Australian Government

Department of Agriculture, Fisheries and Forestry

Decrowned pineapples from India and Indonesia: biosecurity import requirements draft report

July 2026

Cataloguing data

This publication (and any material sourced from it) should be attributed as: DAFF 2026, *Decrowned pineapples from India and Indonesia: biosecurity import requirements draft report*, Department of Agriculture, Fisheries and Forestry, Canberra, CC BY 4.0.

This publication is available at agriculture.gov.au/biosecurity/risk-analysis/plant/pineapples-from-India-Indonesia.

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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: agriculture.gov.au/biosecurity-trade/policy/risk-analysis/memos.

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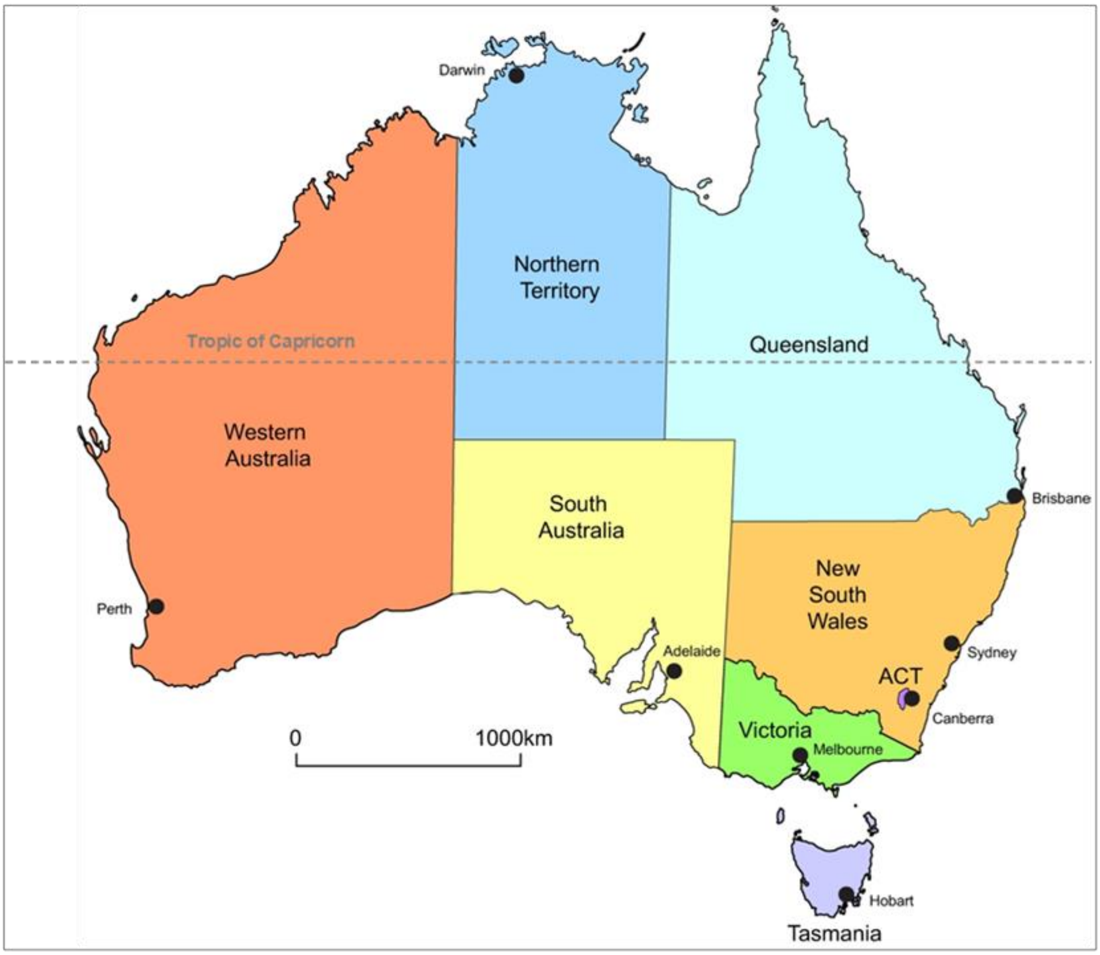

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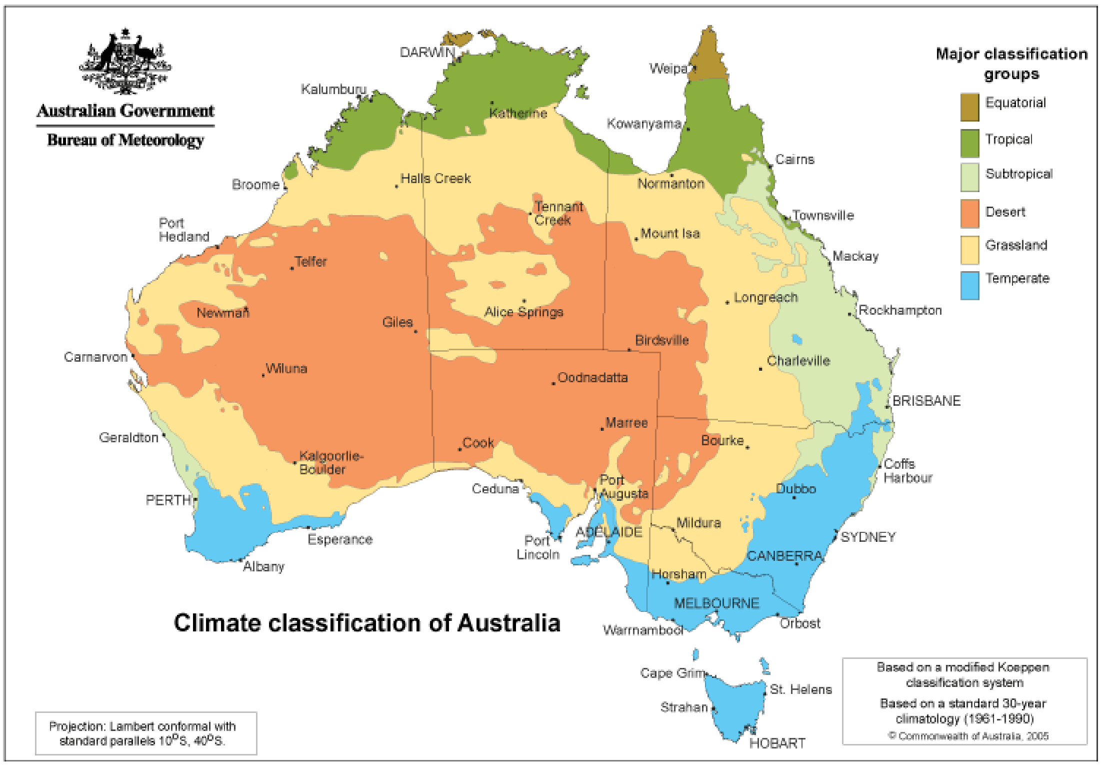


Summary

The Australian Government Department of Agriculture, Fisheries and Forestry (the department) has prepared this draft report to assess the proposals by India and Indonesia for market access to Australia for fresh decrowned pineapples for human consumption.

Australia currently permits the importation of decrowned pineapples from the Philippines, the Solomon Islands, Taiwan and Thailand for human consumption, provided Australian biosecurity import conditions are met.

This draft report determines that the importation of commercially produced decrowned pineapples to Australia from all production areas of India and Indonesia 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 decrowned pineapples from India and Indonesia. The term ‘pests’ includes both arthropod pests and pathogens. This report also contains risk assessments for the identified quarantine pests and regulated article, 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.

Eight 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:

- Hard scales: trilobite scale (*Pseudaonidia trilobitiformis*)
- mealybugs: grey pineapple mealybug (*Dysmicoccus neobrevipes*), papaya mealybug (*Paracoccus marginatus*), madeira mealybug (*Phenacoccus madeirensis*), Pacific mealybug (*Planococcus minor*), cryptic mealybug (*Pseudococcus cryptus*) and Jack Beardsley mealybug (*Pseudococcus jackbeardsleyi*)
- thrips: cotton thrips (*Frankliniella schultzei* species complex).

All 8 pests are quarantine pests. Cotton thrips is also identified as a regulated article as it is capable of harbouring and spreading quarantine orthotospoviruses.

The identified pests are the same, or of the same pest groups, as those associated with pineapple and 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, *Paracoccus marginatus*, *Planococcus minor*, *Pseudococcus cryptus, Pseudococcus jackbeardsleyi* and *Pseudaonidia trilobitiformis*, have been identified as regional quarantine pests for Western Australia. These pests are considered regional quarantine pests as interstate quarantine regulations and enforcement are in place to prevent the entry of these species into Western Australia.

In this draft report the department proposes a range of risk management measures, combined with an operational system, to reduce the risks posed by the 8 identified species to achieve the ALOP for Australia. The proposed measures are:

- for hard scales, mealybugs and thrips:

- fruit treatment considered to be effective against all life stages of scales, mealybugs and thrips, such as methyl bromide fumigation or irradiation; or
- a systems approach considered to be effective in mitigating the risks of scales, mealybugs and thrips on decrowned pineapple fruit, and approved by the department.

This draft report has been published on the department website to allow interested parties to provide comments and submissions within the specified 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 2016* 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

India's Department of Agriculture and Farmers Welfare (DAFW) and the Indonesian Quarantine Authority (IQA) formally requested market access to Australia for pineapples for human consumption in submissions received in April and November 2017, respectively. These submissions provided information on the pests associated with pineapples in India and Indonesia, including the plant parts affected. Information was also provided on commercial pineapple production practices in India and Indonesia.

On 27 September 2023, the department notified stakeholders of the decision to progress the requests for market access for decrowned pineapples from India and Indonesia as a review of biosecurity import requirements. This analysis is conducted in accordance with the *Biosecurity Act 2015*.

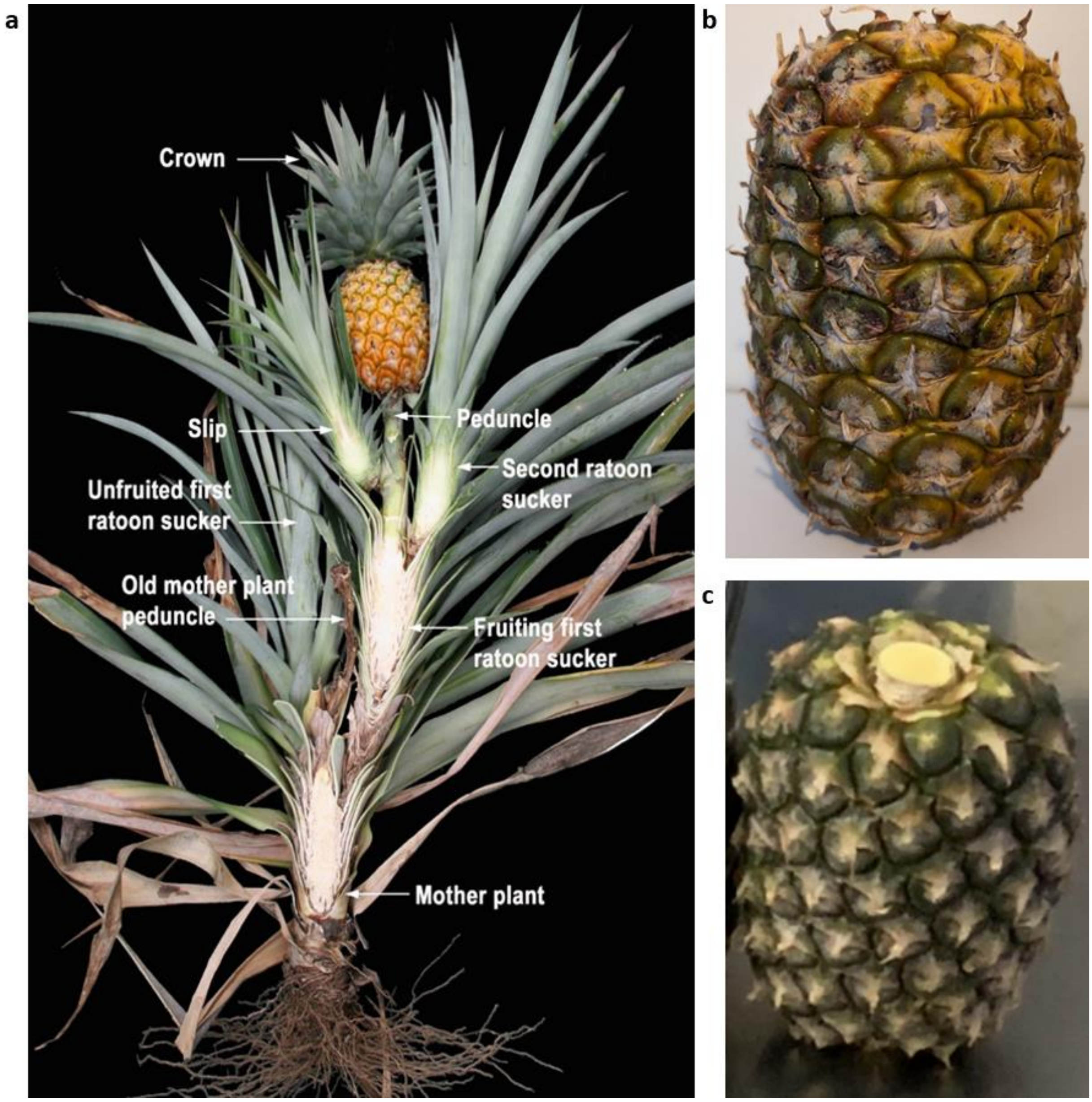
In 2024, officers from the department visited production areas for pineapples in India and Indonesia to observe commercial production, pest management and other export practices.

1.2.2 Scope

The scope of this risk analysis is to consider the biosecurity risks that may be associated with the pathway of imported fresh decrowned pineapples (*Ananas comosus*), produced using commonly applied commercial practices in India and Indonesia, for human consumption in Australia. Commercial production practices observed in India and Indonesia to produce pineapples for export are described in Chapter 2.

In this risk analysis, decrowned pineapples are defined as the entire fruit (including flesh, core, skin, fruitlets and bracts) with the crown removed and only a small portion of basal leaves remaining (Figure 1.1). This risk analysis covers all cultivars of commercially produced pineapples from all production regions in India and Indonesia.

Figure 1.1 Diagram of pineapple plant and fruit morphology



a: A whole pineapple plant in cross section. **b:** A decrowned pineapple fruit showing the upward-facing bracts (pointed leaves) covering each fruitlet. **c:** The underside of a decrowned pineapple fruit showing the basal leaves trimmed back in line with the base. Source: Image (a) reproduced with permission from Dr Garth M. Sanewski.

1.2.3 Existing policy

International policy

Australia currently permits fresh decrowned pineapple fruit imports from Taiwan (Department of Agriculture 2019), Malaysia (DAFF 2012a), the Philippines, Thailand, Sri Lanka and the Solomon Islands (Biosecurity Australia 2002).

Australia also has import policy for the following horticultural commodities:

- mangosteens (DAFF 2012b), salacca (Australian Department of Agriculture 2014), mangoes (DAWR 2015) and dragon fruit (DAWR 2018) from Indonesia
- mangoes (Biosecurity Australia 2008), table grapes (DAWR 2016), pomegranates (DAWE 2020), and okra (DAFF 2023) from India.

The biosecurity import conditions for these commodity pathways, except for pineapples from Malaysia and mangoes, dragon fruit and salacca from Indonesia, and okra from India, for which conditions are yet to be finalised, can be found at the Biosecurity Import Conditions (BICON) system on the department website at bicon.agriculture.gov.au/BiconWeb4.0.

A preliminary assessment has identified that the potential pests of biosecurity concern for decrowned pineapples from India and Indonesia are the same, or of the same pest groups, as those associated with pineapples and other horticultural commodities assessed previously by the department, and for which risk management measures are established.

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.

The biosecurity risk posed by thrips and the 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 2017).

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 Group policies (GPs) for thrips, mealybugs and scale insects are applicable for the decrowned pineapples from India and Indonesia pathways. The department has determined that the information in these GPs can be adopted for the species under consideration in this risk analysis. These GPs and their adoption are further explained in Chapter 3.

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 jurisdiction. 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 decrowned pineapples from India and Indonesia 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 27 September 2023, the department notified stakeholders, in Biosecurity Advice 2023-P08, of the commencement of a review of biosecurity import requirements to assess proposals by India and Indonesia for market access to Australia for decrowned pineapples for human consumption.

Prior to, and following the announcement of this decision, the department engaged with the Australian pineapple industry.

The department has also consulted with the governments of India and Indonesia and Australian state and territory governments during the preparation of this report.

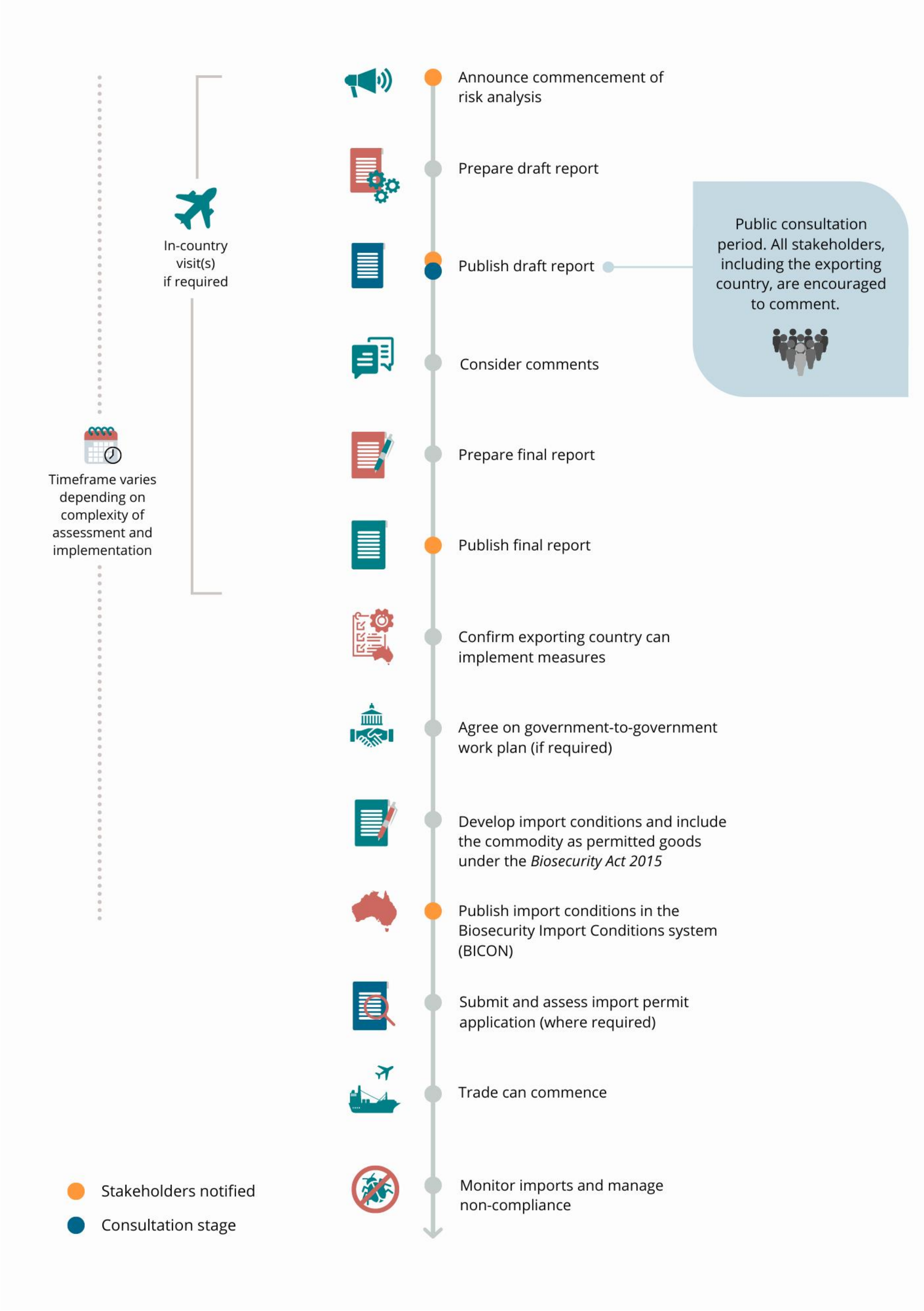
1.2.6 Overview of this pest risk analysis

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 2026a). 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* (FAO 2019a) and ISPM 11: *Pest risk analysis for quarantine pests* (FAO 2019b), 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 2026a).

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 pineapples in India and Indonesia and their export capacities 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 proposers, 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, or 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 proposers, 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 conditions published in BICON, and for any import permits subsequently issued.

Should the final report recommend importation be permitted, India and Indonesia 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 decrowned pineapples from India and Indonesia.

2 Commercial production practices for pineapples in India and Indonesia

This chapter provides information on pre-harvest, harvest and post-harvest practices in India and Indonesia to produce pineapple fruit for export. It also outlines the export capacities of India and Indonesia.

2.1 Considerations used in estimating unrestricted risk

India and Indonesia provided technical market access submissions to Australia that included information on the commercial practices in India and Indonesia for the production of pineapples for export.

In March 2024 departmental officials visited PT Great Giant Pineapple (GGP), in Lampung, Indonesia. GGP is currently the only company in Indonesia that produces fresh pineapple fruit for export. In May 2024, departmental officials visited pineapple farms and packing houses in the Indian states of Kerala and Assam.

The department’s observations of the production, harvest, processing and packing procedures in India and Indonesia for producing pineapples for export, along with additional information provided by India and Indonesia are described in this chapter. Where relevant, information and data from published literature and other sources on pineapple production in India and Indonesia are also included.

