zhao et al. 2022)	No records found	Yes. Actinidia tombus-like virus is associated with leaves of wild *Actinidia* spp. (Zhao et al. 2022). The incidence of this virus in cultivated kiwifruit is unknown. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014;	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia for retail sale. Fruit infected with	Assessment not required	Assessment not required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
			Wang 2021), imported fruit may be infected.	AcTLV may be discarded into the environment. There is no evidence of seed or vector transmission of AcTLV. Mechanical transmission of this virus is also not known.			
Unassigned [*Tolivirales*: *Tombusviridae*] Common name: Actinidia yellowing virus 2 (AcYV2)	Yes (Zhao et al. 2021)	No records found	Yes. Actinidia yellowing virus 2 causes leaf yellowing on kiwifruit (Zhao et al. 2021). There are no reports of symptoms on fruit. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), imported fruit may be infected with AcYV2.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Infected fruit may be discarded into the environment. Actinidia yellowing virus 2 is not known to be seed- or vector-transmitted (Zhao et al. 2021).	No assessment required	No assessment required	No

Pest	Present in China	Present within Australia	Potential to enter on pathway		Potential for establishment and spread	Potential for economic consequences	Pest risk assessment required
			Potential for importation	Potential for distribution			
Unassigned [*Martellivirales*: *Mayoviridae*] Common name: Actinidia yellowing virus 3 (AcYV3)	Yes (Zhao et al. 2022)	No records found	Yes. Actinidia yellowing virus 3 is associated with wild *Actinidia* spp. showing yellowing symptoms on leaves (Zhao et al. 2022). Fruit symptoms in *Actinidia* spp. and the incidence of this virus in cultivated kiwifruit is unknown. Because virus infections are systemic in plants (Fermin 2018; Rodrigo, Zwart & Elena 2014; Wang 2021), imported fruit may be infected.	No. Unlikely to distribute to a new host. Kiwifruit from China are likely to be distributed throughout Australia. Fruit infected with AcYV3 may be discarded into the environment. There is no evidence of seed or vector transmission for AcYV3 on kiwifruit and other hosts. Some other species of Idaeovirus (e.g., raspberry bushy dwarf virus) can be seed-transmitted in other host species (ICTV 2024).	Assessment not required	Assessment not required	No

Glossary, acronyms and abbreviations

Term or abbreviation	Definition
ACT	Australian Capital Territory
Additional declaration	A statement that is required by an importing country to be entered on a phytosanitary certificate and which provides specific additional information on a consignment in relation to regulated pests or regulated articles (FAO 2025).
Anamorph	The asexual form in the life cycle of a fungus, when asexual spores (such as conidia) or no spores are produced (see also imperfect state) (contrasts with holomorph, teleomorph, perfect state) (D'Arcy, Eastburn & Schumann 2026).
Appropriate level of protection (ALOP)	The level of protection deemed appropriate by the Member establishing a sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory (WTO 1995).
Appropriate level of protection (ALOP) for Australia	The *Biosecurity Act 2015* defines the appropriate level of protection (or ALOP) for Australia as a high level of sanitary and phytosanitary protection aimed at reducing biosecurity risks to very low, but not to zero.
Area	An officially defined country, part of a country or all or parts of several countries (FAO 2025).
AQSIQ	The General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China. It was absorbed into the General Administration of Customs China (GACC) in 2018 to streamline customs and product safety, creating a unified regulatory body for imports.
Arthropod	The largest phylum of animals, including the insects, arachnids and crustaceans.
Asexual reproduction	The development of a new individual from a single cell or group of cells in the absence of meiosis.
Australian territory	Australian territory as referenced in the *Biosecurity Act 2015* refers to Australia, Christmas Island and Cocos (Keeling) Islands and any external Territory to which that provision extends.
BICON	Australia's Biosecurity Import Conditions system bicon.agriculture.gov.au/BiconWeb4.0
Biosecurity	The prevention of the entry, establishment or spread of unwanted pests and infectious disease agents to protect human, animal or plant health or life, and the environment.
Biosecurity import risk analysis (BIRA)	The *Biosecurity Act 2015* defines a BIRA as an evaluation of the level of biosecurity risk associated with particular goods, or a particular class of goods, that may be imported, or proposed to be imported, into Australian territory, including, if necessary, the identification of conditions that must be met to manage the level of biosecurity risk associated with the goods, or the class of goods, to a level that achieves the ALOP for Australia. The risk analysis process is regulated under legislation.
Biosecurity risk	The *Biosecurity Act 2015* refers to biosecurity risk as the likelihood of a disease or pest entering, establishing or spreading in Australian territory, and the potential for the disease or pest causing harm to human, animal or plant health, the environment, economic or community activities.
Calyx	A collective term referring to all of the sepals in a flower.
Conidium (pl. conidia)	An asexual, nonmotile fungal spore that develops externally or is liberated from the cell that formed it (D'Arcy, Eastburn & Schumann).
Consignment	A quantity of plants, plant products or other articles being moved from one country to another and covered, when required, by a single phytosanitary certificate (a consignment may be composed of one or more commodities or lots) (FAO 2025).
Control (of a pest)	Suppression, containment or eradication of a pest population (FAO 2025).