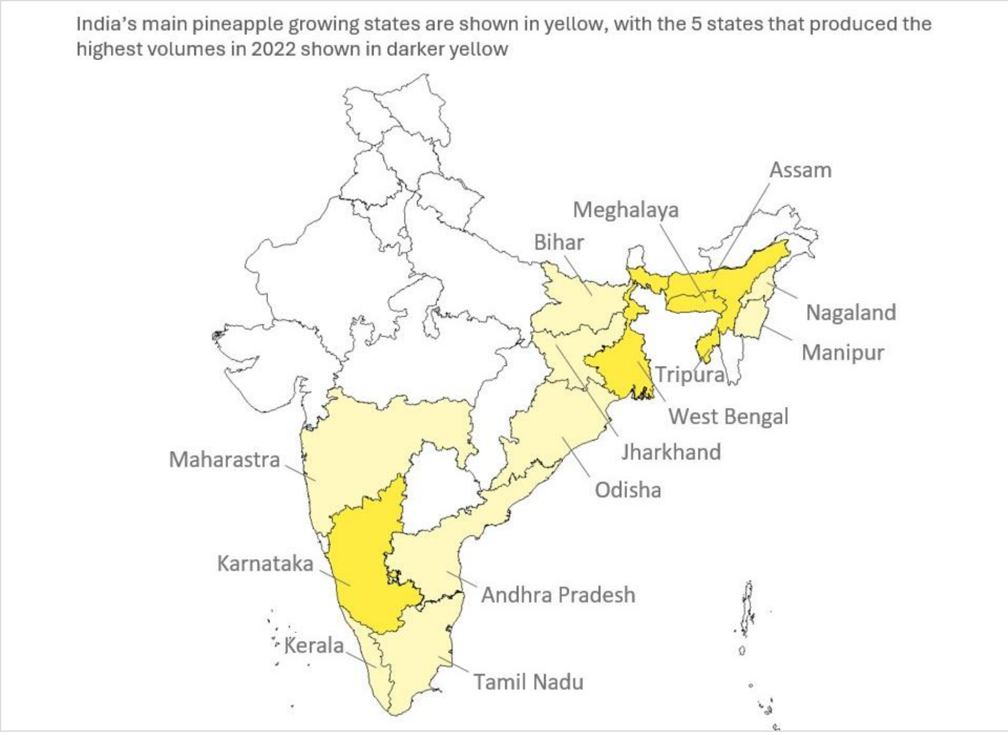
The pre-harvest, harvest and post-harvest practices described in this chapter may vary within and between countries and may not be applied consistently or to the same standard by all exporters. Therefore, when estimating the likelihood of pest introduction, it was considered that certain baseline practices are applied by all growers and packing houses producing export quality pineapple fruit. These practices include the use of clean planting material, as well as fruit cleaning, grading, packing and phytosanitary inspection. These commonly applied practices have been taken into consideration when estimating the unrestricted risks of pests that may be associated with the import of fresh pineapples from India and Indonesia.

2.2 Production areas of pineapples

2.2.1 India

In 2022, India was the sixth largest producer of pineapples in the world by volume (Statista 2024). Pineapples are grown mainly in the east and south of India. The highest producing states in 2022 were West Bengal, Assam, Karnataka, Tripura and Meghalaya (Map 3).

Map 3 Main production areas of pineapples in India

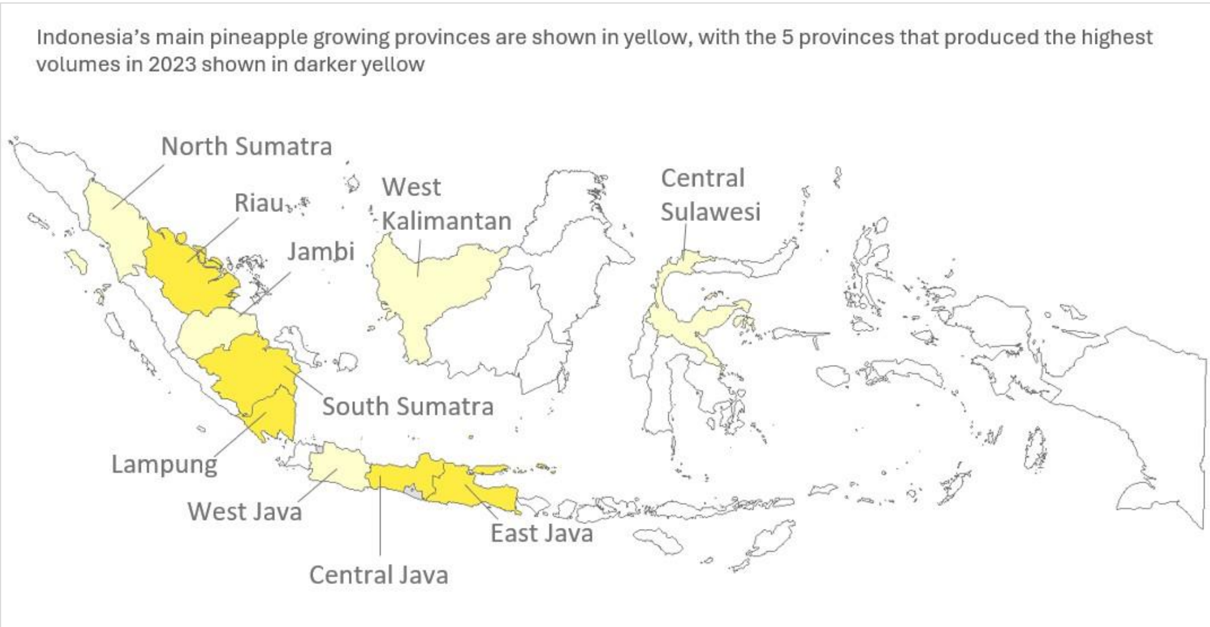


Source: Modified from Ministry of Agriculture and Farmers Welfare (2023).

2.2.2 Indonesia

In 2022, Indonesia was the largest producer of pineapples in the world by volume (Statista 2024). The majority of pineapples in Indonesia are produced in Lampung, South Sumatra, East Java, Riau, Central Java, Jambi and West Java (Central Statistics Agency 2024) (Map 4). Most of the pineapples produced in Lampung are used in processing such as canning (Indonesian Ministry of Agriculture 2016).

Map 4 Main production areas of pineapples in Indonesia



Source: Modified from Indonesian Quarantine Agency (2024).

2.3 Climate in production areas

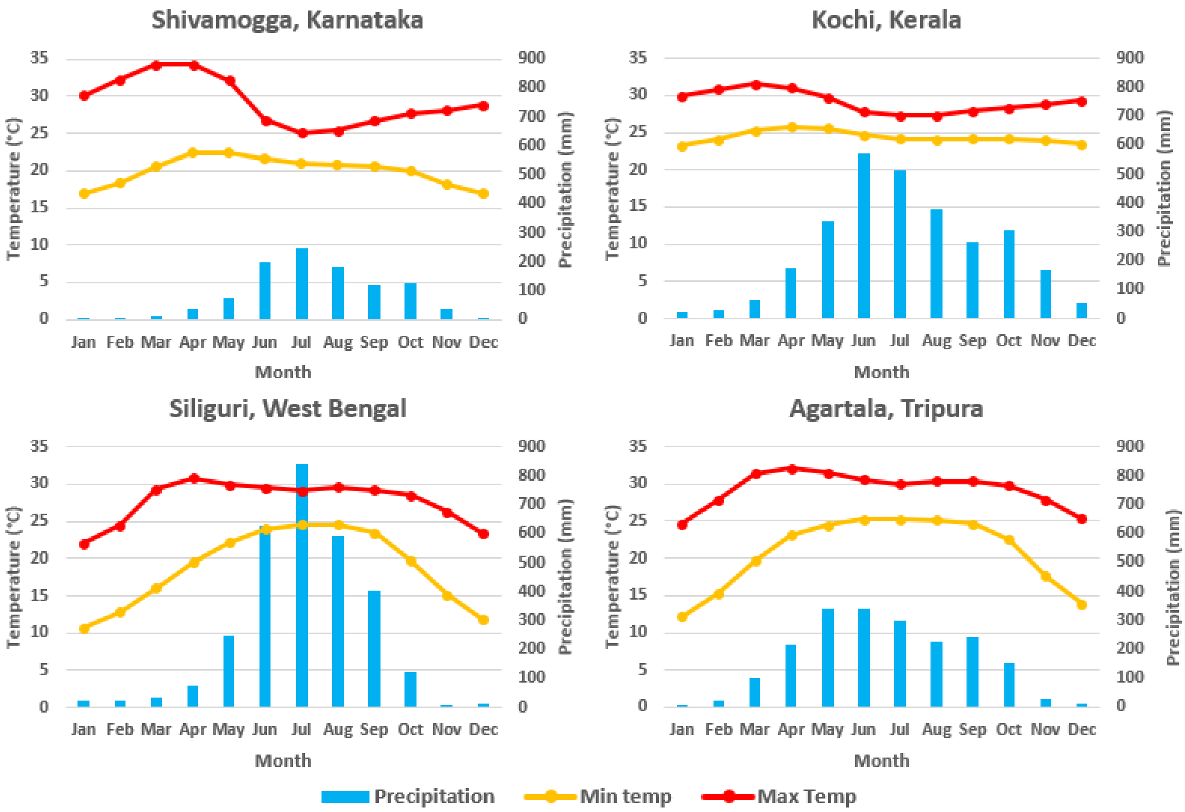
The optimal temperature range for growing pineapples is 20°C at night to 32°C during the day, (Government of India 2022). Pineapples cannot tolerate frosts or very high temperatures, and are vulnerable to sunburn damage (ABC Fruits 2022; Business Queensland 2025).

2.3.1 India

Pineapples in India are cultivated in high rainfall and humid coastal regions of peninsular India, such as Karnataka and Kerala, and the hilly areas of the Northeast region, including West Bengal and Tripura. There is also some commercial production in the interior plains with supplementary irrigation (Ministry of Agriculture & Farmers Welfare 2017).

Because of the large size and diverse geography of India, there are significant variations in the temperatures experienced and rainfall received across the country (Figure 2.1). In Kerala the average monthly maximum temperature ranges from around 28°C to 35°C. Annual average rainfall is around 128 mm, with precipitation occurring approximately 198 days a year. Tripura, in India's northeast, experiences around 187 days of rainfall, with the average annual precipitation around 203 mm. Average monthly maximum temperatures in this region range from around 25°C to 32°C. West Bengal only tends to experience rain on 85 days of the year, mostly during the monsoon season in the middle of the year where the average precipitation is 612 mm. During the dry season, the average precipitation is only 20 mm (Weather and Climate 2026).

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

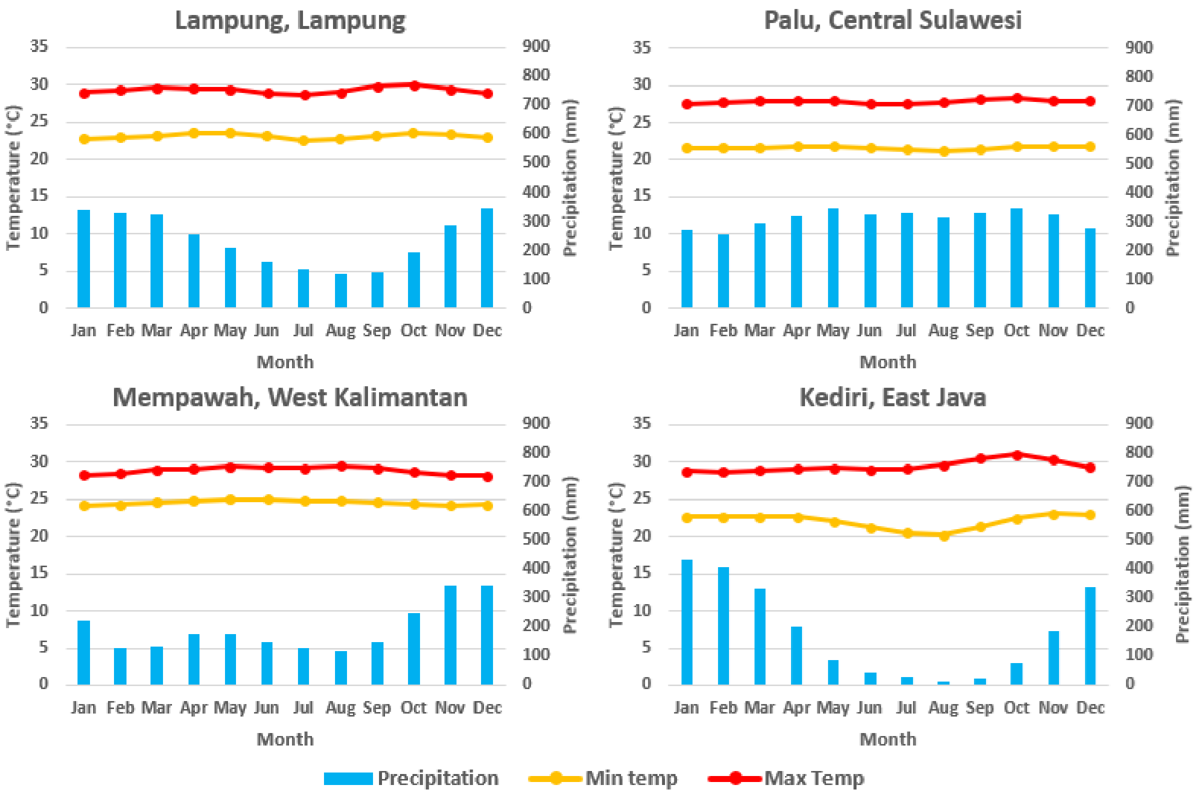


Source: Climate-data.org (2026)

2.3.2 Indonesia

Indonesia has a tropical climate with mean maximum monthly temperatures consistently between 25°C and 30°C. The only company that currently exports pineapples is located in Lampung, where the mean monthly rainfall ranges from 100–300 mm. Higher variability in rainfall occurs in other pineapple production regions such as East Java (Figure 2.2). The climate in Indonesia is suitable for year-round production of pineapples.

Figure 2.2 Mean monthly minimum and maximum temperatures and mean monthly rainfall in the main production areas of pineapples in Indonesia



Source: Climate-data.org (2026)

2.4 Pre-harvest

2.4.1 Cultivars

Pineapple is a medium to tall (1–1.5 m) herbaceous perennial plant with slender pointed leaves 30–100 cm long, surrounding a thick stem (Hikal et al. 2021). Pineapples are composite fruits composed of multiple fruitlets arising from flowers arranged spirally along a central core. The fruit is broadly cylindrical, and may be green, brown or yellow with a crown of blue-green leaves (Hikal et al. 2021).

A wide range of pineapple varieties are grown around the world, with many restricted to their area of origin. Three pineapple cultivars have been grown worldwide; these are Smooth Cayenne, Queen and Singapore Spanish (Sanewski, d'Eeckenbrugge & Junghans 2018). In addition, the hybrid cultivar MD2 has gained popularity as a cultivar for fresh consumption (Thalip, Tong & Ng 2015). Several pineapple varieties are grown in India and Indonesia for fresh consumption as well as processing. The main varieties are listed in table 2.1.

Table 2.1 Pineapple cultivars grown in India and Indonesia

Cultivar	Where grown	Description
MD2	Hybrid cultivar grown in India and Indonesia for export.	A sweet, low acid cultivar. It has a small core and is resistant to internal browning. It has a longer shelf life (around 30 days) and cold storage tolerance (up to 2 weeks) than other commercial varieties (Joy & Anjana 2013).
Smooth Cayenne	Grown in Indonesia mainly for processing (Indonesian Ministry of Agriculture 2016).	Fruits weigh around 1.8–2.3 kg with a diameter of 11–16 cm. The flavour is sweet and acidic (Indonesian Ministry of Agriculture 2016).
Kew, Giant Kew (type of Smooth Cayenne)	Grown in India, particularly the northeastern area. They are mainly grown for processing and are the leading commercial cultivar in India (Joy & Anjana 2013; National Horticulture Board 2018).	Kew and Giant Kew are varieties of smooth cayenne pineapples. Kew pineapples average 1.5–3 kg in weight, depending on the soil, region and age of the plant. They have high sugar content and low acidity and are generally less fibrous than other commercial varieties (Specialty Produce 2024).
Queen	Grown in India for processing and fresh consumption (ABC Fruits 2022). Grown in Indonesia for fresh consumption (Indonesian Ministry of Agriculture 2016).	Spiky fruit with a sweet flavour, weighing around 1 kg with a diameter of 9–16 cm (Indonesian Ministry of Agriculture 2016).
Mauritius (type of Queen)	Late season cultivar grown in India, mainly in Kerala and Meghalaya. It is sold domestically, exclusively for fresh consumption (ABC Fruits 2022).	Medium Queen cultivar, weighing 1.36–2.25 kg, with a narrow core and sweet flesh (ABC Fruits 2022). Mauritius pineapples are highly suitable for export due to their transportability and shelf life (Joy & Anjana 2013).
Singapore Spanish	Grown in Indonesia for fresh consumption (Indonesian Ministry of Agriculture 2016).	Sweet, spiky-leaved, fibrous fruit, weighing around 0.9–1.8 kg with a diameter of 9–13 cm (Indonesian Ministry of Agriculture 2016).

2.4.2 Pineapple cultivation

Pineapple plants may be propagated from suckers, slips or crowns. Suckers are shoots produced at the base of the main plant stem, whereas slips are shoots that grow from the base of the fruit. Pineapple plants produced from suckers or slips bear fruit 12–18 months after planting, and those produced from crowns will fruit after 2–3 years (Northern Territory Government 2026). A pineapple crop can be retained as a ratoon crop after harvest for 3–4 years, depending on the soil conditions. However, fruit weight and yield reduce gradually with each successive ratoon crop (Ministry of Agriculture & Farmers Welfare 2017).

Pineapple fruit typically ripen around 5 months after flowering, depending upon the cultivar, time of planting, type and size of plant material used, and prevailing temperature during fruit development (Ministry of Agriculture & Farmers Welfare 2017).

While there are some differences in the cultivation practices followed in India and Indonesia to grow a healthy crop and produce commercial, export quality fruit, both countries employ pest management systems involving regular monitoring for pests and disease and implementation of appropriate pest and disease control activities in plantations. Plantations producing fruit for export must be registered with the National Plant Protection Agency and government officers conduct regular monitoring of plantations for pests and diseases.

2.4.3 Cultivation practices in India and Indonesia

This section describes the cultivation practices used to produce commercial fruit for export in India and Indonesia, as observed during the visits to production areas in India and GGP company in Indonesia, and gathered through other sources.

Cropping systems and landscape

India and Indonesia use different cropping systems.

In India, while most small-scale pineapple producers (under 5 hectares) grow pineapples as a monocrop, bigger producers frequently intercrop pineapple with coconut or rubber (Figure 2.3) (Joy 2010a, b). Depending on topography, rainfall and drainage, pineapples may be grown in flatbeds, furrows or trenches, or contour-planted in hilly areas (Figure 2.4) (Ministry of Agriculture & Farmers Welfare 2017).

Figure 2.3 Pineapples intercropped with young rubber plants in India

Figure 2.4 Organic contour crop grown using traditional cultivation methods in India

In Indonesia, GGP grows pineapples in rotation with bananas, with four cycles of pineapple production before replanting with bananas. Rotating the crops helps to mitigate potential build-up of pest loads in the plantation. Approximately 44,000 to 77,000 pineapple plants are planted per hectare in double-row beds around 25 x 60 cm apart (Figure 2.5) (Indonesian Ministry of Agriculture 2016).

Figure 2.5 Young pineapple crop in Indonesia

Soil preparation and planting

In both India and Indonesia, commercially grown pineapples produced for export are propagated from healthy, pest and disease-free suckers, usually harvested from the grower's own field. New planting material is treated with a fungicide (Indonesian Ministry of Agriculture 2016; Ministry of Agriculture & Farmers Welfare 2017). While GGP also treats suckers with an insecticide (Indonesian Ministry of Agriculture 2016).

Weeding and mulching

India and Indonesia both implement weed control programs in commercial pineapple plantations. This may include applying a pre-emergent herbicide to the soil prior to planting. Throughout the growing season additional applications of herbicide may also be applied, either by spray or spot application to control weeds. Weeds may also be removed by hand if found during regular monitoring. In some instances, black polythene or a mulch of leaves or straw may be spread on the soil to supress weeds and conserve moisture in the soil (Joy 2010a, b).

Irrigation

Pineapple plants have a shallow root system and need frequent but light irrigation. Timing and frequency of irrigation generally depend on the level of rainfall as well as the requirements of the pineapple cultivar being grown. Natural rainfall is generally sufficient for watering pineapple crops in India and Indonesia.

However, supplementary irrigation may be employed when conditions are hot and dry. For example, pineapple crops in India may be irrigated once every 20–25 days to ensure fruit production achieves the desired quality and fruit size (Ministry of Agriculture & Farmers Welfare 2017). In Indonesia, pineapple fields can be watered once or twice a week by sprinkler or drip irrigation to prevent drought stress (Indonesian Ministry of Agriculture 2016).

Sun protection

Pineapples are vulnerable to sunburn, which can damage the fruit. Different sun protection methods are carried out in India and Indonesia.

For example, in India, maturing pineapples are protected from sun damage by laying dry leaves (e.g., dried palm or pineapple leaves), dry grass or rice straw over individual plants (Figure 2.6). Artificial netting laid over the top of the crop may also be used.

Indonesia's GGP protects the individual pineapple fruit by wrapping paper around the top of the fruit below the crown (Figure 2.7)

Figure 2.6 Example of sun protection for pineapples in India using dried palm leaves

Source: Image provided by Dr Maya T, Pineapple Research Station, Kerala Agricultural University.

Figure 2.7 Sun protection for pineapples using paper in Indonesia

Fertiliser application

Fertiliser is routinely applied in pineapple production to supply essential nutrients required for plant growth, fruit development and yield. The timing and frequency of fertiliser application are influenced by factors such as soil fertility, rainfall and crop growth stage, and are managed to maintain plant health throughout the production cycle.

Forcing

Irregular flowering results in fruit maturing at different times, meaning a longer harvesting period is required. Therefore, forcing is performed to synchronise the timing of flowering.

In India, the peak flowering period varies from December to March in different regions (Ministry of Agriculture & Farmers Welfare 2017). When the pineapple plant has 40–45 leaves, ethephon solution is applied to the heart of the plant, which induces flowering 30–50 days later (Government of India 2022; Ministry of Agriculture & Farmers Welfare 2017).

In Indonesia, pineapples produced by GGP are grown year-round under managed production systems, and therefore there is no peak flowering season. Forcing with ethylene or ethephon is performed 12–18 months after planting (Indonesian Ministry of Agriculture 2016). Forcing is carried out in different sections of the crop each week to ensure a constant supply of fruit.

2.4.4 Pest management

In both India and Indonesia, there is a strong focus on integrated pest management (IPM) practices. This is based around principles such as maintaining general crop health by using healthy, disease resistant planting material and maintaining soil health, as well as using natural enemies, border crops, intercropping and regular weeding to deter pests. The crops are also regularly monitored for pests and diseases and appropriate pest control activities applied to prevent pests or reduce pest prevalence.

An overview of the pest management practices for pineapples produced in India and by GGP company in Indonesia are described below.

India

Growers frequently monitor their crops for pests and diseases and may seek advice from the relevant State Department of Agriculture or State Agriculture University. Officers of the relevant State Department also conduct periodic monitoring of registered farms and record the status of pests and diseases and the control measures in place on the farm (Ministry of Agriculture & Farmers Welfare 2017).

While pests of pineapples are not common in India, there may be sporadic infestations of mealybugs and scale insects. Disease is uncommon, other than stem rot caused by *Phytophthora* (Ministry of Agriculture & Farmers Welfare 2017). Pest prevalence varies with the season; for instance, during the rainy season *Phytophthora* is more likely to occur, while mealybugs are less likely. The main mealybug species associated with pineapples in India is *Dysmicoccus brevipes*, which is a non-quarantine pest for Australia. This species mainly attacks the roots and may also be present at the base of the plant (Ministry of Agriculture & Farmers Welfare 2017).

If mealybugs are detected in the field, the soil is treated with a contact insecticide or a biocontrol agent (for example, *Verticillium lecanii*). Control measures for pathogens include dipping planting material in a fungicide (Bordeaux mixture) before planting and ensuring good drainage (Ministry of Agriculture & Farmers Welfare 2017).

Indonesia

Plantations are monitored weekly at GGP for signs of pests, diseases and weed infestation. The most common pests associated with pineapple crops are mealybugs and, to a lesser extent, scale insects. The main pathogen encountered in pineapple crops is *Phytophthora nicotianae*, which is also present in Australia (APPD 2026); other pathogens are rare.

To mitigate the risks of soil-borne pests and diseases, pineapple propagative material is treated with insecticide and fungicide prior to planting. In addition, foliar pesticide spray is applied throughout the growing period until forcing (Indonesian Ministry of Agriculture 2016).

2.5 Harvesting and handling procedures

Pineapples are harvested around 5 months after forcing. Pineapples are harvested by hand either by twisting and pulling the fruit from the stem or cutting with a sharp knife (Figure 2.8). Fruit that are visibly infested, show symptoms of disease, are damaged or otherwise not of the required quality are discarded in waste crates. In Indonesia, fruit may also be harvested semi-mechanically, where fruit are cut and placed on a boom conveyor belt that loads fruit onto a truck.

Figure 2.8 Pineapple being harvested by hand

Harvested pineapples are placed in plastic crates and transported a short distance to the packing house by truck soon after harvesting (Figure 2.9).

Figure 2.9 Truck for transporting pineapples from the farm to the packing house

2.6 Post-harvest

In Indonesia, there is currently only one company (GGP) that produces and processes pineapples for export. In contrast, pineapple produced for export in India can be processed at several facilities located throughout the country.

There may be differences in the specifics of some of the operational processes, infrastructure and processing standards of packing houses within and between the countries. However, all packing houses perform the same essential function, (e.g., preliminary sorting, cleaning, grading and inspection).

The Indian and Indonesian governments provide oversight and quarantine competency training to all potential exporters to support consistent application of operational procedures.

2.6.1 Packing house processes

India

India’s Agricultural and Processed Food Products Export Development Authority (APEDA) and the Directorate of Plant Protection, Quarantine and Storage (DPPQS) are responsible for registration and auditing of packing house facilities. Facilities registered for export must have a unidirectional process flow, with the different sections of the packing house segregated and labelled.

The typical steps undertaken for processing and packing export quality pineapples in India are described below.

Receival and removal of basal leaves and crown

The fruit are unloaded at the receival area that is separated from the main packing area. The basal leaves (and if required, the crown) are removed. Fruit are initially sorted to ensure export grade fruit are selected for further processing. Fruit that does not meet export standard are discarded or returned to the farmer.

The basal leaves are removed either by hand or scissors. The crown may be torn off, trimmed or cut off with a sharp blade, depending on the requirements of the destination market. Stem material is also trimmed in accordance with the requirements of the destination market.

Cleaning

The pineapples may be cleaned to remove debris and external pests such as mealybugs and thrips.

The cleaning techniques used vary across packing houses. Some examples of cleaning techniques include manually brushing against the direction of the bracts of the pineapple fruit using a variety of types of soft brushes (Figure 2.10) or using high-pressure water (Figure 2.11) to dislodge any external pests or debris. Where fruit has been cleaned using a high-pressure water spray, they are air dried before undergoing further processing.

Figure 2.10 Pineapples being cleaned with brushes

Figure 2.11 Pineapples being cleaned with high-pressure water

Quality check and grading

Fruit may be visually inspected, either by the naked eye or using hand lenses and light to ensure fruit are undamaged and free from pests (Figure 2.12). Damaged fruit or fruit with visible symptoms of disease are discarded. Some packing houses implement two checking steps as part of the packing house process to ensure fruit have been effectively cleaned.

Figure 2.12 Quality and symptom checks for signs of damage and pest infestation

Fruit are visually sorted, weighed and graded according to fruit quality and market destination requirements. Further trimming of basal leaves/crown may also occur (Figure 2.13).

Fruit that does not meet export standard, are damaged or show visible disease symptoms are redirected to domestic markets.

Figure 2.13 Further trimming of basal leaves

Packing and storage

Pineapples are packed into cardboard cartons, which are then sealed with plastic straps. Each carton is labelled with information, including cultivar, farmer/lot number and packing house, for traceability purposes (Government of India 2007).

Due to the perishability of pineapples, they are normally packed and loaded within 24 hours of harvest. However, they may be placed in cool storage if there is a delay between packing and loading for export.

Indonesia

Indonesian exporters are required to be registered with Indonesian Quarantine Authority (IQA). The packing house also needs to be registered with Indonesia's Competent Authority for Food Safety.

While GGP is currently the only group applying to export fresh pineapple fruit from Indonesia, the Indonesian export framework allows for additional exporters to apply to participate in the future. Operational practices implemented by exporters may vary; however, production and packing for export pineapples are generally expected to include processes such as cleaning, grading, packing and inspection.

The processing steps described below are reflective of the processes observed at GGP.

Fruit receival, initial clean and removal of basal leaves

The pineapples undergo a preliminary inspection for external pests upon arrival at an outdoor receival area of the packing house. Fruit with visible pest infestation are removed. The remaining fruit undergo an initial clean using high-pressure air (HPA) to remove any contaminants or debris, and basal leaves are removed by hand (Figure 2.14).

Figure 2.14 Pineapple undergoing preliminary inspection and cleaning

Cleaning, crown removal and fruit maturity test

The pineapples are manually brushed and washed in a water tank and then individually cleaned with HPA (Figure 2.15).

Figure 2.15 Pineapples being cleaned and brushed in water and cleaned using HPA

a: Pineapples being brushed and washed in a water tank. **b:** Pineapples being individually cleaned with HPA.

Guillotines are set up along the conveyor belt and the pineapple crowns are removed if they are unsightly or if decrowning is required by the destination market (Figure 2.16). The fruit then proceed along the conveyor belt for second cleaning process.

Figure 2.16 Decrowning of pineapples

The second cleaning process consists of pineapples passing through a tank of clean water followed by a chlorine spray and a tank of water agitated with water jets (Figure 2.17).

A random sample of pineapples are selected at this stage of the processing line to test the brix level of the fruit to ensure the pineapples are at the desired stage of maturity. The minimum standard for pineapples in Indonesia is a brix level of 12%.

Figure 2.17 Pineapples undergoing second wash with chlorinated water

Fungicide and wax application

The base and top (if crown removed) of the pineapples are then sprayed with a fungicide (Figure 2.18) and coated in wax to prolong shelf life and prevent fungal infection that may occur as a result of decrowning and removal of basal leaves. The fruit are then air dried before further processing.

Figure 2.18 Pineapples being treated with fungicide

Grading, packing and quality check

The pineapples are visually checked with the naked eye to ensure the fruit have been cleaned effectively and are free of external pests. A hand lens may also be used to inspect the fruit.

Fruit are then graded by a monitored automatic fruit grading machine and packed in cardboard boxes. Each box is labelled to identify the cultivar, plantation, packing house, time of harvest and other information as required by the destination market (Indonesian Ministry of Agriculture 2016; PT. Great Giant Pineapple 2024).

One in every 30 boxes is selected according to a systematic sampling approach for quality inspection. Every fruit from the selected box is inspected under illuminated magnifiers to ensure they are undamaged and free of pests and disease symptoms (Figure 2.19).

The packed pineapples are palletised and placed in a cool room at 17°C for 4–12 hours before shipping.

Figure 2.19 Quality check of randomly selected pineapples

2.6.2 Phytosanitary inspection

The phytosanitary inspection process is similar for both India and Indonesia.

India

Phytosanitary inspection is performed by a DPPQS officer from the region and is carried out according to the DPPQS standard operating procedures (Government of India 2007) and, where applicable, the phytosanitary inspection requirements of the importing country (e.g., 600-unit inspection). The DPPQS officer inspects a sample of fruit for phytosanitary inspection, which takes place in a designated room or laboratory at the packing house, or at the port of departure, depending on the requirements of the importer. The results of the inspection are documented. If the consignment is found free of quarantine pests and meets the requirements of the importing country, it is issued with a phytosanitary certificate, in accordance with ISPM 12: *Phytosanitary certificates* (FAO 2022).

Indonesia

Phytosanitary inspection is performed at the GGP packing house by IQA inspectors in a dedicated inspection area. The IQA inspector randomly inspects a sample of fruit in accordance with the importing country's phytosanitary inspection requirements (e.g., 600-unit inspection). The results of the inspection are documented. If the consignment is found free of quarantine pests and meets the requirements of the importing country, it is issued with a phytosanitary certificate, in accordance with ISPM 12: *Phytosanitary certificates* (FAO 2022).

2.6.3 Transport

Fruit may be transported from India to Australia by air or sea. The approximate transportation time is 14–16 hours by air and 15–17 days by sea. The temperature during sea transport is recommended to be maintained at 8°C to 10°C (Ministry of Agriculture and Farmers Welfare 2023).

Transport from Indonesia is likely to be by sea freight. It is recommended containers are pre-cooled to 7°C to 9°C and maintained at this temperature with an average humidity of 75% (Indonesian Ministry of Agriculture 2016).

A summary of the operational steps for decrowned pineapples produced in India and Indonesia are provided in Figure 2.20 and Figure 2.21 respectively.

Figure 2.20 Summary of operational steps for pineapples grown for export in India

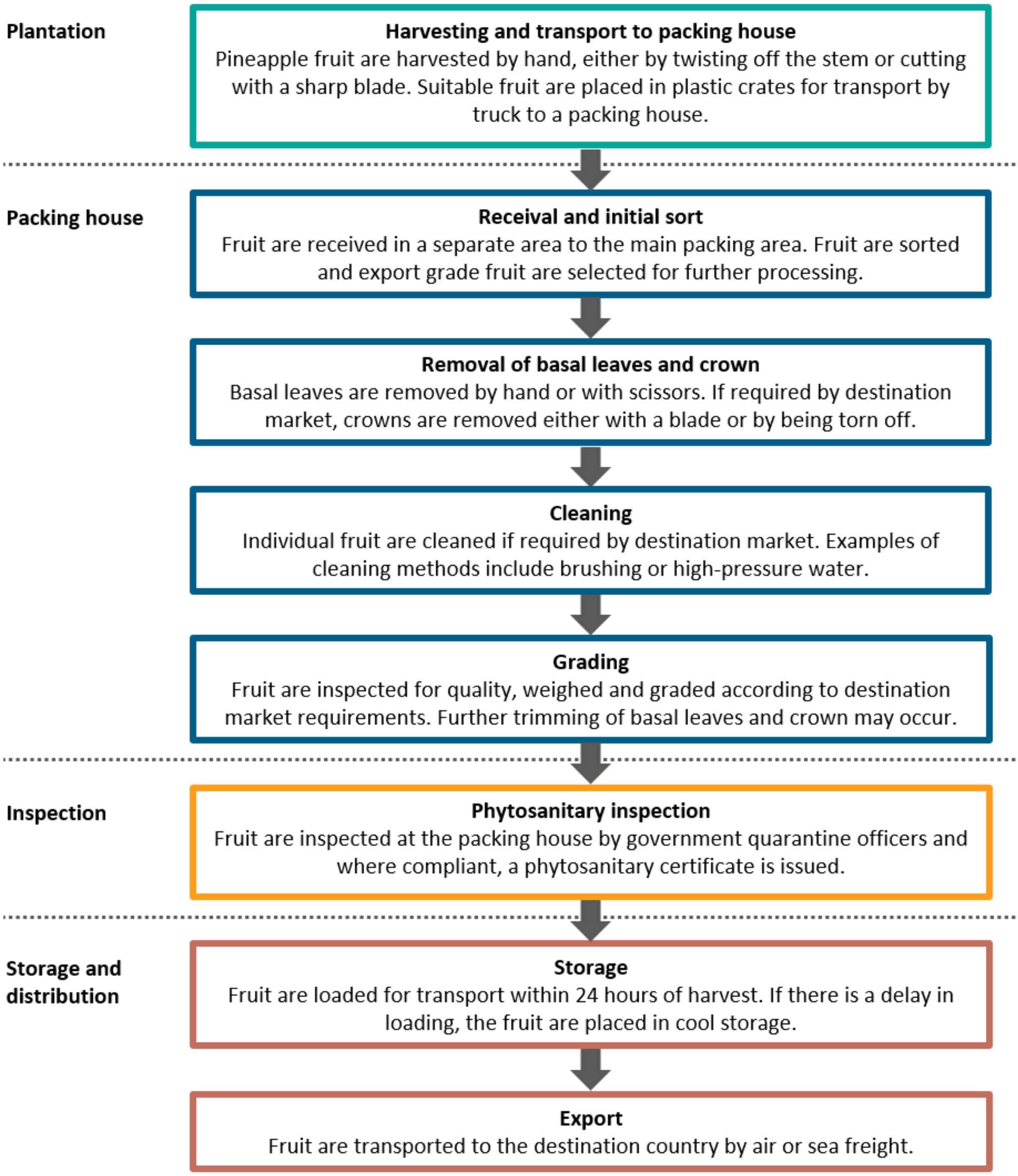


Figure 2.21 Summary of operational steps for pineapples grown for export in Indonesia

Plantation

Harvesting and transport to packing house
Pineapple fruit are harvested by hand (either by twisting off the stem or cutting with a sharp blade) or semi-mechanically. Suitable fruit are placed in plastic crates for transport by truck to a packing house.

Packing house

Receival preliminary sort, cleaning and removal of basal leaves
Fruit are received in a separate area to the main packing area. Fruit with visible pest infestation are removed. Suitable fruit are cleaned using high pressure air and the basal leaves are removed by hand.

First cleaning and decrowning
Fruit are cleaned first by manually brushing in a water bath, then individually cleaned using high pressure air. If required by the destination market the pineapple crown is removed using a guillotine.

Second cleaning
Fruit pass through a tank of water followed by a tank of chlorinated water and chlorine spray.

Fungicide and wax application
The base and top of the fruit are sprayed with a fungicide and coated in wax to prolong shelf life.

Grading and packing
Fruit of the same grade are packed into boxes according to the export market requirements.

Quality check
One in every 30 boxes is randomly selected for quality inspection. Fruit are inspected under illuminated magnifiers to ensure they are undamaged and free of pests.

Inspection

Phytosanitary inspection
Fruit are inspected at the packing house by government quarantine inspectors and where compliant, a phytosanitary certificate is issued.

Storage and distribution

Storage
Export ready consignments are stored in cool rooms at 17°C for 4–12 hours before transport.

Export
Fruit are transported to the destination country usually by air or sea freight at 7°C to 9°C.

2.7 Export capacity

2.7.1 Production statistics

India

India is one of the major producers of pineapples, producing around 1.8 million tonnes of pineapples in 2023 (Ministry of Agriculture and Farmers Welfare 2023). In India's major growing areas (Table 2.2) pineapples are typically harvested from May to August (Ministry of Agriculture and Farmers Welfare 2023) but there is some regional variability; for instance, Tripura has begun staggering cultivation to provide fruit year-round. Overall, peak production throughout India is July–August (Transgraph Consulting 2023).

Production figures for the main pineapple production areas in India from 2020 to 2022 are shown in table 2.2.

Table 2.2 Pineapple production in India's 5 largest producing states

	Volume (thousand tonnes)		
State	**2020**	**2021**	**2022**
West Bengal	350.65	354.64	356.62
Assam	307.52	315.14	338.98
Karnataka	166.48	164.61	169.54
Tripura	142.66	144.60	144.60
Meghalaya	138.70	138.81	138.93

Source: Ministry of Agriculture and Farmers Welfare (2023).

Indonesia

Pineapples are produced year-round in Indonesia for processing and fresh consumption. Indonesia is one of the world's leading producers of pineapples, producing over 3 million tonnes of pineapples in 2023 (Central Statistics Agency 2024). Production figures for the main pineapple production areas in Indonesia from 2021-2023 are shown in Table 2.3.

Table 2.3 Pineapple production in Indonesia's 5 largest producing provinces

	Volume (thousand tonnes)		
Province	**2021**	**2022**	**2023**
Lampung	705.88	861.71	722.85
South Sumatra	476.07	567.12	477.43
East Java	198.77	357.51	435.68
Riau	354.88	261.77	379.03
Central Java	344.85	336.10	282.63

Source: Central Statistics Agency (2024).

2.7.2 Export statistics

India

Although India is one of the world's largest producers of pineapple, most pineapples are produced for the domestic market (Transgraph Consulting 2023) and are consumed fresh rather than processed (National Horticulture Board 2019). In 2022–23 India's major export markets for fresh pineapples included Nepal (3,703 tonnes), the United Arab Emirates (1,433 tonnes), the Maldives (866 tonnes), Qatar (554 tonnes) and Bhutan (215 tonnes) (Ministry of Agriculture and Farmers Welfare 2023).

Indonesia

Indonesia's pineapple production primarily supplies the domestic market. Pineapples are mainly exported in processed forms (such as canned or dried), with fewer than 1% exported as fresh fruit. GGP is currently the only exporter of fresh pineapple operating in Indonesia. In 2024, Indonesia's main export market for fresh and dried pineapple was China (3,966 tonnes), followed by the United Arab Emirates (3,249 tonnes), Singapore (778 tonnes) and Saudi Arabia (269 tonnes) (WITS 2026).

2.7.3 Export season

In India, the pineapple export season varies between regions, but it is expected that the main export season for pineapples to Australia from India would be May to August (Ministry of Agriculture and Farmers Welfare 2023).

In Indonesia, pineapples can be produced and exported year-round.

3 Pest risk assessments for quarantine pests

3.1 Summary of outcomes of pest initiation and categorisation

The initiation process (Appendix B) identified 160 pests as being potentially associated with pineapples in India and / or Indonesia.

Of these 160 pests, the pest categorisation process (Appendix B) identified:

- 1 pest as not present in India or Indonesia due to a previous record being invalid, and therefore not requiring further assessment.
- 101 pests as already present in Australia and not under official control, and therefore not requiring further assessment
- 48 pests as not having potential to enter on the commercially produced decrowned pineapples from India and Indonesia pathways, and therefore not requiring further assessment

The remaining 10 pests were assessed as having potential to enter, establish, spread and cause consequences in Australia, and therefore require further pest risk assessment.

In applying the Group PRAs, 1 thrips, 6 mealybugs and 3 hard scales were identified on the import pathways and listed in the pest categorisation (Appendix B). The application of the Group PRAs to this risk analysis is outlined in Appendix A in section A2.7.

3.2 Pests requiring further pest risk assessment

The 10 pests associated with commercially produced decrowned pineapples for export from India and Indonesia, identified as requiring further pest risk assessment are listed in Table 3.1.

Of these 10 pests:

- All 10 are quarantine pests for Australia
  - 5 of the 10 quarantine pests are regional quarantine pests for Western Australia. While they have been recorded in some regions of Australia, interstate quarantine regulations are in place and enforced for these pests.
  - 1 of the 10 quarantine pests is also identified as a regulated article as it is capable of harbouring and spreading quarantine orthotospoviruses.