Term or abbreviation	Definition
Crawler	Intermediate mobile nymph stage of certain arthropods.
Diapause	A period of spontaneous dormancy, independent of environmental conditions, interrupting developmental activity in an embryo, larva or pupa (D'Arcy, Eastburn & Schumann 2026).
Endangered area	An area where ecological factors favour the establishment of a pest whose presence in the area will result in economically important loss (FAO 2025).
Entry (of a pest)	Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO 2025).
EP	Existing policy. This denotes that a pest species has previously been assessed in another policy published by the department.
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO 2025).
FAO	Food and Agriculture Organization of the United Nations
Fresh	Living; not dried, deep-frozen or otherwise conserved (FAO 2025).
FSANZ	Food Standards Australia New Zealand (foodstandards.gov.au/Pages/default.aspx) and the Australia New Zealand Food Standards Code (foodstandards.gov.au/code/Pages/default.aspx)
Fumigation	A method of pest control that completely fills an area with gaseous pesticides to suffocate or poison the pests within.
GACC	The General Administration of Customs of the People's Republic of China. GACC is a key border agency of China with responsibilities of traditional customs, as well as border health checks, inspection and quarantine for imports and exports.
Genus	A taxonomic category ranking below a family and above a species and generally consisting of a group of species exhibiting similar characteristics. In taxonomic nomenclature the genus name is used, either alone or followed by a Latin adjective or epithet, to form the name of a species.
Goods	The *Biosecurity Act 2015* defines goods as an animal, a plant (whether moveable or not), a sample or specimen of a disease agent, a pest, mail or any other article, substance or thing (including, but not limited to, any kind of moveable property).
GP	Group policy. This refers to the *Final group pest risk analysis for thrips and orthotospoviruses on fresh fruit, vegetable, cut-flower and foliage imports* (thrips Group PRA) (DAWR 2017b), the *Final group pest risk analysis for mealybugs and the viruses they transmit on fresh fruit, vegetable, cut-flower and foliage imports* (mealybugs Group PRA) (DAWR 2019), the *Final group pest risk analysis for soft and hard scale insects on fresh fruit, vegetable, cut-flower and foliage imports* (scales Group PRA) (DAWE 2021a), and the *Final report for a review of pest risk assessments for spider mites* (*Acari: Trombidiformes: Tetranychidae*) (DAFF 2024a).
Host	An organism that harbours a parasite, mutual partner, or commensal partner, typically providing nourishment and shelter.
Host range	Species capable, under natural conditions, of sustaining a specific pest or other organism (FAO 2025).
Import permit	Official document authorising importation of a commodity in accordance with specified phytosanitary import requirements (FAO 2025).
Infection	The internal 'endophytic' colonisation of a plant, or plant organ, and is generally associated with the development of disease symptoms as the integrity of cells and/or biological processes are disrupted.
Infestation (of a commodity)	Presence in a commodity of a living pest of the plant or plant product concerned. Infestation includes infection (FAO 2025).