Table 3.1 Quarantine pests potentially associated with decrowned pineapples from India and Indonesia, requiring further pest risk assessment

Pest/pest group	Scientific name	Common name	Policy status/region
Hard scales [Hemiptera: Diaspididae]	*Diaspis bromeliae* **a**	Pineapple scale	GP, WA
	Melanaspis bromiliae **b**	Ananas scale	GP
	Pseudaonidia trilobitiformis **a**	Trilobite scale	GP, WA
Mealybugs [Hemiptera: Pseudococcidae]	*Dysmicoccus neobrevipes* **a**	Grey pineapple mealybug	GP
	Paracoccus marginatus **a**	Papaya mealybug	GP, WA
	Phenacoccus madeirensis **b**	Madeira mealybug	GP
	Planococcus minor **a**	Pacific mealybug	GP, WA

Pest/pest group	Scientific name	Common name	Policy status/region
	Pseudococcus cryptus **a**	Cryptic mealybug	GP, WA
	Pseudococcus jackbeardsleyi **a**	Jack Beardsley mealybug	GP, WA
Thrips [Thysanoptera: Thripidae]	*Frankliniella schultzei* species complex **a, c, d**	Cotton thrips	GP

a: Present in India and Indonesia. **b**: Present in India only. **c**: Assessed in the Group policy as *Frankliniella schultzei*. **d**: species that is also identified as a regulated article for Australia. **GP**: Species has been assessed previously in a Group PRA, and the Group policy has been applied. **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.

All of the 10 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 biosecurity risk posed by thrips and the orthotospoviruses they transmit was previously assessed for all countries in the thrips Group PRA (DAWR 2017), which has been applied to this assessment of decrowned pineapples from India and Indonesia.

The biosecurity risk posed by mealybugs and the viruses they transmit was previously assessed for all countries in the mealybugs Group PRA (DAWR 2019), which has been applied to this assessment of decrowned pineapples from India and Indonesia.

The biosecurity risk posed by soft and hard scale insects was previously assessed for all countries in the scales Group PRA (DAWE 2021a), which has been applied to this assessment of decrowned pineapples from India and Indonesia.

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.

A summary of the likelihood, consequence and URE ratings obtained in each pest risk assessment is provided in Table 3.7. An overview of the decision process at the initiation, pest categorisation and pest risk assessment stages of this PRA is presented diagrammatically in Figure 3.1.

3.4 Hard scales

***Diaspis bromeliae* (GP, WA), *Melanaspis bromiliae* (GP), *Pseudaonidia trilobitiformis* (GP, WA)**

Three hard scale species were identified on the decrowned pineapples from India and Indonesia pathways as quarantine pests for Australia: *Diaspis bromeliae* (pineapple scale), *Melanaspis bromiliae* (ananas scale) and *Pseudaonidia trilobitiformis* (trilobite scale).

Diaspis bromeliae and *P. trilobitiformis* are not present in Western Australia and are assessed as regional quarantine pests for that state.

The indicative likelihood of entry for all quarantine hard scale species is assessed in the scales Group PRA (DAWE 2021a) as Moderate, which is comprised of indicative likelihoods of importation and distribution of High and Moderate, respectively.

Diaspis bromeliae, *M. bromiliae* and *P. trilobitiformis* can be associated with pineapple fruit (Danzig & Pellizzari 1998; Miller & Davidson 2005; Newett & Rigden 2015; Petty, Stirling & Bartholomew 2002). *Diaspis bromeliae* and *P. trilobitiformis* are reported from Indonesia (Indonesian Ministry of Agriculture 2016; Suh 2016) and India (García Morales et al. 2026) and *M. bromiliae* has been reported from India (García Morales et al. 2026). Due to their small size and the complex structure of the pineapple fruit providing shelters (including bracts and crevices on the skin), some scales may not be detected and removed during packing house processes such as cleaning, sorting and grading. After assessment of relevant pathway-specific factors (sections A2.6 and A2.7) for decrowned pineapples from India and Indonesia, the likelihood of importation of High was verified as appropriate for these scale species on these pathways.

Decrowned pineapples would be expected to be distributed for retail sale to multiple destinations within the PRA area. *Pseudaonidia trilobitiformis* has a wide host range and first instar crawlers present on discarded pineapple fruit or waste could potentially disperse to a new host. Therefore, the indicative likelihood of distribution has been verified as Moderate for *P. trilobitiformis* on these pathways.

However, *D. bromeliae* and *M. bromiliae* have relatively narrow host ranges compared to many other scale species, and decrowned pineapples have a relatively short shelf life (up to 30 days at 7°C), so the indicative likelihood of distribution of Moderate from the scales Group PRA may not be appropriate for *D. bromeliae* and *M. bromiliae* on the decrowned pineapples from India and Indonesia pathways. The limited availability of suitable hosts reduces the likelihood of the pests transferring to a new host, and the short shelf life of the fruit limits the time for any scales present on the fruit to produce eggs or mobile nymphs before dying. Therefore, the likelihood of distribution of *D. bromeliae* and *M. bromiliae* on decrowned pineapples from India and Indonesia is assessed here.

As explained in section 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 pathways. Therefore, the assessments of the likelihoods for establishment (High) and spread (High) and the potential consequences (Low) have been adopted from the scales Group PRA.

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 indicative likelihood of importation for all hard scales is assessed as High in the scales Group PRA. The likelihood that *D. bromeliae* and *M. bromiliae* will arrive in Australia in a viable state with the importation of decrowned pineapples from India and Indonesia is considered to be similar to hard scales on fresh fruit, vegetable, cut-flower and foliage imports. The likelihood of importation of **High** was verified as appropriate for *D. bromeliae and M. bromiliae* on the decrowned pineapple from India and Indonesia pathways (Table 3.2).

Likelihood of distribution

The likelihood that *D. bromeliae* and *M. bromiliae* will be distributed within Australia in a viable state as a result of the processing, sale or disposal of decrowned pineapples from India and Indonesia, and subsequently transfer to a susceptible part of a host, is assessed as **Low**.

The following information provides supporting evidence for this assessment.

Only small volumes of pineapple waste are likely to be discarded in the environment (for example, gardens, parks or roadsides).

- As stated in the scales Group PRA, scale insects are likely to enter the environment through consumers discarding infested fruit waste in backyards, parks and roadsides. They are unlikely to enter the environment through municipal solid waste (MSW) streams such as landfill or commercial composting.
- Waste from a pineapple may have a lower likelihood of being discarded in the environment than other fresh fruits that can be hand peeled and more readily consumed outdoors.
- Pineapples require preparation before consumption, which includes removing the skin where scales may be present. Preparation of fruit is likely to be undertaken indoors. Waste would mostly be deposited directly into receptacles indoors before being transferred into larger waste bins for disposal via MSW systems or into backyard composting systems, limiting opportunities for dispersal of hard scales to a suitable host.
- While pineapple waste is quite likely to be discarded in household compost, this waste is usually contained (for example, in compost bins, tumblers, Bokashi bins, solar waste digesters or worm farms), preventing hard scales from reaching a host plant.

The limited mobility of hard scales limits their potential to disperse to new hosts from fruit or fruit waste.

- Most life stages of hard scales are sessile and unable to disperse from the fruit or fruit waste. Only the early first instar nymphs (crawlers) and non-feeding adult males are capable of dispersing from the fruit (Koteja 1990).
- Crawlers of hard scales have limited capability to disperse under their own locomotion, but they can be passively dispersed over greater distances by wind (Greathead 1990).

Diaspis bromeliae and *M. bromiliae* may only have a brief period in which to disperse to a new host before the fruit, or fruit waste, degrades.

- Pineapples have a short shelf life at room temperature, and the fruit may deteriorate within a few days (DOA Malaysia 2004). They are therefore typically consumed soon after purchase (Malumphy 2015).
- Cool storage may prolong the shelf life of pineapples. For example, decrowned MD2 pineapples may be stored for up to 30 days at 7°C (Chandra et al. 2023). However, it is unlikely that hard scales would be able to disperse from fruit in cool storage.

Diaspis bromeliae and *M. bromiliae* may be less likely to transfer to a suitable host in the PRA area than other hard scale species.

- Suitable host plants of *D. bromeliae* and *M. bromiliae* may be present in the PRA area but are unlikely to be common or widespread.
  - *Melanaspis bromiliae* has a very limited host range, with only 5 host plant species in 3 families recorded. These include *Ananas comosus* (also reported under the synonyms *A. bracteatus*, *A. sativus* and *Ananas* sp.), *Bromelia* sp. and *Neoglaziovia variegata* in the Bromeliaceae family, as well as *Cocos nucifera* (Arecaceae) and *Pandanus* sp. (Pandanaceae) (Deitz & Davidson 1986; García Morales et al. 2026).
  - The host range of *D. bromeliae* is unresolved due to potential confusion over previous pest identifications, but pineapple and other plants in the Bromeliaceae family are particularly favoured as hosts (Watson 2026). Records from hosts other than Bromeliaceae and Orchidaceae may be misidentifications of *Diaspis boisduvalii* (Miller & Davidson 2005), which is only distinguishable from *D. bromeliae* by microscopic examination of slide-mounted females (Miller & Davidson 2005; Watson 2026). *Diaspis bromeliae* has been intercepted in international trade on bromeliad nursery stock (DAWE 2021a) and pineapple fruit (Suh 2016).
- The scales Group PRA states that Poaceae (grasses) and Asteraceae (daisies) provide the highest risk of scale distribution, due to their abundance and wide distribution in parks, roadsides and yards.
  - Based on the available literature, *D. bromeliae* and *M. bromiliae* are not recorded from any Asteraceae plant hosts.
  - *Diaspis bromeliae* has been recorded on sugarcane (*Saccharum officinarum*) in the Poaceae family (García Morales et al. 2026). Sugarcane is no longer grown commercially in Western Australia, and while sugarcane may be grown in some home gardens, it is not common.

Overall likelihood of entry

After assessment of relevant pest- and pathway-specific factors (sections A2.6 and A2.7) for decrowned pineapples from India and Indonesia, the overall likelihood of entry (importation x distribution) for *P. trilobitiformis* was verified as **Moderate**.

The overall likelihood of entry for *D. bromeliae* and *M. bromiliae* is determined as **Low** by combining the verified likelihood of importation of High with the reassessed likelihood of distribution of Low, using the matrix of rules in Table A.2.

A summary of the risk assessments for the 3 quarantine hard scale species is presented in Table 3.2.

Table 3.2 Risk estimates for *Diaspis bromeliae, Melanaspis bromiliae* and *Pseudaonidia trilobitiformis*

Risk component	**Ratings for quarantine hard scales in the scales Group PRA**	**Ratings for *Pseudaonidia trilobitiformis* on decrowned pineapples from India and Indonesia pathways**	**Ratings for *Diaspis bromeliae and Melanaspis bromiliae* on decrowned pineapples from India and Indonesia pathways**
Likelihood of entry (importation x distribution)	Moderate (High x Moderate) (indicative)	Moderate (High x Moderate)	Low (High x Low)
Likelihood of establishment	High	High	High
Likelihood of spread	High	High	High
Overall likelihood of entry, establishment and spread	Moderate	Moderate	Low
Consequences	Low	Low	Low
Unrestricted risk	**Low**	**Low**	**Very Low**

As assessed in the scales Group PRA, the indicative URE for scales is **Low** (Table 3.4) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for *Pseudaonidia trilobitiformis* present on the decrowned pineapples from India and Indonesia pathways. Therefore, specific risk management measures are required for *P*. *trilobitiformis* on these pathways.

The URE for *D. bromeliae* and *M. bromiliae* on the decrowned pineapples from India and Indonesia pathways is assessed as **Very Low**, which achieves the ALOP for Australia. Therefore, no specific risk management measures are required for these two scale species on the decrowned pineapples from India and Indonesia pathways.

This risk assessment, which is based on the scales Group PRA, applies to all quarantine scales on the decrowned pineapples from India and Indonesia pathways, irrespective of their specific identification in this document. This is explained in section A2.7.

3.5 Mealybugs

***Dysmicoccus neobrevipes* (GP), *Paracoccus marginatus* (GP, WA), *Phenacoccus madeirensis* (GP), *Planococcus minor* (GP, WA), *Pseudococcus cryptus* (GP, WA), *Pseudococcus jackbeardsleyi* (GP, WA)**

6 mealybug species were identified on the decrowned pineapples from India and Indonesia pathways as quarantine pests for Australia: *Dysmicoccus neobrevipes* (grey pineapple mealybug), *Paracoccus marginatus* (papaya mealybug), *Phenacoccus madeirensis* (madeira mealybug), *Planococcus minor* (Pacific mealybug), *Pseudococcus cryptus* (cryptic mealybug) and *Pseudococcus jackbeardsleyi* (Jack Beardsley mealybug) (Table 3.3).

Paracoccus marginatus, *Planococcus minor*, *Pseudococcus cryptus* and *Pseudococcus jackbeardsleyi* are not present in Western Australia and are assessed 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) by combining the likelihood of importation of High with likelihood of distribution of Moderate (Table 3.3 and Table 3.4).

Dysmicoccus neobrevipes, *Paracoccus marginatus, Planococcus minor*, *Pseudococcus cryptus* and *Pseudococcus jackbeardsleyi* are reported from India (CABI 2026; García Morales et al. 2026; Vidya & Bhaskar 2017) and Indonesia (CABI 2026; García Morales et al. 2026). *Phenacoccus madeirensis* is only reported from India (García Morales et al. 2026; Lalitha et al. 2015).They are associated with pineapple plants (de los Angeles Martinez, Suris & Perez 2000; Jiang et al. 2011; Petty, Stirling & Bartholomew 2002) and may infest fruit (CABI 2026; DAWR 2019; García Morales et al. 2026; Jiang et al. 2011; Martin Kessing & Mau 2007b; Miller et al. 2014; Newett & Rigden 2015; Petty, Stirling & Bartholomew 2002). Due to their small size and the complex structure of the pineapple fruit providing shelters on and beneath the surface of the skin (including bracts, blossom cups and other crevices) some mealybugs may not be detected and removed during packing house processes, such as cleaning, sorting and grading. For these reasons the indicative likelihood of importation has been verified as High for the decrowned pineapples from India and Indonesia pathways.

Decrowned pineapples would be expected to be distributed for retail sale to multiple destinations within the PRA area. The mealybugs assessed in this report have wide host ranges and first instar crawlers present on discarded pineapple fruit or waste could potentially disperse to a new host. Therefore, the indicative likelihood of distribution has been verified as Moderate for these pathways.

After assessment of relevant pest- and pathway-specific factors (sections A2.6 and A2.7) for decrowned pineapples from India and Indonesia, the overall likelihood of entry (importation x distribution) was verified as **Moderate.**

As explained in section 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 pathways. Therefore, the assessments of the likelihoods for establishment (High) and spread (High) and the potential consequences (Low) have been adopted from the mealybug Group PRA.

Table 3.3 Quarantine mealybug species potentially associated with decrowned pineapples from India and Indonesia

Pest	In mealybugs Group PRA	Quarantine pest	On decrowned pineapples pathways	Likelihood of entry (Importation x distribution)
Dysmicoccus neobrevipes	Yes	Yes	Yes	Moderate (High x Moderate)
Paracoccus marginatus	Yes	Yes (WA)	Yes	Moderate (High x Moderate)
Phenacoccus madeirensis	Yes	Yes	Yes	Moderate (High x Moderate)
Planococcus minor	Yes	Yes (WA)	Yes	Moderate (High x Moderate)
Pseudococcus cryptus	Yes	Yes (WA)	Yes	Moderate (High x Moderate)
Pseudococcus jackbeardsleyi	Yes	Yes (WA)	Yes	Moderate (High x Moderate)

WA: Regional quarantine pest for Western Australia.

A summary of the risk assessment for quarantine mealybugs is presented in Table 3.4.

Table 3.4 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 3.4) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for the quarantine mealybugs species present on the decrowned pineapples from India and Indonesia pathways. Therefore, specific risk management measures are required for the quarantine mealybugs on these pathways.

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 fresh fruit pathways.

This risk assessment, which is based on the mealybugs Group PRA, applies to all quarantine mealybugs on the decrowned pineapples from India and Indonesia pathways, irrespective of their specific identification in this document. This is explained in section A2.7.

3.6 Cotton thrips

Frankliniella schultzei **species complex (GP)**

Frankliniella schultzei is identified as a non-quarantine pest in the thrips Group PRA (DAWR 2017). However, recent evidence indicates *F. schultzei* is a species complex with at least 8 species globally, 3 of which have been recorded in Australia (De Oliveira, Bitencourt & Silva Junior 2023; Hereward et al. 2017). Because at least 5 species in the complex have not been recorded in Australia, the *F. schultzei* species complex is considered a quarantine pest of concern for Australia (DAFF 2024b). Outcomes from the thrips Group PRA are applicable to all quarantine pest thrips (DAWR 2017) and, therefore, are applied to the *F. schultzei* species complex.

Additionally, the *Frankliniella schultzei* species complex is identified as a regulated article for Australia because it is capable of harbouring and spreading (vectoring) orthotospoviruses that are quarantine pests for Australia, as detailed in the thrips Group PRA (DAWR 2017).

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 2026a).

The indicative likelihood of entry for all quarantine thrips is assessed in the thrips Group PRA as Moderate (DAWR 2017). The *F. schultzei* species complex is associated with pineapple (Joy, Anjana & Soumya 2016) and is present in India (Tyagi et al. 2017) and Indonesia (CABI 2026; Sartiami & Mound 2013). However, there is currently little information on which species within the species complex are present there. Due to the uncertainty, it is considered that *F. schultzei* species that are not present in Australia are present in India and Indonesia, and are therefore of potential biosecurity concern to Australia, until information that indicates otherwise becomes available. Due to their small size and the complex structure of the pineapple fruit providing shelters (including bracts and crevices on the skin), some thrips may not be detected and removed during packing house processes such as cleaning, sorting and grading. For these reasons the indicative likelihood of importation has been verified as High for the decrowned pineapples from India and Indonesia pathways.

Decrowned pineapples would be expected to be distributed for retail sale to multiple destinations within the PRA area. The *Frankliniella schultzei* species complex has a wide host range and adults as well as nymphs present on discarded pineapple fruit or waste could potentially disperse to a new host. Therefore, the indicative likelihood of distribution has been verified as Moderate for the decrowned pineapples from India and Indonesia pathways.

After assessment of relevant pathway-specific factors (section A2.6 and A2.7) for decrowned pineapples from India and Indonesia, the likelihood of entry (importation x distribution) was verified as **Moderate**.

As explained in section 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 pathways. Therefore, the assessments of the likelihoods for 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 3.5.

Table 3.5 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 quarantine thrips is **Low** (Table 3.5) which does not achieve the ALOP for Australia. This indicative URE is considered to be applicable for the quarantine thrips species present on the decrowned pineapple from India and Indonesia pathways. Therefore, specific risk management measures are required for the quarantine thrips on these pathways.

As the *F. schultzei* species complex vector orthotospoviruses that are quarantine pests for Australia, a summary of the risk assessment for quarantine orthotospoviruses transmitted by these thrips is presented in Table 3.6.

Table 3.6 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 orthotospoviruses adopted from the thrips Group PRA (DAWR 2017)

As assessed in the thrips Group PRA, the URE for quarantine orthotospoviruses transmitted by thrips is **Low** (Table 3.6), 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 decrowned pineapples from India and Indonesia pathways. 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 quarantine thrips on the decrowned pineapples from India and Indonesia pathways, irrespective of their specific identification in this document. This is explained in section A2.7.

3.7 Pest risk assessment conclusions

Likelihood ratings and the consequences estimate for individual quarantine pests and regulated articles are set out in Table 3.7.

Of the 10 pests for which a further pest risk assessment was conducted:

- The UREs for 8 quarantine pests were assessed as not achieving the ALOP for Australia, and thus specific risk management measures are required for these pests on the decrowned pineapples from India and Indonesia pathways. These pests are:
  - trilobite scale (*Pseudaonidia trilobitiformis*)
  - grey pineapple mealybug (*Dysmicoccus neobrevipes*)
  - papaya mealybug (*Paracoccus marginatus*)
  - madeira mealybug (*Phenacoccus madeirensis*)
  - Pacific mealybug (*Planococcus minor*)
  - cryptic mealybug (*Pseudococcus cryptus*)
  - Jack Beardsley mealybug (*Pseudococcus jackbeardsleyi*)
  - cotton thrips (*Frankliniella schultzei* species complex)
- Cotton thrips is also identified as a regulated article for Australia due to its potential to introduce quarantine orthotospoviruses into Australia. The URE for quarantine orthotospoviruses transmitted by thrips was assessed in the thrips group PRA (DAWR 2017) as not achieving the ALOP for Australia, and thus specific risk management measures are required for this regulated article on the decrowned pineapples from India and Indonesia pathways.

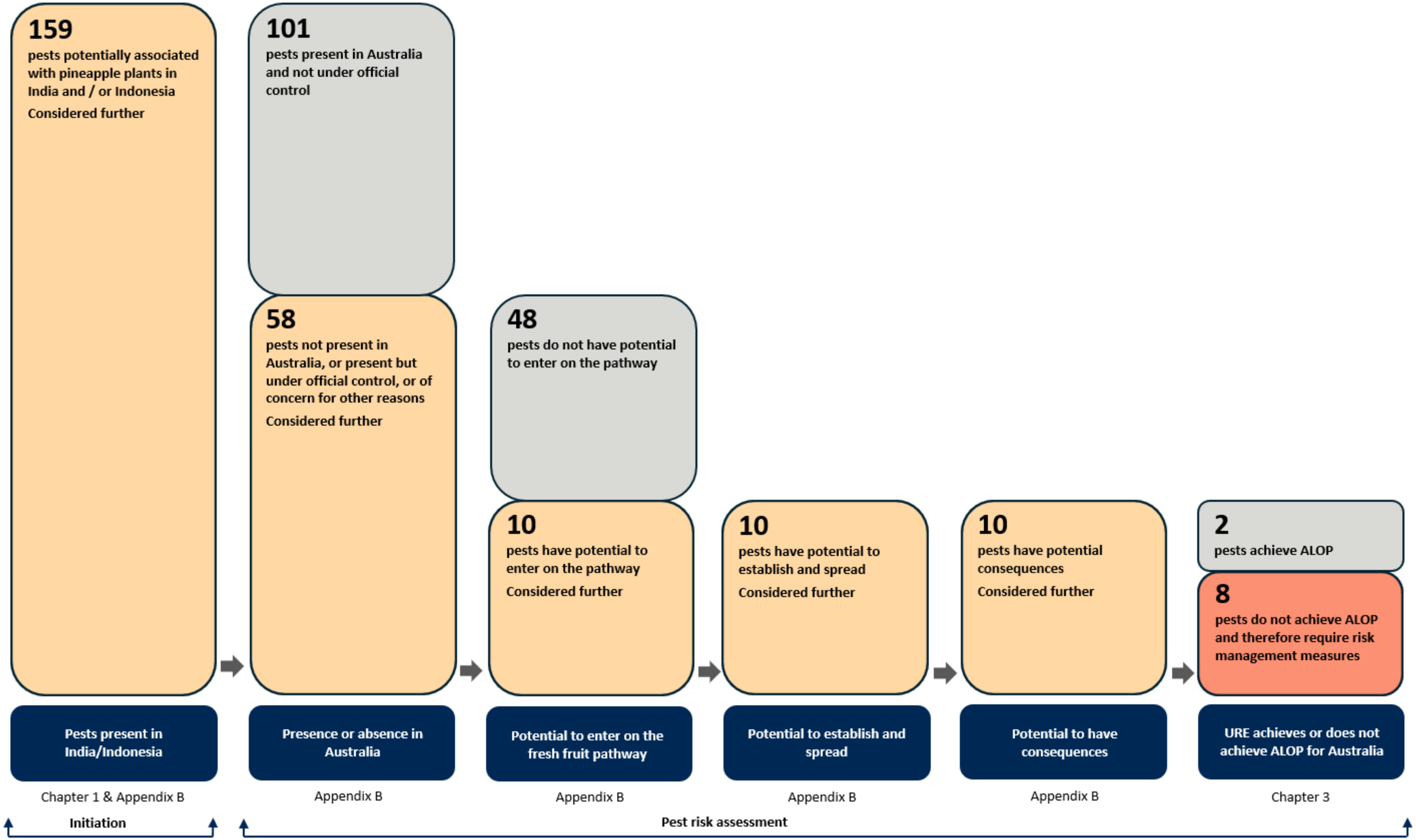
An overview of the decision process for the pest risk assessment for decrowned pineapples from India and Indonesia is presented in Figure 3.1.

Table 3.7 Pest risk assessment conclusions for pests, and pest groups, associated with the decrowned pineapples from India and Indonesia pathways

	Likelihood of						Consequences	URE
Pest name	**Importation**	**Distribution**	**Entry**	**Establishment**	**Spread**	**EES**		
Hard scales [Hemiptera: Diaspididae]								
Diaspis bromeliae (GP, WA)	High	Low	**Low**	High	High	Low	Low	**Very Low**
Melanaspis bromiliae (GP)	High	Low	**Low**	High	High	Low	Low	**Very Low**
Pseudaonidia trilobitiformis (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Mealybugs [Hemiptera: Pseudococcidae]								
Dysmicoccus neobrevipes (GP)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Paracoccus marginatus (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Phenacoccus madeirensis (GP)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Planococcus minor (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Pseudococcus cryptus (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Pseudococcus jackbeardsleyi (GP, WA)	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Cotton thrips [Thysanoptera: Thripidae]								
Frankliniella schultzei species complex (GP) **a**	High	Moderate	**Moderate**	High	High	Moderate	Low	**Low**
Orthotospoviruses [Bunyavirales: Tospoviridae] vectored by *Frankliniella schultzei* species complex								
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 2017). **GP:** Species has been assessed previously in a Group PRA, and the Group policy has been applied. **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 decrowned pineapples from India and Indonesia



Note: This figure does not include the beetle *Metamasius hemipterus*, which was removed from consideration due to the previous record of this species in Indonesia being a misidentification

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 recommends specific risk management measures for those quarantine pests and regulated articles (section 4.1). It also recommends 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 build on, formalise and strengthen the commonly applied commercial production practices for decrowned pineapples in India and Indonesia, as described in Section 2.1, 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 recommended measures and section 4.1.2 outlines the measures for specific pests.

4.1.1 Overview of proposed measures

The department has established specific risk management measures for the pests assessed in Chapter 3 as posing a biosecurity risk that does 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 to achieve the ALOP for Australia for the same, or similar commodities from other countries. There is no available information to suggest that these measures will not manage the biosecurity risk of the pests associated with decrowned pineapples from India and Indonesia to achieve the ALOP for Australia. Therefore, the established measures are proposed for the pests associated with decrowned pineapples from India and Indonesia 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 mealybugs and thrips. DAFW and IQA will need to propose which option(s) they intend to use and provide evidence to the department as to how the requirements of the proposed option(s) will be met.

In addition, the exporting country's NPPO may propose an alternative option, i.e. different from those recommended 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 the exporting country's NPPO, 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 India and Indonesia have 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 program 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 decrowned pineapples from India and Indonesia has changed, or where alternative risk management options become available (see section 4.4.2).

4.1.2 Risk management measures for quarantine pests associated with decrowned pineapples from India and Indonesia

Proposed specific risk management measures for the 8 quarantine pests and regulated articles associated with decrowned pineapples from India and Indonesia are listed in Table 4.1.

Table 4.1 Proposed risk management measures for quarantine pests and regulated articles associated with decrowned pineapples from India and Indonesia

Pest	Scientific name	Common name	Measures
Scales [Hemiptera: Diaspididae]	*Pseudaonidia trilobitiformis* [GP, WA]	Trilobite scale	Fruit treatment considered effective against all life stages of scales, such as methyl bromide fumigation or irradiation OR Systems approach approved by the department
Mealybugs [Hemiptera: Pseudococcidae]	*Dysmicoccus neobrevipes* [GP]	Grey pineapple mealybug	Fruit treatment considered effective against all life stages of mealybugs, such as methyl bromide fumigation or irradiation OR Systems approach approved by the department
	Paracoccus marginatus [GP, WA])	Papaya mealybug	
	Phenacoccus madeirensis [GP]	Madeira mealybug	
	Planococcus minor [GP, WA]	Pacific mealybug	
	Pseudococcus cryptus [GP, WA]	Cryptic mealybug	
	Pseudococcus jackbeardsleyi [GP, WA]	Jack Beardsley mealybug	
Thrips [Thysanoptera: Thripidae]	*Frankliniella schultzei* species complex [GP] **a, b**	Cotton thrips	Fruit treatment considered effective against all life stages of thrips, such as methyl bromide fumigation or irradiation OR Systems approach approved by the department

a: Assessed in the Group PRA as *Frankliniella schultzei*. **b:** Quarantine thrips species that is also identified as a regulated article for Australia as it vectors quarantine orthotospoviruses assessed in the thrips Group PRA. **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 Australian Government Department of Agriculture, Fisheries and Forestry (the department) proposes the following specific risk management measures for the identified quarantine pests and regulated article on the pineapple from India and Indonesia pathways:

- for hard scales, mealybugs and thrips

- fruit treatment considered effective against all life stages of these pests, such as methyl bromide fumigation or irradiation, or
- systems approach considered to be effective in mitigating the risk of these pests on decrowned pineapple fruit and approved by the department.

Measures for hard scales, mealybugs and thrips

For hard scales, mealybugs and thrips, the department proposes the options of fruit treatment (such as methyl bromide fumigation or irradiation) or a systems approach. The objective of the proposed measures 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.

It should be noted that the risk management measure recommended by the department to manage hard scales, mealybugs and thrips on most fresh fruit import pathways is visual inspection and, if found, remedial action (DAWE 2020, 2021b). However, the complex surface structure of a pineapple has many crevices and protruding bracts that can harbour hard scales, mealybugs and thrips, therefore visual inspection alone is not considered to be sufficiently efficacious to detect the presence of these pests on the decrowned pineapple fruit from India and Indonesia pathways.

Option 1: Fruit treatment

Fruit treatment known to be effective against all life stages of scales, mealybugs and thrips, such as methyl bromide fumigation or irradiation, applied pre-export may be used as a phytosanitary measure for hard scales, mealybugs and thrips.

Methyl bromide fumigation

The department considers methyl bromide fumigation to be an effective treatment for hard scales, mealybugs and thrips on the decrowned pineapple from India and Indonesia pathways. The department proposes that decrowned pineapple fruit be fumigated prior to export for 2 hours at one of the rates specified here:

- 32 grams methyl bromide per cubic metre at a pulp temperature of 21°C or greater.
- 40 grams methyl bromide per cubic metre at a pulp temperature of 16°C to 20.9°C.
- 48 grams methyl bromide per cubic metre at a pulp temperature of 11°C to 15.9°C.
- 56 grams methyl bromide per cubic metre at a pulp temperature of 10°C to 10.9°C

The requirements for the use of fumigation as a phytosanitary measure are set out in ISPM 43: *Requirements for the use of fumigation as a phytosanitary measure* (FAO 2019e). Methyl bromide fumigation is recognised as an effective method for pest risk management when performed in an approved facility and at the specified rate recognised as effective for the target pest groups. It is advised that, where methyl bromide fumigation of fruit is adopted, it must be completed in accordance with the relevant departmental standards.

Should India or Indonesia wish to use fumigation as a phytosanitary measure, the exporting country's NPPO would need to provide a submission to the department for consideration, demonstrating that it has processes and procedures for the registration, approval and audit of treatment facilities. The department may request on-site verification of the treatment facilities.

Irradiation

The department considers irradiation to be an effective treatment for hard scales, mealybugs and thrips on the decrowned pineapple fruit from India and Indonesia pathways. 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* (FAO 2026b). 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 pineapple fruit, by Food Standards Australia New Zealand (FSANZ 2021).

The department proposes a treatment schedule of 400 Gy minimum absorbed dose, consistent with the schedule recommended in the United States Department of Agriculture Treatment Manual (USDA 2026) for all insect pests except pupae and adults of the order Lepidoptera.

The use of irradiation as a phytosanitary measure is subject to the department's approval of the irradiation facilities identified by DAFW or IQA. Should India or Indonesia wish to use irradiation as a phytosanitary measure, the exporting country's NPPO would need to provide a submission to the department for consideration. The submission must fulfil requirements as set out in ISPM 18 (FAO 2026b).

Other fruit treatments

The department recognises that other fruit treatments such as heat (e.g., vapour heat treatment), cold treatment or other fumigants may also be effective treatments against hard scales, mealybugs and thrips on the decrowned pineapples from India and Indonesia pathway. The use of any such treatment option is subject to its approval by the department as an efficacious measure against scales, mealybugs and thrips. Should India or Indonesia wish to propose a treatment option, the exporting country's NPPO would need to provide a submission to the department for consideration that includes suitable information to support the claimed efficacy of the treatment to manage scales, mealybugs and thrips on the decrowned pineapples from India and Indonesia pathway, for consideration by the department.

Option 2: Systems approach

A systems approach integrates different risk management measures, at least 2 of which act independently, which cumulatively achieve the required level of phytosanitary protection. The requirements of a systems approach are set out in ISPM 14: *The use of integrated measures in a systems approach for pest risk management* (FAO 2019c).

Should India or Indonesia wish to use a systems approach as a measure to manage the risk posed by hard scales, mealybugs and thrips of quarantine concern for Australia on the decrowned pineapple fruit from India and Indonesia pathways, the exporting country's NPPO would need to submit a proposal to the department for consideration. The proposal should outline all components of the system and provide evidence of how these components will address the risks posed by these hard scales, mealybugs and thrips.

The department considers the following components could be important for inclusion in a systems approach to manage the risk posed by hard scales, mealybugs and thrips of quarantine concern for

Australia on the decrowned pineapple fruit from India and Indonesia pathways. These components are not exhaustive or definitive, and additional or alternative components may also be required and can be considered if proposed:

- registration and auditing of plantations and packing houses,
- use of clean planting material,
- pest monitoring, preventative and management measures in the plantation,
- harvest and post-harvest processes such as sorting, grading, cleaning and quality checks,
- inspection of fruit using a method appropriate for detecting pests on and below the surface of the fruit,
- post-harvest safeguarding, secure handling and packaging of fruit to prevent reinfestation by pests, and
- pre-export phytosanitary inspection processes and non-compliance arrangements to verify and ensure efficacy of the systems approach.

Further details about these potential components are provided in Table C.1.

Upon receipt of a submission, the department will assess the components of the proposed system and whether, collectively, they effectively manage the risk posed by hard scales, mealybugs and thrips of quarantine concern for Australia on the decrowned pineapple fruit from India and Indonesia pathways.

4.1.3 Consideration of alternative measures

Consistent with the principle of equivalence detailed in ISPM 11: *Pest risk analysis for quarantine pests* (FAO 2019b) and ISPM 24: *Guidelines for the determination and recognition of equivalence of phytosanitary measures* (FAO 2021), the department will consider any alternative measure proposed by the exporting country's NPPO. 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 the exporting country's NPPO 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 decrowned pineapples from India and Indonesia is maintained, and these can be verified.

4.2.1 A system of traceability to source plantations

The objectives of this procedure are to ensure that:

- decrowned pineapples are sourced only from plantations producing commercial export quality fruit
- plantations from which decrowned pineapples 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 decrowned pineapples are grown/produced under an approved systems approach, it can be verified that all fruit was produced and exported under the conditions for that pathway.

The exporting country’s NPPO must establish systems to enable traceability to where decrowned pineapples for export to Australia are sourced. The exporting country’s NPPO must ensure that export pineapple fruit 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 (e.g., a systems approach) is used, export plantations must be registered with the exporting country’s NPPO against the requirements of the measure being used. Records of registered plantations and the exporting country’s NPPO audits must be kept by the exporting country’s NPPO respectively, 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 pineapples are sourced only from packing houses that are approved by the exporting country’s NPPO
- where applicable, treatment providers are approved by the exporting country’s NPPO and capable of applying a treatment that suitably manages the target pests.

Packing houses must be registered with the exporting country’s NPPO. The exporting country’s NPPO are 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 the exporting country’s NPPO audits must be kept by the exporting country’s NPPO respectively, and must be made available to the department.

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

The approval of treatment providers by the exporting country’s NPPO must include verification that suitable systems are in place to ensure compliance with treatment requirements. This may include:

- documented procedures to ensure decrowned pineapples are appropriately treated and safeguarded post treatment
- staff training to ensure compliance with procedures
- record-keeping procedures
- suitability of facilities and equipment
- the exporting country’s NPPO's system of oversight of treatment application.

The department provides final approval of facilities, following review of regulatory oversight provided by the exporting country’s NPPO 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:

- decrowned pineapples 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* (FAO 2026a))
- unprocessed packaging material is not imported with decrowned pineapples from India and Indonesia. 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 decrowned pineapples
- all wood material associated with the consignment used in packaging and transport of decrowned pineapples complies with the department's import requirements, as published on BICON
- secure packaging is used for export of decrowned pineapples from India and Indonesia 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 0.16 mm 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 0.16 mm strand thickness
    - **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 decrowned pineapples from India and Indonesia 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 decrowned pineapples produced using the systems approach: the plantation reference/number and the packing house reference/number

- where applicable, packaged decrowned pineapples from India and Indonesia that have undergone irradiation treatment are labelled with a statement that the decrowned pineapples have 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 decrowned pineapples is maintained during storage and movement.

Treated and/or inspected decrowned pineapples 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 decrowned pineapples 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 the exporting country's NPPO

The objective of these procedures is to ensure that Australia's import conditions have been met. All consignments of decrowned pineapples from India and Indonesia for export to Australia must be inspected by the exporting country's NPPO and found free of pests of biosecurity concern for Australia. Pre-export visual inspection must be undertaken by the exporting country's NPPO in accordance with ISPM 23: *Guidelines for inspection* (FAO 2019d) and consistent with the principles of ISPM 31: *Methodologies for sampling of consignments* (FAO 2016). 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 (FAO 2019d) and ISPM 31 (FAO 2016) 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 pineapple fruit), 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 having been produced in accordance with a systems approach.

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 decrowned pineapples from India and Indonesia 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.

In the event that consignments of decrowned pineapples from India and Indonesia are repeatedly non-compliant, the department may require enhanced risk management measures, including mandatory phytosanitary treatment. The department reserves the right to suspend imports (either all imports, or imports from specific pathways) and to conduct an audit of the risk management systems. Imports will be allowed to 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 decrowned pineapples 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 India and Indonesia that produce decrowned pineapples 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 India and Indonesia has changed, or where alternative risk management or compliance-based intervention options become available.

The exporting country's NPPO must inform the department immediately on the detection of any new pests of pineapples in India and Indonesia respectively 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 Imported Food Inspection Scheme operated by the department at the border. This is a food safety risk-based inspection and testing program for verifying safety and compliance with Australia's legislative requirements for imported food. 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 1.4.1 and Schedule 19 of the Code set out the maximum residue limits for contaminants and natural toxicants in food, including imported food.

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.

Food safety requirements for food imports are published in BICON.

5 Conclusion

This draft risk analysis report was conducted to assess the proposals by India and Indonesia for market access to Australia for fresh decrowned pineapples for human consumption.

The risk analysis 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* (FAO 2019a) and ISPM 11: *Pest risk analysis for quarantine pests* (FAO 2019b), 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 decrowned pineapples to Australia from all commercial production areas of India and Indonesia 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 identified as associated with the trade of decrowned pineapples from India and Indonesia.

All fresh fruit, including decrowned pineapples from India and Indonesia, 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 decrowned pineapples from India and Indonesia for human consumption. The import conditions will be communicated on BICON. The publication of import conditions on BICON is subject to India and Indonesia 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* (FAO 2019a) and ISPM 11: *Pest risk analysis for quarantine pests* (FAO 2019b) 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 2026a). A pest is 'any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products' (FAO 2026a). 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 2026a).

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 and procedures that occur on arrival in Australia. These procedures include verification by the department that the consignment received is as described on the commercial documents and its integrity has been maintained.

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 2026a).

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 2026a). 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 (FAO 2019b), the PRA process may be initiated as a result 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 (FAO 2019b) 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 (FAO 2019b) 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 2026a). 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 2026a). 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 using 6 qualitative descriptors: 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 overall 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

Impact score	Local	District	Regional	National
G				**Major significance**
F			**Major significance**	**Significant**
E		**Major significance**	**Significant**	**Minor significance**
D	**Major significance**	**Significant**	**Minor significance**	**Unlikely to be discernible**
C	**Significant**	**Minor significance**	**Unlikely to be discernible**	
B	**Minor significance**	**Unlikely to be discernible**		
A	**Unlikely to be discernible**			
	Geographic level			

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 2017)
- *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 mite review) (DAFF 2024a).

The Group PRA approach is consistent with relevant international standards and requirements– including ISPM 2: *Framework for Pest Risk Analysis* (FAO 2019a), ISPM 11: *Pest Risk Analysis for Quarantine Pests* (FAO 2019b) 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 (FAO 2019b) 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 decrowned pineapples from India and Indonesia

The pest categorisation table does not represent a comprehensive list of all the pests associated with the entire pineapple plant, grown in India or Indonesia. 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 decrowned pineapple fruit 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 'GP' and 'WA' are used. 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 2017), 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)* (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 at pre-export or on arrival in Australia, the relevant Group policy will also apply.

The department is aware of the changes in fungal nomenclature which ended the separate naming of different states of fungi with a pleomorphic life cycle. However, as the nomenclature for these fungi is in a phase of transition and many priorities of names are still to be resolved. This report uses the generally accepted names and provides alternatively used names as synonyms, where required. The department is also aware of the changes in nomenclature of arthropod species based on the latest morphological and molecular reviews. As official lists of accepted fungus and arthropod names become available, these accepted names will be adopted.

The department is aware of the changes to viral nomenclature, which is being transitioned to a binomial naming convention. This transition is ongoing at the time of drafting this report and, as such, the former species name has been included alongside the binomial name for all listed viruses to avoid confusion.