Term or abbreviation	Definition
Inspection	Official visual examination of plants, plant products or other regulated articles to determine if pests are present or to verify conformity with phytosanitary requirements (FAO 2025).
Instar	An insect life stage in between moults.
Intended use	Declared purpose for which plants, plant products or other articles are imported, produced or used (FAO 2025).
Interception (of a pest)	The detection of a pest during inspection or testing of an imported consignment (FAO 2025).
International Plant Protection Convention (IPPC)	The IPPC is an international plant health agreement, established in 1952, that aims to protect cultivated and wild plants by preventing the introduction and spread of pests. The IPPC provides an international framework for plant protection that includes developing International Standards for Phytosanitary Measures (ISPMs) for safeguarding plant resources.
International Standard for Phytosanitary Measures (ISPM)	An international standard adopted by the Conference of FAO, the Interim Commission on Phytosanitary Measures or the Commission on Phytosanitary Measures, established under the IPPC (FAO 2025).
Introduction (of a pest)	The entry of a pest resulting in its establishment (FAO 2025).
Larva	A juvenile form of animal with indirect development, undergoing metamorphosis (for example, insects or amphibians).
Latent infection	A type of persistent infection where a pathogen (virus, bacteria, or parasite) remains in the body in a dormant, inactive state, producing no symptoms.
Lot	A number of units of a single commodity, identifiable by its homogeneity of composition, origin etc., forming part of a consignment (FAO 2025). Within this report a 'lot' refers to a quantity of fruit of a single cultivar, harvested from a single production site during a single pick and packed at one time.
Mature fruit	Commercial maturity is the start of the ripening process. The ripening process will then continue and provide a product that is acceptable to consumers. Maturity assessments include colour, starch, index, soluble solids content, flesh firmness, acidity, and ethylene production rate.
National Plant Protection Organisation (NPPO)	Official service established by a government to discharge the functions specified by the IPPC.
NSW	The state of New South Wales in Australia.
NT	The Northern Territory of Australia.
Nymph	The immature form of some insect species that undergoes incomplete metamorphosis. It is not to be confused with larva, as its overall form is already that of the adult.
Official control	The active enforcement of mandatory phytosanitary regulations and the application of mandatory phytosanitary procedures with the objective of eradication or containment of quarantine pests or for the management of regulated non-quarantine pests (FAO 2025).
Pathogen	A biological agent that can cause disease to its host.
Pathway	Any means that allow the entry or spread of a pest (FAO 2025).
Pest	Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products (FAO 2025).
Pest categorisation	The process for determining whether a pest has or has not the characteristics of a quarantine pest or those of a regulated non-quarantine pest (FAO 2025).
Pest free area (PFA)	An area in which a specific pest is absent as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained (FAO 2025).

Term or abbreviation	Definition
Pest free place of production (PFPP)	Place of production in which a specific pest is absent as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period (FAO 2025).
Pest free production site (PFPS)	A production site in which a specific pest is absent, as demonstrated by scientific evidence, and in which, where appropriate, this condition is being officially maintained for a defined period (FAO 2025).
Pest risk analysis (PRA)	The process of evaluating biological or other scientific and economic evidence to determine whether an organism is a pest, whether it should be regulated, and the strength of any phytosanitary measures to be taken against it (FAO 2025).
Pest risk assessment (for quarantine pests)	Evaluation of the probability of the introduction and spread of a pest and the magnitude of the associated potential economic consequences (FAO 2025).
Pest risk assessment (for regulated non-quarantine pests)	Evaluation of the probability that a pest in plants for planting affects the intended use of those plants with an economically unacceptable impact (FAO 2025).
Pest risk management (for quarantine pests)	Evaluation and selection of options to reduce the risk of introduction and spread of a pest (FAO 2025).
Pest risk management (for regulated non-quarantine pests)	Evaluation and selection of options to reduce the risk that a pest in plants for planting causes an economically unacceptable impact on the intended use of those plants (FAO 2025).
Pest status (in an area)	Presence or absence, at the present time, of a pest in an area, including where appropriate its distribution, as officially determined using expert judgement on the basis of current and historical pest records and other information (FAO 2025).
Phytosanitary action	An official operation, such as inspection, testing, surveillance or treatment, undertaken to implement phytosanitary measures or to enable phytosanitary certification (FAO 2025).
Phytosanitary certificate	An official paper document or its official electronic equivalent, consistent with the model certificates of the IPPC, attesting that a consignment meets phytosanitary import requirements (FAO 2025).
Phytosanitary certification	Use of phytosanitary procedures leading to the issue of a phytosanitary certificate (FAO 2025).
Phytosanitary import requirements	Specific phytosanitary measures established by an importing country concerning consignments moving into that country (FAO 2025).
Phytosanitary measure	Phytosanitary relates to the health of plants. Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests (FAO 2025). In this risk analysis the term ‘phytosanitary measure’ and ‘risk management measure’ may be used interchangeably.
Phytosanitary procedure	An official method on how to perform a phytosanitary action (FAO 2025).
Phytosanitary regulation	Official rule to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests, including establishment of procedures for phytosanitary certification (FAO 2025).
Polyphagous	Feeding on a relatively large number of hosts from different plant family and/or genera.
PRA area	Area in relation to which a pest risk analysis is conducted (FAO 2025).
Production site	In this report, a production site is a continuous planting of *Actinidia* spp. plants treated as a single unit for pest management purposes. If a property is subdivided into one or more units for pest management purposes, then each unit is a production site.
Pupa	The quiescent stage between the larva and the adult of certain insects (D'Arcy, Eastburn & Schumann 2026).