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

Pest	Present in India and Indonesia	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
ARTHROPODS							
Coleoptera							
Adoretus sinicus Burmeister, 1855 [Scarabaeidae] Chinese rose beetle	India (CABI 2026) Indonesia (CABI 2026)	No records found	No. Not known to be associated with pineapple fruit. *Adoretus sinicus* has been reported feeding on pineapple roots (Joy, Anjana & Soumya 2016). Females oviposit in the soil, and larvae feed on roots and decaying vegetation in the soil (Habeck 1964; McQuate & Jameson 2011). Adults feed on the leaves of an extensive number of hosts (Habeck 1964; McQuate & Jameson 2011).	Assessment not required	Assessment not required	Assessment not required	No
Ahasverus advena (Waltl, 1832) [Silvanidae] Foreign grain beetle	Indonesia (Navarro et al. 2007)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Araecerus fasciculatus (C.DeGeer, 1775) Synonym: *Araecerus coffeae* (Fabricius, 1801) [Anthribidae] Areca nut weevil, coffee bean weevil	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Carpophilus dimidiatus (Fabricius, 1792) [Nitidulidae] Corn-sap beetle	India (DPP 2001)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Carpophilus hemipterus (Linnaeus, 1758) [Nitidulidae] Dried fruit beetle	Indonesia (CABI 2026; Indonesian Ministry of Agriculture 2016)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Carpophilus maculatus Murray, 1864 [Nitidulidae] Pineapple sap beetle, souring beetle, dried fruit beetle	India (Dasgupta & Pal 2019) Indonesia (Brown, Armstrong & Cruickshank 2012)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Epuraea luteola Erichson, 1843 Synonym: *Haptoncus luteolus* (Erichson, 1843) [Nitidulidae] Yellow brown sap beetle	India (Dasgupta & Pal 2019) Indonesia (Dasgupta, Pal & Hegde 2016)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW (APPD 2026).	No. Not known to be associated with commercially produced, fresh mature pineapple fruit. *Epuraea luteola* is a pest of dried stored products and decomposing fruit, including pineapples (Ewing & Cline 2004; Mifsud & Audisio 2008; Myers 2025).	Assessment not required	Assessment not required	Assessment not required	No
Epuraea ocularis Fairmaire, 1849 Synonyms: *Haptoncus ocularis* (Fairmaire, 1849) [Nitidulidae] Pineapple sap beetle	India (Dasgupta & Pal 2019) Indonesia (de Araujo et al. 2018)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW, NT, Qld (APPD 2026).	No. Not known to be associated with commercially produced, fresh mature pineapple fruit. *Epuraea ocularis* is common in Hawaiian pineapple fields, where it develops on dead and souring plant material and pupates in the soil (Chang & Jensen 1974). *Epuraea ocularis* occurs on collapsed and over-ripe pineapple fruit (Rohrbach & Johnson 2003).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Exomala orientalis (Waterhouse, 1875) Synonyms: *Anomala orientalis* (Waterhouse, 1875), *Blitopertha orientalis* Reitter 1903 [Scarabaeidae] Oriental beetle	India (CABI 2026)	No records found	No. Not known to be associated with pineapple fruit. Larvae of *Exomala orientalis* live in the soil and feed on roots of hosts, including pineapple (EFSA Panel on Plant Health (PLH) et al. 2020). Adults feed on flowers and leaves (Hinson 2014).	Assessment not required	Assessment not required	Assessment not required	No
Metamasius hemipterus (Linneaus 1758) [Curculionidae] Silky cane weevil	Indonesia: No, pest record invalid. A report of this pest from 1904 is considered to be a misidentification (EPPO 2026).	Assessment not required	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Oryctes rhinoceros (Linnaeus, 1758) [Scarabaeidae] Coconut rhinoceros beetle	India (CABI 2026; Dornberg 2015) Indonesia (CABI 2026; Dornberg 2015)	No records found	No. Not known to be associated with pineapple fruit. *Oryctes rhinoceros* is mainly a pest of coconut and palm; however, it has occasionally been recorded on other hosts, including pineapple (Khoo, Ooi & Ho 1991). There is limited information on its association with pineapple, but on coconut and palms the adults feed on leaves or bore into the growing points or meristem. Eggs are laid in decaying organic matter, in which the larvae feed and pupate (CABI 2026; Wood 1968).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Rhabdoscelus obscurus (Boisduval, 1835) [Curculionidae] Cane weevil borer	Indonesia (CABI 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW, Qld (APPD 2026).	No. Unlikely to be present on imported pineapple fruit. Eggs are laid in sugar cane stalks and the trunks and leaf bases of palm trees, where the larvae feed (Halfpapp & Storey 1991); these life stages are not known to be associated with pineapple. Adults feed externally on pineapple fruit causing shallow holes in the skin (Waite 1993). They are large, conspicuous beetles (>10 mm) and are likely to be removed during production and inspection processes. Further, they are mobile and unlikely to remain on the fruit during harvesting and packing processes.	Assessment not required	Assessment not required	Assessment not required	No
Sybra alternans Gressitt, 1956 Synonym: *Mycerinopsis alternans* (Wiedemann, 1823) [Cerambycidae] Small longhorn beetle	Indonesia (Gressitt 1956)	No records found	No. Unlikely to be associated with commercially produced fresh mature pineapple fruit. The only record associating *S. alternans* with pineapple fruit was from an experiment where fruit was left outside for one week and allowed to spoil (Sakimura & Linford 1940). This species generally prefers dead and dry stems and branches of host plants. The larvae bore into dry wood to pupate (Chen, Ota & Fonsah 2001). Larvae feed on fermenting and decaying bark and sapwood of host plants (Mondaca, Ramírez & Rothmann 2016; Swezey 1950).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Urophorus humeralis (Fabricius, 1798) Synonym: *Carpophilus humeralis* (Fabricius, 1798) [Nitidulidae] Pineapple sap beetle	India (CABI 2026) Indonesia (CABI 2026; Williams et al. 1983)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Diptera							
Atherigona orientalis Schiner, 1868 [Muscidae] Pepper fruit fly	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; DPIRD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Bactrocera dorsalis (Hendel, 1912) [Tephritidae] Oriental fruit fly	India (CABI 2026) Indonesia (CABI 2026)	Eradicated from mainland Australia (Hancock et al. 2000)	No. Unlikely to be associated with commercially produced fresh mature pineapple fruit. The only record of this species being associated with pineapple in the field is from overripe and possibly damaged pineapples collected in La Réunion, France (Moquet et al. 2021; MPI 2023). Laboratory cage trials using whole and cut fruit have demonstrated that, under experimental conditions, pineapple is a poor host that is unfavourable for larval development (Ibrahim & Rahman 1982; Macion, Mitchell & Smith 1968).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Drosophila ananassae Doleschall, 1858 [Drosophilidae]	India (Singh & Singh 2008) Indonesia (Singh & Singh 2008)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NT, Qld (ABRS 2026; Evenhuis 2016).	No. Unlikely to be associated with commercially produced fresh mature pineapple fruit. This species has been reported on overripe and rotting pineapple fruit (Brncic 1987; McEvey & Schiffer 2015). Although it was reported to be associated with pineapple fruit by Yunus and Ho (1980), the condition of the fruit was not described. Most *Drosophila* species are associated with fungi and decaying fruit and vegetables (Nielsen 2003).	Assessment not required	Assessment not required	Assessment not required	No
Hemiptera							
Aonidiella aurantii (Maskell 1879) [Diaspididae] California red scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspidiotus destructor Cockrell, 1903 [Diaspididae] Coconut scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspidiotus nerii Bouche, 1833 [Diaspididae] Oleander scale	India (García Morales et al. 2026) Indonesia (García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Diaspis boisduvalii Signoret, 1869 [Diaspididae] Boisduval scale	India (CABI 2026; García Morales et al. 2026) Indonesia (García Morales et al. 2026)	Yes (APPD 2026; García Morales et al. 2026).	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Diaspis bromeliae (Kerner, 1778) [Diaspididae] Pineapple scale	India (García Morales et al. 2026) Indonesia (García Morales et al. 2026; Indonesian Ministry of Agriculture 2016)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW, Qld (APPD 2026).	Yes. *Diaspis bromeliae* is a pest of pineapple (Petty, Stirling & Bartholomew 2002). This species prefers to feed on leaves of host plants, but during heavy infestations can also occur on fruit (García Morales et al. 2026; Miller & Davidson 2005; Newett & Rigden 2015; Petty, Stirling & Bartholomew 2002). This species is semitransparent and small (1–2.5 mm) (Watson 2026) and may not be detected and removed during harvest and packinghouse processes.	Yes. The host range of *Diaspis bromeliae* includes orchids, bromeliads and epiphytes, though there is doubt over some host records due to possible confusion with *D. boisduvalii* (Miller & Davidson 2005; Watson 2026). Hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Scales present on discarded pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the Scales Group PRA (DAWE 2021a).	Yes. Assessed in the Scales Group PRA (DAWE 2021a).	Yes (GP, WA)

Pest	Present in India and Indonesia	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
Dysmicoccus brevipes (Cockerell, 1893) [Pseudococcidae] Grey pineapple mealybug	India (García Morales et al. 2026; Ministry of Agriculture & Farmers Welfare 2017) Indonesia (García Morales et al. 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Dysmicoccus neobrevipes Beardsley, 1959 [Pseudococcidae] Grey pineapple mealybug	India (García Morales et al. 2026; Vidya & Bhaskar 2017) Indonesia (García Morales et al. 2026)	No records found	Yes. *Dysmicoccus neobrevipes* occurs on the aerial parts of the pineapple plant including leaves, stems, flowers and fruit (CABI 2026; Martin Kessing & Mau 2007b; Newett & Rigden 2015; Petty, Stirling & Bartholomew 2002). This species is small (1.5 mm long) (CABI 2026) and may not be detected and removed during harvest and packing house processes.	Yes. This species is highly polyphagous with hosts in 41 families and 71 genera (García Morales et al. 2026). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Mealybugs present on discarded pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the mealybugs Group PRA (DAWR 2019).	Yes. Assessed in the mealybugs Group PRA (DAWR 2019).	Yes (GP)

			Potential to enter on pathway				
Pest	**Present in India and Indonesia**	**Present within Australia**	**Potential for importation**	**Potential for distribution**	**Potential for establishment and spread**	**Potential for economic consequences**	**Pest risk assessment required**
Ferrisia virgata (Cockerell, 1893) [Pseudococcidae] Striped mealybug	India (García Morales et al. 2026; Ministry of Agriculture & Farmers Welfare 2017) Indonesia (García Morales et al. 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Geococcus coffeae Green, 1933 [Pseudococcidae] Coffee root mealybug	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NT (ABRS 2026; García Morales et al. 2026).	No. Not known to be associated with pineapple fruit. This species lives underground and occurs on roots of host plants (ABRS 2026; CABI 2026; Kondo & Watson 2022) and is not known to occur on fruit.	Assessment not required	Assessment not required	Assessment not required	No
Lepidosaphes beckii (Newman, 1869) [Diaspididae] Purple scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (APPD 2026; García Morales et al. 2026).	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Lepidosaphes gloverii (Packard, 1869) [Diaspididae] Glover scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (APPD 2026; García Morales et al. 2026).	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Leptocorisa acuta (Thunberg, 1783) [Coreidae] Rice seed bug, Paddy bug	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Melanaspis bromiliae (Leonardi, 1899) Synonym: *Melanaspis bromeliae* Dekle, 1965 [Diaspididae] Ananas scale, brown pineapple scale	India (García Morales et al. 2026)	No records found	Yes. *Melanaspis bromiliae* occurs on fruit and leaves of hosts including pineapple (Danzig & Pellizzari 1998). This species is small (<2 mm) (Deitz & Davidson 1986) and may not be detected and removed during harvest and packinghouse processes.	Yes. This species is oligophagous and mainly occurs on bromeliads and coconut (García Morales et al. 2026), which are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Scales present on pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the Scales Group PRA (DAWE 2021a).	Yes. Assessed in the Scales Group PRA (DAWE 2021a).	Yes (GP)
Melanaspis smilacis (Comstock, 1883) [Diaspididae] Smilax scale	India (García Morales et al. 2026)	No records found	No. Not known to be associated with pineapple fruit. *Melanaspis smilacis* occurs on stems and leaves of hosts (García Morales et al. 2026; Huang & Wang 2016).	Assessment not required	Assessment not required	Assessment not required	No
Milviscutulus mangiferae (Green, 1889) [Coccidae] Mango shield scale	India (García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Paracoccus marginatus Williams & Granara de Willink, 1992 [Pseudococcidae] Papaya mealybug	India (CABI 2026; Lalitha et al. 2015) Indonesia (CABI 2026; Lalitha et al. 2015)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NT, Qld (CABI 2026; García Morales et al. 2026).	Yes. *Paracoccus marginatus* is a pest of pineapple (CABI 2026; Saengyot & Burikam 2011) and can occur on fruit parts of hosts (CABI 2026; Mastoi et al. 2014). This species is small (<3 mm) (García Morales et al. 2026) and may not be detected and removed during harvest and packinghouse processes.	Yes. *Paracoccus marginatus* is highly polyphagous, feeding on plants in 172 genera and 54 families (EFSA Panel on Plant Health (PLH) et al. 2023). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Mealybugs present on discarded pineapple fruit waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes
Parasaissetia nigra (Nietner, 1861) [Coccidae] Nigra scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Phenacoccus madeirensis Green, 1923 [Pseudococcidae] Madeira mealybug	India (CABI 2026; García Morales et al. 2026)	No records found.	Yes. *Phenacoccus madeirensis* is a pest of pineapple (García Morales et al. 2026; Wang et al. 2019; Wei et al. 2019) and can be found on fruit parts of hosts (CABI 2026). This species is small and often co-occurs with other mealybug species, making detection difficult (Wang et al. 2019), and it may therefore escape detection and removal during harvest and packinghouse processes.	Yes. *Phenacoccus madeirensis* is highly polyphagous (Kondo & Watson 2022). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Mealybugs present on discarded pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes (GP, WA)
Phenacoccus solenopsis Tinsley, 1898 [Pseudococcidae] Cotton mealybug	India (CABI 2026; García Morales et al. 2026; Pirithiraj, Soundararajan & Chandrasekaran 2021) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (ABRS 2026; APPD 2026; Dominiak & Gillespie 2020)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

			Potential to enter on pathway				
Pest	**Present in India and Indonesia**	**Present within Australia**	**Potential for importation**	**Potential for distribution**	**Potential for establishment and spread**	**Potential for economic consequences**	**Pest risk assessment required**
Pinnaspis buxi (Bouche, 1851) [Diaspididae] Bamboo mussel-scale	India (CABI 2026; García Morales et al. 2026) Indonesia (García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pinnaspis strachani (Cooley, 1899) [Diaspididae] Cotton white scale, Lesser snow scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (APPD 2026; CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Planococcus citri (Risso, 1813) [Pseudococcidae] Citrus mealybug	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (CABI 2026; García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Planococcus minor (Maskell, 1897) [Pseudococcidae] Pacific mealybug	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW, NT, Qld, SA (APPD 2026; García Morales et al. 2026).	Yes. *Planococcus minor* is a pest of pineapple and is found on all parts of the plant (Jiang et al. 2011). This species has been intercepted at the border in Australia and elsewhere on fruit and foliage of hosts (DAWR 2019; Miller et al. 2014).	Yes. *Planococcus minor* is highly polyphagous (García Morales et al. 2026). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Mealybugs present on pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes (GP, WA)
Prococcus acutissimus (Green, 1896) [Coccidae] Banana shaped scale, slender soft scale	India (García Morales et al. 2026) Indonesia (García Morales et al. 2026)	Yes (Schutze et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Pseudococcus cryptus Hempel 1918 [Pseudococcidae] Cryptic mealybug	India (García Morales et al. 2026) Indonesia (García Morales et al. 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in Qld (APPD 2026).	Yes. *Pseudococcus cryptus* has been reported on pineapple and occurs on aerial parts of plant hosts (García Morales et al. 2026).	Yes. *Pseudococcus cryptus* is a polyphagous species with hosts in 53 families and 94 genera (García Morales et al. 2026). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Mealybugs present on pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes (GP, WA)

Pest	Present in India and Indonesia	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
Pseudococcus jackbeardsleyi Gimpel and Miller 1996 [Pseudococcidae] Jack Beardsley mealybug	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in Qld (APPD 2026; Schutze et al. 2026).	Yes. *Pseudococcus jackbeardsleyi* is a pest of pineapple (Li et al. 2025) and can occur on fruit parts of host plants (Mani et al. 2013). This species been intercepted on horticultural products at the Australian border (DAWR 2019).	Yes. *Pseudococcus jackbeardsleyi* is highly polyphagous with hosts in 122 genera and 55 families (García Morales et al. 2026; Schutze et al. 2026). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Mealybugs present on discarded pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes. Assessed in the mealybug Group PRA (DAWR 2019).	Yes (GP, WA)