Term or abbreviation	Definition
Qld	The state of Queensland in Australia.
Quarantine	Official confinement of regulated articles, pests or beneficial organisms for inspection, testing, treatment, observation or research (FAO 2025).
Quarantine pest	A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled (FAO 2025).
Regulated article (RA)	Any plant, plant product, storage place, packaging, conveyance, container, soil and any other organism, object or material capable of harbouring or spreading pests, deemed to require phytosanitary measures, particularly where international transportation is involved (FAO 2025).
Regulated non-quarantine pest	A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party (FAO 2025).
Regulated pest	A quarantine pest or a regulated non-quarantine pest (FAO 2025).
Restricted risk	Restricted risk is the risk estimate when risk management measures are applied.
Risk analysis	Refers to the technical or scientific process for assessing the level of biosecurity risk associated with the goods, or the class of goods, and if necessary, the identification of conditions that must be met to manage the level of biosecurity risk associated with the goods, or class of goods to a level that achieves the ALOP for Australia.
Risk management measure	Conditions that must be met to manage the level of biosecurity risk associated with the goods or the class of goods, to a level that achieves the ALOP for Australia. In this risk analysis, the term 'risk management measure' and 'phytosanitary measure' may be used interchangeably.
SA	The state of South Australia.
Specific surveillance	An official process whereby information on pests in an area is obtained through surveys (FAO 2025).
Spread (of a pest)	Expansion of the geographical distribution of a pest within an area (FAO 2025).
SPS Agreement	WTO Agreement on the Application of Sanitary and Phytosanitary Measures.
Stakeholders	Government agencies, individuals, community or industry groups or organizations, whether in Australia or overseas, including the proponent/applicant for a specific proposal, who have an interest in the policy issues.
Surveillance	An official process whereby information on pests in an area is obtained through general surveillance, specific surveillance or a combination of both (FAO 2025).
Survey (of pests)	An official procedure conducted over a defined period to determine the presence or absence of pests, or the boundaries or characteristics of a pest population, in an area, place of production or production site (FAO 2025).
Standard commercial production practices	Practices that are typically applied on farms and in packing houses to produce goods for export. These practices are taken into consideration in this risk analysis when estimating the unrestricted risk of pests that may be associated with the import of goods.
Systemic	Pertaining to a disease in which the pathogen (or a single infection) spreads generally throughout the plant; pertaining to chemicals that spread internally through the plant (D'Arcy, Eastburn & Schumann 2026).
Systems approach(es)	The integration of different risk management measures, at least 2 of which act independently, and which cumulatively achieve the appropriate level of protection against regulated pests.
Teleomorph	The sexual form in the life cycle of a fungus (see also perfect state) (contrasts with anamorph, holomorph, imperfect state) (D'Arcy, Eastburn & Schumann 2026).

Term or abbreviation	Definition
Tas.	The state of Tasmania in Australia.
Trash	Soil, splinters, twigs, leaves and other plant material, other than fruit as defined in the scope of this risk analysis. For example, stem and leaf material, seeds, soil, animal matter/parts or other extraneous material
Treatment (as a phytosanitary measure)	Official procedure for killing, inactivating, removing, rendering infertile or devitalising regulated pests (FAO 2025).
Unrestricted risk	Unrestricted risk estimates apply in the absence of risk management measures.
Vector	In this report, a vector is an organism that is capable of harbouring and spreading a pest from one host to another.
Viable	Alive, able to germinate or capable of growth and/or development.
Vic.	The state of Victoria in Australia.
WA	The state of Western Australia.
WTO	World Trade Organization

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