Pest	Present in India and Indonesia	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
Pseudaonidia trilobitiformis (Green, 1896) [Diaspididae] Trilobite scale	India (García Morales et al. 2026; Kondo & Watson 2022) Indonesia (García Morales et al. 2026; Kondo & Watson 2022)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NT, Qld (ABRS 2026; APPD 2026).	Yes. *Pseudaonidia trilobitiformis* is a pest of pineapple (CABI 2026; Culik, Ventura & Martins 2009). This species can occur on fruit parts of hosts (Miller & Davidson 2005). Armoured scales, including *P. trilobitiformis,* have sessile life stages that remain attached to host surfaces and are protected by a hard, waxy cover (DAWE 2021a), and therefore may not be detected and removed during harvest and packinghouse processes.	Yes. *Pseudaonidia trilobitiformis* is polyphagous, feeding on plants belonging to 50 families (García Morales et al. 2026; Malumphy 2014). Many hosts are available in Australia. Imported pineapples will likely be distributed throughout Australia via the wholesale and retail trade pathway. Scales present on pineapple fruit or waste could potentially disperse to a new host within close proximity.	Yes. Assessed in the soft and hard scales Group PRA (DAWE 2021a).	Yes. Assessed in the soft and hard scales Group PRA (DAWE 2021a).	Yes (GP, WA)
Pulvinaria psidii Maskell, 1893 [Coccidae] Green scale	India (CABI 2026; García Morales et al. 2026) Indonesia (CABI 2026; García Morales et al. 2026)	Yes (García Morales et al. 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Unaspis citri (Comstock, 1883) [Diaspididae] Citrus snow scale	Indonesia (CABI 2026; García Morales et al. 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW, NT, Qld, SA, Vic (ABRS 2026; García Morales et al. 2026).	No. Not known to be associated with pineapple fruit. *Unaspis citri* is a polyphagous species but is primarily associated with citrus. *Unaspis citri* was assessed previously on pineapples from Malaysia, as pineapple was considered a host (DAFF 2012a). However, a review of the latest scientific literature has found no evidence that *U. citri* feeds or breeds on pineapple. Sources listing pineapple as a host are either unreferenced or refer to a 1976 checklist of Florida pests (Dekle 1976), which does not provide any detail of associated plant part or supporting primary evidence.	Assessment not required	Assessment not required	Assessment not required	No
Lepidoptera							
Agrotis ipsilon (Hufnagel, 1766) [Noctuidae] Black cutworm	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Assara albicostalis Walker, 1863 [Pyralidae] Pyralid moth	India (Robinson et al. 2023) Indonesia (Robinson et al. 2023)	No records found	No. Unlikely to be associated with pineapple fruit. There is little information available on *A. albicostalis*. Pineapple is listed as a host by Robinson, Tuck and Shaffer (1994), possibly based on two collection records on *Ananas* sp. in India and South-East Asia (Robinson et al. 2023). These records are undated and give no information on life stage or whether the moth was reared from the fruit. No primary evidence was found of this species being associated with pineapple fruit.	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Darna pallivitta (Moore, 1877) [Limacodidae] Nettle caterpillar	Indonesia (Peña 2013)	No records found	No. Not associated with pineapple fruit. Eggs are laid on leaves, and larvae feed upon foliage of host plants (Nagamine & Epstein 2007) including pineapple (Hara, Kishimoto & Niino-DuPonte 2013).	Assessment not required	Assessment not required	Assessment not required	No
Darna trima (Moore, 1859) [Limacodidae] Nettle caterpillar	Indonesia (Waterhouse 1993)	No records found	No. Not associated with pineapple fruit. Pineapple is recognised as a host crop in China (Li, Wang & Waterhouse 1997). Eggs and larvae occur on foliage of host plants (CABI 2026; Howard et al. 2001).	Assessment not required	Assessment not required	Assessment not required	No
Eudocima phalonia (Linnaeus, 1763) Synonym: *Eudocima fullonia* (Clerck, 1764) [Erebidae] Fruit-piercing moth	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026; DPIRD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Ischyja manlia (Cramer, 1776) [Erebidae] Fruit-piercing moth	India (Holloway 2005) Indonesia (Gurule et al. 2010)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in Qld (ALA 2026).	No. Unlikely to be present on imported pineapple fruit. Pineapple is reported as a host (Sohn, Choi & Cho 2005), but *I. manlia* is unlikely to be present on exported fruit. The larvae feed on leaves (Kuroko & Lewvanich 1993). The large adult moths (wingspan 10–12 cm) feed on fruit but they are nocturnal feeders (Sohn, Choi & Cho 2005) so are unlikely to be present when the fruit are harvested.	Assessment not required	Assessment not required	Assessment not required	No
Parasa lepida (Cramer, 1799) Synonym: *Latoia lepida* (Cramer, 1799) [Limacodidae] Nettle caterpillar	India (CABI 2026) Indonesia (CABI 2026)	No records found	No. Not associated with pineapple fruit. *Parasa lepida* has been reported as a pest in pineapple plantations (Butani 1975). Eggs are laid on leaves, (Hill 2008), larvae feed on foliage and pupate in the soil or folds of leaves (Butani 1975).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Setothosea asigna (van Eecke, 1929) [Limacodidae]	Indonesia (Robinson et al. 2023)	No records found	No. Not associated with pineapple fruit. *Setothosea asigna* has been reported as a pest of pineapple (Li, Wang & Waterhouse 1997; Petty, Stirling & Bartholomew 2002). Eggs and larvae occur on foliage of host plants (Howard et al. 2001).	Assessment not required	Assessment not required	Assessment not required	No
Spodoptera exigua (Hübner, 1808) [Noctuidae] Beet armyworm	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Spodoptera litura (Fabricius, 1775) [Noctuidae] Tobacco cutworm, Cotton leafworm	India (CABI 2026) Indonesia (CABI 2026)	Yes (ABRS 2026; APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Strymon megarus (Godart, 1824) Synonym: *Thecla basilides* (Geyer, 1837) [Lycaenidae] Bud moth, Pineapple fruit borer	India (Government of India 2022) Indonesia (reported as *Thecla basilides*) (Indonesian Ministry of Agriculture 2016)	No records found	No. Not known to be associated with mature pineapple fruit. Eggs are laid on the pineapple inflorescences at a very early stage of development (de Faria et al. 2009; Harris 1927; Rohrbach & Johnson 2003). Larvae generally feed internally on the inflorescences and developing fruit (de Matos & Reinhardt 2009; Rohrbach & Johnson 2003), but attack vegetative parts (slips and suckers) if flowers or developing fruits are unavailable (de Faria et al. 2009). Feeding produces visible damage (Rohrbach & Johnson 2003) including holes, gum exudation and uneven fruit development (Joy, Anjana & Soumya 2016).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Strymon ziba (Hewitson, 1868) Synonym: *Thecla basilides* (Geyer, 1837) [Lycaenidae] Ziba scrub-hairstreak, Megarus scrub-hairstreak	Indonesia (reported as *Thecla basilides*) (Indonesian Ministry of Agriculture 2016)	No records found	No. Not known to be associated with mature pineapple fruit. Eggs are laid on the pineapple inflorescences at a very early stage of development (Harris 1927; Rohrbach & Johnson 2003). Larvae generally feed internally on the inflorescences and developing fruit (Rohrbach & Johnson 2003), but feed on leaves if flowers or developing fruits are unavailable (Robbins 2010). Feeding produces visible damage (Rohrbach & Johnson 2003).	Assessment not required	Assessment not required	Assessment not required	No
Orthoptera							
Atractomorpha sinensis Bolívar 1905 [Pyrgomorphidae] Pinkwinged grasshopper	India (Gupta & Chandra 2018)	No records found	No. Not associated with pineapple fruit. *Atractomorpha sinensis* feeds on a wide variety of plants, including pineapple (Martin Kessing & Mau 2007a). Grasshoppers feed on leaves, buds and tender stems of plants. Eggs of this species are laid in soil (Martin Kessing & Mau 2007a).	Assessment not required	Assessment not required	Assessment not required	No
Oxya chinensis (Thunberg, 1815) Synonym: *Gryllus chinensis* Thunberg, 1815 [Acrididae] Rice grasshopper	India (CABI 2026) Indonesia (CABI 2026)	No records found	No. Not associated with pineapple fruit. *Oxya chinensis* has been reported as a pest of pineapple (Petty, Stirling & Bartholomew 2002). Eggs are laid in soil (Kalshoven & van der Laan 1981) and active life stages feed on foliage of host plants (Petty, Stirling & Bartholomew 2002).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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**			
Oxya velox (Fabricius, 1787) [Acrididae] Paddy field grasshopper	India (GBIF Secretariat 2026) Indonesia (GBIF Secretariat 2026)	No records found	No. Not associated with pineapple fruit. *Oxya velox* has been reported as a pest of pineapple (Huang & Wang 2016). Eggs are laid in soil (Kalshoven & van der Laan 1981) and active life stages feed on foliage of host plants (Huang & Wang 2016).	Assessment not required	Assessment not required	Assessment not required	No
Teleogryllus mitratus (Burmeister, 1838) [Gryllidae] Field cricket	India (Lu et al. 2018) Indonesia (GBIF Secretariat 2026)	No records found	No. Not associated with pineapple fruit. *Teleogryllus mitratus* has been reported as a pest of pineapple (Huang & Wang 2016). Eggs are laid in soil (Kalshoven & van der Laan 1981) and active life stages feed on roots and foliage of host plants (Kalshoven & van der Laan 1981).	Assessment not required	Assessment not required	Assessment not required	No
Valanga nigricornis (Burmeister, 1838) [Acrididae] Valanga grasshopper	India (CABI 2026) Indonesia (CABI 2026)	No records found	No. Not associated with pineapple fruit. While *V. nigricornis* has been reported as a pest of pineapple (Waterhouse 1993), it feeds on leaves (Waterhouse 1993) and eggs occur in soil (Kalshoven & van der Laan 1981).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Thysanoptera							
Frankliniella schultzei species complex (Trybom 1910) [Thripidae] Cotton thrips, tomato thrips	India (CABI 2026; Ministry of Agriculture & Farmers Welfare 2017) Indonesia (CABI 2026)	No. Only some members of this species complex are known to be present in Australia (De Oliveira, Bitencourt & Silva Junior 2023; Hereward et al. 2017; Singha et al. 2025). Other species in the complex remain absent from Australia. *Frankliniella schultzei* was previously assessed in the thrips Group PRA as a vector of quarantine orthotospoviruses. Therefore, it is also a regulated article for Australia (DAWR 2017).	Yes. Members of the *F. schultzei* species complex are polyphagous pests, causing damage to flowers (Milne & Walter 2000), leaves and young fruit (PHA & NGIA 2011). Members of this species complex have been reported to feed on pineapple (Joy, Anjana & Soumya 2016). Members of the *F. schultzei* species complex are routinely intercepted on horticultural products at the Australian border (DAWR 2017).	Yes. Pineapples will be distributed throughout Australia for sale and could potentially carry thrips adults, eggs and larvae. Members of the *F. schultzei* species complex are polyphagous (CABI 2026) and suitable hosts are available in Australia. Adults, as well as viable immature stages, could potentially be present on imported pineapple, and could disperse to new hosts available in Australia.	Yes. Given the *F. schultzei* species complex is considered a quarantine pest, outcomes of the thrips Group PRA, which are applicable to all quarantine pest thrips, are applied to this species complex (DAWR 2017).	Yes. Given the *F. schultzei* species complex is considered a quarantine pest, outcomes of the thrips Group PRA, which are applicable to all quarantine pest thrips, are applied to this species complex (DAWR 2017).	Yes (GP)
Holopothrips ananasi Costa Lima 1935 [Phlaeothripidae] Pineapple thrips	Indonesia (Indonesian Ministry of Agriculture 2016)	No records found.	No. Unlikely to be present on imported pineapple fruit. While *H. ananasi* has been reported as a pest of pineapple (Sohn, Choi & Cho 2005), it feeds on leaves and flower parts of the plant (Indonesian Ministry of Agriculture 2016; Joy, Anjana & Soumya 2013, 2016).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Thrips hawaiiensis (Morgan, 1913) [Thripidae] Banana flower thrips	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Thrips tabaci Lindeman 1889 [Thripidae] Onion thrips	India (CABI 2026; Joy, Anjana & Soumya 2016) Indonesia (CABI 2026; Sastrosiswojo 1991)	Yes (APPD 2026; Mound, Tree & Paris 2026) *Thrips tabaci* was previously assessed in the thrips Group PRA as a vector of the quarantine virus *Orthotospovirus tomatanuli* (TYRV). Therefore, it is a regulated article for Australia (DAWR 2017).	No. Not associated with pineapple fruit. *Thrips tabaci* is a pest of pineapple, occurring mainly on flowers (Carter 1939; Joy, Anjana & Soumya 2016). However, while this species is a vector of the quarantine virus *Orthotospovirus tomatanuli*, this virus is not associated with pineapple and has not been recorded in India or Indonesia. Therefore, further assessment of *T. tabaci* as a regulated article is not required for the pineapple fruit from India or Indonesia pathways.	Assessment not required	Assessment not required	Assessment not required	No
Trombidiformes							
Dolichotetranychus floridanus (Banks, 1900) [Tenuipalpidae] Pineapple false mite	India (Prabheena & Ramani 2015) Indonesia (Jeppson, Keifer & Baker 1975; Petty, Stirling & Bartholomew 2002)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW, Qld (APPD 2026; Poli 1991).	No. Not associated with pineapple fruit. *Dolichotetranychus floridanus* is associated with leaves (Waite 1993), generally occurring between the leaf bases and near the leaf stems (Joy, Anjana & Soumya 2016; Poli 1991). In high densities they may infest the root primordia and the stem (Poli 1991) but they are not known to infest the fruit.	Assessment not required	Assessment not required	Assessment not required	No
Eutetranychus orientalis (Klein, 1936) [Tetranychidae] Citrus brown mite	India (CABI 2026) Indonesia (CABI 2026)	Yes (CABI 2026; DPIRD 2026; Poli 1991)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Panonychus citri (McGregor, 1916) [Tetranychidae] Citrus red mite	India (CABI 2026) Indonesia (Bolland, Gutierrez & Flechtmann 1998; CABI 2026)	Yes. Under official control (Regional) for WA (DPIRD 2026). Present in NSW (APPD 2026; Gutierrez & Schicha 1983).	No. Not associated with pineapple fruit. Although there is a record of *P. citri* on pineapple leaves in Taiwan (Jiang et al. 2011) this record is considered doubtful as there are no primary records of this species affecting pineapple in Taiwan (Huang & Wang 2016). No subsequent records of this species affecting pineapple have been found.	Assessment not required	Assessment not required	Assessment not required	No
Schizotetranychus asparagi (Oudemans, 1928) Synonym: *Epitetranychus asparagai* Oudemans 1928 [Tetranychidae] Pineapple mite	India (Zeity, Nagappa & Gowda 2016)	No, pest records are invalid. There is a single record from 1968 (Davis 1968), which has not been confirmed (Halliday 2000).	No. Not associated with pineapple fruit. *Schizotetranychus asparagi* is associated with the leaves of pineapple (PHA 2016).	Assessment not required	Assessment not required	Assessment not required	No
Steneotarsonemus ananas (Tryon, 1898) [Tarsonemidae] Pineapple fruit mite	Indonesia (Petty, Stirling & Bartholomew 2002)	Yes. Under official control (Regional) for (DPIRD 2026). Present in Qld (Aguilar-Piedra et al. 2021).	No. Not associated with mature pineapple fruit. *Steneotarsonemus ananas* is associated with floral cavities (Petty, Stirling & Bartholomew 2002), and the bases of developing leaves in the heart of the pineapple plant (Rohrbach & Apt 1986). This pest occurs on developing fruitlets (Tryon 1898), causing visible damage (Petty, Stirling & Bartholomew 2002).	Assessment not required	Assessment not required	Assessment not required	No
BACTERIA							
'*Candidatus* Phytoplasma asteris' Lee *et al.* 2004 [Acholeplasmatales: Acholeplasmataceae] 16SrI-B (Aster yellows group)	India (Baiswar et al. 2010; Kumar, Singh & Lakhanpaul 2012; Mitra et al. 2019) Indonesia (Boa et al. 2010)	No, pest records are invalid. Previous records of presence in Vic. and WA are misidentifications (CABI 2026).	Yes. This phytoplasma has been shown to cause shoot proliferation and witches' broom symptoms in pineapple (Mitra et al. 2019). There are no reports of its association with the fruit. However, phytoplasmas inhabit the phloem sieve-tube and can establish systemic infections (Christensen et al. 2005). As	No. The movement of this phytoplasma from imported fruit to a suitable host would require a phloem-sucking insect vector,	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
			the infection is systemic, this phytoplasma could be present in pineapple fruit.	such as a leafhopper or planthopper (Weintraub & Beanland 2006). Its primary vector is the aster leafhopper *Macrosteles fascifrons* (syn. *M. quadrilineatus*) (CABI 2026; Capinera 2001), which is not present in Australia. Even if other potential leafhopper vectors are present in Australia, they are unlikely to feed on discarded pineapple fruit, as these insects are leaf feeders (Capinera 2001).			
Dickeya zeae Samson *et al*. 2005 Synonym: *Erwinia chrysanthemi* (pineapple strain) Burkholder *et al*. 1953 [Enterobacteriales: Enterobacteriaceae] Bacterial fruit collapse and heart rot of pineapple	India (Hu et al. 2018; Kumar et al. 2015) Indonesia (Aeny et al. 2020; Prasetyo & Aeny 2014)	Yes (APPD 2026; Pritchard et al. 2013; Young et al. 2022)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Pantoea agglomerans (Beijerinck 1888) Gavini *et al.* 1989 Synonyms: *Enterobacter agglomerans* (Beijerinck 1888) Ewin & Fife 1972; *Erwinia herbicola* (Lohins 1911) Dye 1964 [Enterobacterales: Erwiniaceae] Pink disease (note: several distinct bacteria have been implicated as causal agents of pink disease).	India (Dastager et al. 2009) Indonesia (Dewi, Mubarok & Yuniastuti 2019)	Yes (APPD 2026; DPIRD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pantoea ananatis (Serrano 1928) Mergaert *et al.* 1993 Synonym: *Erwinia ananas* Serrano 1928 [Enterobateriales: Erwiniaceae] Bacterial fruitlet brown rot	India (CABI 2026) Indonesia (Nurjanah, Joko & Subandiyah 2017)	Yes (APPD 2026; Pegg & Anderson 2009)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pectobacterium carotovorum (Jones 1901) Waldee 1945 Synonym: *Erwinia carotovora* (Jones 1901) Berge *et al.* 1923 [Enterobacteriales: Pectobacteriaceae]	India (Maisuria & Nerurkar 2013) Indonesia (IAQA 2016)	Yes (APPD 2026; Chandrashekar & Diriwaechter 1983; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pseudomonas marginalis pv. *Marginalis* (Brown 1918) Stevens 1925 [Pseudomonadales: Pseudomonadaceae]	India (CABI 2026) Indonesia (CABI 2026)	Yes (CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

			Potential to enter on pathway				
Pest	**Present in India and Indonesia**	**Present within Australia**	**Potential for importation**	**Potential for distribution**	**Potential for establishment and spread**	**Potential for economic consequences**	**Pest risk assessment required**
FUNGI							
Acremonium polychromum (J.F.H. Beyma) W. Gams Synonym: *Gliomastix polychroma* (J.F.H. Beyma) Matsush. [Hylocraeles: Hypocreaceae]	India (Vu et al. 2019) Indonesia (Kiyuna et al. 2011)	No records found	No. Not associated with pineapple fruit. *Acremonium polychromum* is associated with leaves of pineapple (HerbIMI 2026).	Assessment not required	Assessment not required	Assessment not required	No
Acrostalagmus annulatus (Berk & Broome) Seifert Synonym: *Stilbella annulata* (Berk & M.A. Curtis) Seifert [Hypocreales: incertae sedis]	Indonesia (Farr & Rossman 2026)	No records found	No. Not associated with pineapple fruit. *Acrostalagmus annulatus* is associated with decaying leaves of pineapple (Singh 1980; Stevenson 1975).	Assessment not required	Assessment not required	Assessment not required	No
Alternaria alternata (Fr.) Keissl. [Pleosporales: Pleosporaceae]	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; Le & Gregson 2019)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Annellolacinia dinemasporioides B. Sutton [Incertae cedis: Incertae cedis]	Indonesia (Fröhlich et al. 1993)	No records found	No. Not associated with pineapple fruit. *Annellolacinia dinemasporiodes* occurs on leaves of pineapple (Fröhlich et al. 1993).	Assessment not required	Assessment not required	Assessment not required	No
Aspergillus flavus Link [Eurotiales: Aspergillaceae]	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026; DPIRD 2026; Geiser, Pitt & Taylor 1998)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspergillus fumigatus Fresen. [Eurotiales: Aspergillaceae]	India (Farr & Rossman 2026) Indonesia (Sjamsuridzal & Lisdiyanti 2008)	Yes (APPD 2026; Talbot et al. 2018)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Aspergillus niger Tiegh. [Eurotiales: Ascomycetes]	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026)	Yes (APPD 2026; Cook & Dubé 1989; Shivas 1989; Simmonds 1966; Walker 2001)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Asterinella stuhlmannii (Henn.) Theiss. Synonym: *Asterina stuhlmanii* Henn. [Microthyriales: Microthyriaceae]	India (Farr & Rossman 2026)	No records found	No. Not associated with pineapple fruit. *Asterinella stuhlmannii* is associated with dead or dying leaves of pineapple (Singh 1980; Stevenson 1975).	Assessment not required	Assessment not required	Assessment not required	No
Athelia rolfsii (Curzi) C.C. Tu & Kimbr. [Atheliales: Atheliaceae]	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Beltrania rhombica Penz [Sordariales: Beltraniaceae]	India (Farr & Rossman 2026) Indonesia (Farr & Rossman 2026)	Yes (APPD 2026; Paulus, Gadek & Hyde 2006)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Ceratocystis paradoxa complex (De Seynes) C. Moreau This complex includes the species: *Thielaviopsis paradoxa* (de Seynes) Höhn, synonym *Ceratocystis paradoxa* (De Seynes) C. Moreau; *Thielaviopsis ethacetica* Went, synonym *Ceratocystis ethacetica* (Went) Mbenoun & Z.W. de Beer [Microascales: Ceratocystidaceae] Black rot of pineapple	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; DPIRD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Cladosporium atriellum Cooke [Capnodiales: Cladosporiaceae]	India (Boa & Lenné 1994; HerbIMI 2026)	No records found	No. Not associated with pineapple fruit. There is a single record of this species from pineapple (HerbIMI 2026) but the plant part was not recorded. No other records of association with pineapple have been found.	Assessment not required	Assessment not required	Assessment not required	No

			Potential to enter on pathway				
Pest	**Present in India and Indonesia**	**Present within Australia**	**Potential for importation**	**Potential for distribution**	**Potential for establishment and spread**	**Potential for economic consequences**	**Pest risk assessment required**
Cladosporium herbarum (Pers.) Link [Cladosporiales: Cladosporiaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (Farr & Rossman 2026)	Yes (APPD 2026; Barkat et al. 2016; DPIRD 2026; Farr & Rossman 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Cladosporium oxysporum Beck. & M.A. Curtis [Cladosporiales: Cladosporiaceae]	India (Farr & Rossman 2026) Indonesia (Sugijanto & Dorra 2016)	Yes (APPD 2026; Farr & Rossman 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Colletotrichum coccodes (Wallr.) Hughes [Glomerellales: Glomerellaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026)	Yes (CABI 2026; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Colletotrichum gloeosporioides (Penz.) Penz. & Sacc. Synonym: *Glomerella cingulata* (Stoneman) Spauld & H. Schrenk [Glomerellales: Glomerellaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Colletotrichum truncatum (Schwein.) Andrus & W.D. Moore Synonym: *Colletotrichum capsici* (Syd.) E.J. Butler & Bisby [Glomerellales: Glomerellaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (Crouch et al. 2009; Farr & Rossman 2026)	Yes (APPD 2026; Ash et al. 2014; Lenne 1990; Shivas 1989; Shivas et al. 2016)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Coniella fragariae (Oudem.) B. Sutton Synonym: *Coniella pulchella* Höhn [Diaporthales: Schizopameaceae]	India (Farr & Rossman 2026; HerbIMI 2026)	Yes (DPIRD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Corynespora cassiicola (Berk. & Curtis) Wei [Pleosporales: Corynesporascaceae]	India (CABI 2026; GBIF Secretariat 2026) Indonesia (CABI 2026; GBIF Secretariat 2026)	Yes (APPD 2026; DPIRD 2026; Shivas & Alcorn 1996; Silva et al. 1995; Simmonds 1966)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Curvularia australiensis (Bugnic. Ex M.B Ellis) Manamgoda, Dai & K.D. Hyde Synonym: *Bipolaris australiensis* (Bugnic. ex M.B. Ellis) Tsuda & Ueyama [Pleosporales: Pleosporaceae]	India (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Curvularia eragrostidis (Henn) J.A. Mey Synonyms: *Pseudocochliobolus eragrostidis* Tsuda & Ueyama; *Cochliobolus eragrostidis* (Tsuda & Ueyama) Sivan [Pleosporales: Pleosporaceae]	India (Lenne 1990) Indonesia (Tan, Crous & Shivas 2018)	Yes (APPD 2026; CABI 2026; DPIRD 2026; Lenne 1990)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Curvularia geniculata (Tracy & Earle) Boedijn Synonyms: *Cochliobolus geniculatus* Nelson; *Helminthosporium geniculatum* Tracy & Earle [Pleosporales: Pleosporaceae]	India (CABI 2026) Indonesia (Lenne 1990)	Yes (APPD 2026; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Curvularia lunata (Wakker) Boedijn Synonym: *Cochliobolus lunatus* R.R. Nelson & Haasis [Pleosporales: Pleosporaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Curvularia verruculosa Tandon & Bilgrami ex M.B.Eills Synonym: *Cochliobolus verruculosus* (Tsuda & Ueyama) Sivan [Pleosporales: Pleosporaceae] Post harvest rot	India (Farr & Rossman 2026; Lenne 1990) Indonesia (Lenne 1990)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Dictyothyrina ananasicola N.J. Kapoor & R.L Manjal [Micropeltidales: Micropeltidaceae]	India (Farr & Rossman 2026)	No records found	No. Not associated with pineapple fruit. *Dictyothyrina ananasicola* is associated with leaves of pineapple (Farr & Rossman 2026).	Assessment not required	Assessment not required	Assessment not required	No
Dinemasporium microsporum Sacc. [Chaetosphaeriales: Chaetosphaeriaceae]	India (Pavgi & Gupta 1967)	No records found	No. Not associated with pineapple fruit. *Dinemasporium microsporum* is associated with foliage of pineapple, and causes leaves to become withered and dried (Pavgi & Gupta 1967).	Assessment not required	Assessment not required	Assessment not required	No
Exserohilum rostratum (Drechsler) K.J Leonard & Suggs Synonym: *Setosphaeria rostrata* K.J Leonard [Pleosporales: Pleosporaceae]	India (Richardson 1990) Indonesia (Lenne 1990)	Yes (APPD 2026; Hyde & Alcorn 1993; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fulvia fulva (Cooke) Cif. Synonym: *Passalora fulva* (Cooke) U. Braun & Crous [Mycosphaerellales: Mycosphaerellaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026)	Yes (CABI 2026; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Fusarium chlamydosporum Wollenw. & Reinking Synonym: *Pseudofusarium purpureum* Matsush [Hypocreales: Nectriaceae] Fruit rot Fusariosis	India (Lenne 1990) *F. chlamydosporum* has been reported to cause fusariosis in pineapple in Malaysia (Ibrahim et al. 2016). However, there is no evidence of *F. chlamydosporum* causing fusariosis in pineapple in India.	Yes (APPD 2026; DPIRD 2026) Although *F. chlamydosporum* is present in Australia, there is no evidence of this pathogen causing fusariosis in pineapple in Australia.	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium fujikuroi Nirenberg Synonyms: *Fusarium subglutinans* (Wollenw. & Reinking) P.E. Nelson, Toussoun & Marasas; *Fusarium moniliforme* var. *subglutinans* Wollenw. & Reinking [Hypocreales: Nectriaceae] Fruitlet core rot Fusariosis/fruitlet core rot	India (Farr & Rossman 2026; HerbIMI 2026) Indonesia (Pinaria, Liew & Burgess 2010) *Fusarium fujikuroi* has been reported to cause fusariosis in pineapple in Malaysia (Ibrahim et al. 2016) and fruitlet core rot in Costa Rica (Vignassa et al. 2021). However, there is no evidence of *F. fujikuroi* causing fusariosis or fruitlet core rot in pineapple in India or Indonesia.	Yes (Liew et al. 2016) Although *F. fujikuroi* is present in Australia, there is no evidence of this pathogen causing fusariosis or fruitlet core rot in pineapple in Australia.	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

			Potential to enter on pathway				
Pest	**Present in India and Indonesia**	**Present within Australia**	**Potential for importation**	**Potential for distribution**	**Potential for establishment and spread**	**Potential for economic consequences**	**Pest risk assessment required**
Fusarium incarnatum (Roberge ex Desm.) Sacc. Synonym: *Fusarium semitectum* Berk. & Ravenel [Hypocreales: Nectriaceae] Fruit rot Fusariosis	India (Farr & Rossman 2026; HerbIMI 2026) Indonesia (Pinaria, Liew & Burgess 2010; Stepien, Koczyk & Waskiewicz 2013) *Fusarium incarnatum* has been reported to cause fusariosis in pineapple in Malaysia (Ibrahim et al. 2016). However, there is no evidence of *F. incarnatum* causing fusariosis in pineapple in India or Indonesia.	Yes (Bentley et al. 2007; Shivas 1989) Although *F. incarnatum* is present in Australia, there is no evidence of this pathogen causing fusariosis in pineapple in Australia.	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium oxysporum Schltdl. [Hypocreales: Nectriaceae] Basal rot	India (Farr & Rossman 2026) Indonesia (Tunarsih, Rahayu & Hidayat 2015)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium sacchari (E.J. Butler & Hafiz Khan) W. Gams Synonym: *Gibberella sacchari* Summerell & J.F. Leslie [Hypocreales: Nectriaceae] Pineapple eye rot, fruitlet core rot	India (CABI 2026; HerbIMI 2026)	Yes (APPD 2026; CABI 2026; DPIRD 2026; Summerell et al. 2011)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Fusarium solani (Mart.) Sacc. Synonym: *Neocosmospora solani* (Mart.) L. Lombard & Crous [Hypocreales: Nectriaceae] Fruit rot	India (Farr & Rossman 2026; Sharma, Singh & Jain 1981) Indonesia (Farr & Rossman 2026)	Yes (APPD 2026; Cook & Dubé 1989; Shivas 1989; Simmonds 1966)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Fusarium verticillioides (Sacc.) Nirenberg Synonym: *Fusarium moniliforme* J. Sheld [Hypocreales: Nectriaceae] Fruitlet core rot	India (Farr & Rossman 2026) Indonesia (Maryani et al. 2019)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Lasiodiplodia theobromae (Pat.) Griffon & Maubl. Synonym: *Botryodiplodia theobromae* Pat [Botryosphaeriales: Botryosphaeriaceae] Botryodiplodia rot	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Leptothyrium indicum Pavgi & P. Gupta [Incertae cedis: Incertae cedis]	India (Pavgi & Gupta 1967)	No records found	No. Not associated with pineapple fruit. *Leptothyrium indicum* is associated with foliage of pineapple, and causes leaves to become withered and dried (Pavgi & Gupta 1967).	Assessment not required	Assessment not required	Assessment not required	No
Macrophomina phaseolina (Tassi) Goid. [Botryosphaeriales: Botryosphaeriaceae] Charcoal root rot	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; CABI 2026; Persley, Cooke & House 2010; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Marasmiellus scandens (Massee) Dennis & D.A. Reid [Agaricales: Omphalotaceae]	India (CABI 2026) Indonesia (CABI 2026)	No records found	No. Not associated with pineapple fruit. *Marasmiellus scandens* is common on a wide range of tropical hosts, and has been recorded on pineapple (Singh 1980; Turner 1971). It affects leaves, twigs and branches of host plants (Lim & Sangchote 2003).	Assessment not required	Assessment not required	Assessment not required	No
Marasmius crinis-equi F. Muell. ex Kalchbr. [Agaricales: Marasmiaceae] Horse hair blight	India (CABI 2026) Indonesia (CABI 2026)	Yes (ALA 2026; APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Microdiplodia ananasae S.M. Singh & G.P. Agarwal [Botryosphaeriales: Botryosphaeriaceae]	India (Farr & Rossman 2026)	No records found	No. Not associated with pineapple fruit. This species has been reported on leaves of pineapple (Farr & Rossman 2026).	Assessment not required	Assessment not required	Assessment not required	No
Mucor hiemalis Wehmer [Mucorales: Mucoraceae]	India (Farr & Rossman 2026; HerbIMI 2026)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Myiocopron pandani Höhn. [Microthyriales: Microthyriaceae]	India (Pavgi & Gupta 1967)	No records found	No. Not associated with pineapple fruit. This species is associated with foliage of pineapple, and causes leaves to become withered and dried (Pavgi & Gupta 1967).	Assessment not required	Assessment not required	Assessment not required	No
Neofusicoccum mangiferae (Syd. & P. Syd) Crous, Slippers & A.J.L. Phillips Synonyms: *Fusicoccum mangiferum* (Syd. & P. Syd.) G.I. Johnson, Slippers & M.J. Wingf.; *Nattrassia mangiferae* (Syd. & P. Syd.) B. Sutton & Dyko [Botryosphaeriales: Botryosphaeriaceae]	India (Phillips et al. 2013)	Yes (APPD 2026; Burgess, Barber & Hardy 2005; Farr & Rossman 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Neoscytalidium dimidiatum (Penz.) Crous & Slippers Synonym: *Hendersonula toruloidea* Nattrass [Botryosphaeriales: Botryosphaeriaceae]	India (CABI 2026)	Yes (Ray, Burgess & Lanoiselet 2010)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Nigrospora oryzae (Berk. & Broome) Petch Synonym: *Khuskia oryzae* Huds. [Trichosphaeriales: Trichosphaeriaceae] Storage fruit rot	India (CABI 2026)	Yes (APPD 2026; DPIRD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Paramarasmius palmivorus (Sharples) Antonín & Kolařík Synonym: *Marasmius palmivorus* Sharples [Agricales: Marasmiaceae] Oil palm bunch rot	India (CABI 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	No records found	No. Unlikely to be present on commercially grown pineapple fruit. This species is primarily saprophytic on decaying organic matter, but on hosts such as oil palm it can be pathogenic if a large mass of dead or decaying organic matter is present (Masika et al. 2020). Although it has been reported (as *M. palmivorus*) on pineapple in Malaysia (Singh 1980), evidence for pathogenicity on pineapples is lacking (DOA Malaysia 2009). No other records of association with pineapple fruit have been found.	Assessment not required	Assessment not required	Assessment not required	No
Paramyrothecium roridum (Tode) L. Lombard & Crous Synonym: *Myrothecium roridum* Tode [Hypocreales: Stachybotryaceae]	India (Pavgi & Gupta 1967) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026; Lenne 1990; Shivas & Alcorn 1996)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Penicillium chrysogenum Thom Synonym: *Penicillium notatum* Westling [Eurotiales: Aspergillaceae]	India (CABI 2026; Farr & Rossman 2026; HerbIMI 2026)	Yes (APPD 2026; DPIRD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Penicillium citrinum Thom [Eurotiales: Aspergillaceae]	India (CABI 2026; HerbIMI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Penicillium expansum Link [Eurotiales: Aspergillaceae]	India (CABI 2026; Farr & Rossman 2026; HerbIMI 2026)	Yes (Cook & Dubé 1989; Cunnington 2003; Shivas 1989; Simmonds 1966)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Penicillium glabrum (Wehmer) Westling Synonym: *Penicillium frequentans* Westling [Eurotiales: Aspergillaceae]	India (Farr & Rossman 2026; HerbIMI 2026)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Periconia byssoides Pers. [Pleosporales: Periconiaceae]	India (Lenne 1990)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pestalotiopsis adusta (Ellis & Everh.) Steyaert Synonym: *Pestalotia adusta* Ellis & Everh. [Amphisphaeriales: Pestalotiopsidaceae]	India (Farr & Rossman 2026) Indonesia (Farr & Rossman 2026)	Yes (Fröhlich, Hyde & Guest 1997)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pestalotiopsis mangiferae (Henn.) Steyaert [Amphisphaeriales: Pestalotiopsidaceae]	India (Farr & Rossman 2026; HerbIMI 2026) Indonesia (Suputa et al. 2010)	Yes (APPD 2026; DPIRD 2026; Pitkethley 1998)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Pestalotiopsis microspora (Speg.) Bat. & Peres Synonym: *Pestalotia microspora* Speg. [Amphisphaeriales: Amphisphaeriaceae]	India (Farr & Rossman 2026) Indonesia (Farr & Rossman 2026)	Yes (ALA 2026; Pak et al. 2017)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pestalotiopsis versicolor (Speg.) Steyart [Amphisphaeriales: Pestalotiopsidaceae]	India (HerbIMI 2026) Indonesia (HerbIMI 2026)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phoma comosa Pavgi & Gupta 1967 [Pleosporales: Pleosporomycetidae]	India (Pavgi & Gupta 1967)	No records found	No. Not associated with pineapple fruit. *Phoma comosa* is associated with foliage of pineapple, and causes leaves to become withered and dried (Pavgi & Gupta 1967).	Assessment not required	Assessment not required	Assessment not required	No
Phyllosticta sorghina Sacc. Synonym: *Epicoccum sorghinum* (Sacc.) Aveskamp, Gruyter & Verkley [Pleosporales: Didymellaceae]	India (HerbIMI 2026) Indonesia (HerbIMI 2026)	Yes (HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pleurostoma richardsiae (Nannfeldt) Réblová & Jaklitsch Synonyms: *Phialophora richardsiae* (Nannf.) Conant; *Pleurostomophora richardsiae* (Nannf.) L. Mostert, W. Gams & Crous [Calosphaeriales: Pleurostomataceae]	India (Farr & Rossman 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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			
Pseudopestalotiopsis theae (Sawada) Maharachch., K.D. Hyde & Crous Synonyms: *Pestalotia theae* Sawada; *Pestalotiopsis theae* (Sawada) Maharachch [Amphisphaeriales: Sporocadaceae]	India (Farr & Rossman 2026; HerbIMI 2026)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pseudopithomyces sacchari (Speg.) Ariyaw. & K.D Hyde Synonym: *Pithomyces sacchari* (Speg.) M.B. Ellis [Pleosporales: Didymosphaeriaceae]	India (HerbIMI 2026)	Yes (APPD 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Rhizoctonia solani Kühn Synonym: *Thanatephorus cucumeris* (A.B. Frank) Donk [Cantharellales: Ceratobasidiaceae]	India (Farr & Rossman 2026; Richardson 1990) Indonesia (Lenne 1990)	Yes (APPD 2026; Cook & Dubé 1989; DPIRD 2026; Simmonds 1966)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Rhizopus stolonifer (Ehrenb.) Vuill. Synonym: *Rhizopus nigricans* Ehrenb. [Mucorales: Mucoraceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Dewayani et al. 2021)	Yes (APPD 2026; Shivas 1989; Simmonds 1966)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Spegazzinia sundara Subram [Pleosporales: Didymosphaeriaceae]	India (Farr & Rossman 2026)	No records found	No. Not associated with pineapple fruit. This species is associated with dead leaves of pineapple (Farr & Rossman 2026).	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Spegazzinia tessarthra (Berk & M.A. Curtis) Sacc. [Pleosporales: Didymosphaeriaceae]	India (Farr & Rossman 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Stachylidium bicolor Link [Incertae sedis: Incertae sedis]	India (Farr & Rossman 2026)	Yes (APPD 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Talaromyces funiculosus (Thom) Samson, Yilmaz, Frisvad & Seifert Synonym: *Penicillium funiculosum* Thom [Eurotiales: Trichocomaceae] Black spot of pineapple, Fruitlet core rot	India (Farr & Rossman 2026; HerbIMI 2026)	Yes (APPD 2026; Farr & Rossman 2026; HerbIMI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Wallrothiella bromeliae Rehm [Amplistromatales: Amplistromataceae]	India (Farr & Rossman 2026)	No records found	No. Not associated with pineapple fruit. This species is associated with the leaves of pineapple (Padwick & Merh 1943).	Assessment not required	Assessment not required	Assessment not required	No
OOMYCETES							
Phytophthora cinnamomi Rands [Peronosporales: Peronosporaceae] Green fruit rot, fungal heart rot, root rot	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; CABI 2026; Pegg & Anderson 2009; Pegg 1993)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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 meadii McRae [Peronosporales: Peronosporaceae] Heart rot, Rubber leaf drop, top rot, stem rot, fruit rot	India (CABI 2026) Indonesia (CABI 2026)	No. Declared absent (Australian Government Department of Agriculture 2015).	No. Unlikely to be associated with pineapple fruit. Although there is a single record of *P. meadii* on pineapple in 1929 (Sideris 1929), recent reports do not consider *P. meadii* a cause of *Phytophthora* rot in pineapple (DeFrank et al. 1999; Green & Nelson 2015). Given there are no subsequent records of *P. meadii* associated with pineapple, the 1929 record is considered doubtful (CABI 2026).	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora nicotianae Breda de Haan Synonym: *Phytophthora nicotianae* var. *parasitica* (Dastur) G.M. Waterh [Peronosporales: Peronosporaceae] Heart rot	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; CABI 2026; Erwin & Ribeiro 1996; Pegg 1993; Walker & Morey 1999)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Phytophthora palmivora (E.J. Butler) E.J. Butler [Peronosporales: Peronosporaceae] Heart rot	India (CABI 2026; Jayalakshmi et al. 2017) Indonesia (CABI 2026; Santoso et al. 2015)	Yes (APPD 2026; Barber et al. 2013; CABI 2026; Stukely 2012)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pythium aphanidermatum (Edson) Fitzp. [Peronosporales: Pythiaceae] Heart rot	India (CABI 2026; Farr & Rossman 2026) Indonesia (CABI 2026; Farr & Rossman 2026)	Yes (APPD 2026; Cook & Dubé 1989; Male & Vawdrey 2010; Persley, Cooke & House 2010)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Pythium arrhenomanes Drechsler [Peronosporales: Pythiaceae] Heart Rot	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pythium myriotylum Drechsler [Peronosporales: Pythiaceae]	India (CABI 2026) Indonesia (CABI 2026)	Yes (APPD 2026; CABI 2026; Persley, Cooke & House 2010; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pythium splendens Hans Braun Synonym: *Globisporangium splendens* (Braun) Uzuhashi, Tojo & Kakish [Peronosporales: Pythiaceae] Root rot	India (Farr & Rossman 2026)	Yes (APPD 2026; Sampson & Walker 1982)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Pythium vexans De Bary [Peronosporales: Pythiaceae]	India (CABI 2026; Farr & Rossman 2026) Indonesia (Santoso et al. 2015)	Yes (CABI 2026; Shivas 1989)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
VIRUSES							
Ampelovirus duananas [*Martellivirales*: *Closteroviridae*] Former species name: *Pineapple mealybug wilt-associated virus 2* Common name: Pineapple mealybug wilt-associated virus 2 (PMWaV-2)	Indonesia (Valentino et al. 2023)	Yes (DAWR 2019; Gambley et al. 2008)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Pest	Present in India and Indonesia	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
Ampelovirus unananas [*Martellivirales*: *Closteroviridae*] Former species name: *Pineapple mealybug wilt-associated virus 1* Common name: Pineapple mealybug wilt-associated virus 1 (PMWaV-1)	India (Sether et al. 2001) Indonesia (Valentino et al. 2023)	Yes (DAWR 2019; Gambley et al. 2008)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Orthotospovirus capsiciflavi [*Elliovirales*: *Tospoviridae*] Former species name: *Capsicum chlorosis orthotospovirus* Common name: Capsicum chlorosis virus (CaCV)	India (CABI 2026)	Yes (CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No
Orthotospovirus tomatomaculae [*Elliovirales*: *Tospoviridae*] Former species name: *Tomato spotted wilt orthotospovirus* Common name: Tomato spotted wilt orthotospovirus (TSWV)	India (CABI 2026) Indonesia (CABI 2026)	Yes (CABI 2026)	Assessment not required	Assessment not required	Assessment not required	Assessment not required	No

Appendix C: Potential components of a systems approach to manage hard scales, mealybugs and thrips on decrowned pineapples from India and Indonesia

The department considers that a systems approach, combined with an operational system, could be used to reduce the risks of quarantine hard scales, mealybugs and thrips on fresh decrowned pineapple fruit from India and Indonesia to achieve the ALOP for Australia.

A systems approach integrates different risk management measures, at least two of which act independently, which cumulatively achieve the required level of phytosanitary protection. The requirements of a systems approach are set out in ISPM 14: *The use of integrated measures in a systems approach for pest risk management* (FAO 2019c).

Potential components of a systems approach to manage the risks associated with hard scales, mealybugs and thrips on the decrowned pineapples from India and Indonesia pathway are outlined in Table C.1. A brief explanation of how these components contribute to risk reduction and provide assurance that the systems approach is effectively implemented is also provided.

Table C.1 Potential components of a systems approach for hard scales, mealybugs and thrips on the decrowned pineapples from India and Indonesia pathways

Example Component	How the component contributes to risk reduction and assurance
Registration and auditing of orchards and packing houses	Registration and auditing by the NPPO provide assurance that pineapple fruit for export are only sourced from approved plantations and packing houses, and have been produced in accordance with the systems approach.
Pest-free planting material	Using clean, pest-free planting material that has been treated and/or inspected to ensure it is free of hard scales, mealybugs and thrips of quarantine concern for Australia helps to minimise the introduction and prevalence of these pest groups in the crop.
Integrated Pest Management (IPM) and farm hygiene practices	Good farm hygiene and IPM practices help reduce pest prevalence and the risk of pest establishment by removing pest reservoirs (e.g., weeds, ant nests) and applying natural pest control or cultural activities (e.g., release of biological control agents, intercropping, crop rotation). These practices reduce pest pressure in the plantation and lower the risk of fruit infestation.
Pest monitoring and management practices in the plantation	Effective pest monitoring and timely control measures minimise the risk of scales, mealybugs and thrips of quarantine concern for Australia being present on exported fruit, particularly where populations may increase rapidly during susceptible crop growth stages or under conditions favourable to pest development. Maintaining low pest pressure at harvest improves the effectiveness of post-harvest processes and reduces the likelihood of pests remaining on fruit intended for export.
Fruit processing under secure conditions	Processing only one type of fruit for a single market (i.e., decrowned pineapples for export to Australia) at a time prevents contact with other fruit that may carry pests, reducing the risk of cross-contamination.
Fruit sorting	Sorting fruit at harvest or upon arrival at the packing house reduces the pest load entering the packing process and supports the effectiveness of export-grade processing. Removing infested fruit, either in the field or at a designated receival area that is separate from the cleaning and packing areas, reduces the risk of pests contaminating fruit intended for export.
Fruit cleaning	Cleaning fruit reduces the risk of hard scales, mealybugs or thrips of quarantine concern for Australia being present on exported fruit. Pineapples require a cleaning technique that physically dislodges pests of concern, including those in cryptic or sheltered locations (i.e., bracts and crevices). Examples of suitable cleaning methods include washing, brushing, high-pressure air or high-pressure water or a combination of these techniques.

Example Component	How the component contributes to risk reduction and assurance
Post-cleaning check to verify effective cleaning	Using an appropriate method to check the fruit after cleaning for pests provides assurance that the cleaning process effectively removed hard scales, mealybugs and thrips of quarantine concern for Australia from the surface of the fruit. Detection of pests at this stage indicates that further corrective action is required before fruit proceeds to export.
Internal inspection of fruit	Inspecting fruit, using an appropriate method (e.g., fruit cutting) provides an additional verification step to detect internal pests or pests in sheltered areas of the fruit (i.e., in a blossom cup or crevice of a pineapple fruit) that may not be readily observed during external inspection processes.
Fruit grading	Fruit grading reduces risk by ensuring that only fruit meeting export quality standards are packed for export. Fruit showing signs of pest damage, physical injury or defects that could harbour pests are removed, reducing the risk of infested fruit entering the export pathway.
Safeguarding and secure packaging of fruit	Safeguarding fruit after processing and the use of clean, secure packaging maintains the phytosanitary status of fruit by preventing reinfestation prior to export.
Phytosanitary inspection, certification and management of non-compliance	Phytosanitary inspection and certification verify that fruit are free from pests of quarantine concern for Australia and the consignment meets import requirements. Appropriate management of non-compliance ensures that any identified issues are addressed prior to export, supporting the integrity of the overall systems approach.

Glossary, acronyms and abbreviations

Term or abbreviation	Definition
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 2026a).
Agvet chemicals	Agricultural and veterinary chemicals, including a range of products developed to protect crops, livestock and domestic animals; safeguard our environment from invasive weeds and pests; and meet consumer needs for things such as household insecticides and pool and spa chemicals.
APEDA	India's Agricultural and Processed Food Products Export Development Authority.
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 2026a).
Arthropod	The largest phylum of animals, including the insects, arachnids and crustaceans.
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.
Basal leaves	Leaves associated with the peduncle, located at the bottom of the fruit.
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.
Bract	On a mature pineapple fruit, the bract is the leaf spike covering the lower portion of each eye on the surface of the fruit.
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 2026a).
Control (of a pest)	Suppression, containment or eradication of a pest population (FAO 2026a).
Crawler	An intermediate, mobile nymph stage of certain arthropods.
Crown	All vegetative plant material located above the pineapple fruit.
DAFW	India's Department of Agriculture and Farmers Welfare
DPPQS	India's Directorate of Plant Protection Quarantine and Storage

Term or abbreviation	Definition
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 2026a).
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 2026a).
Establishment (of a pest)	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO 2026a).
FAO	Food and Agriculture Organization of the United Nations
Fruitlet	An individual unit of the pineapple fruit formed from a single flower, visible on the fruit surface as one 'eye'.
Fresh	Living; not dried, deep-frozen or otherwise conserved (FAO 2026a).
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.
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 2017), 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).
GGP	PT Great Giant Pineapple, a pineapple producing company in Indonesia.
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 2026a).
HPA	High-pressure air.
Import permit	Official document authorising importation of a commodity in accordance with specified phytosanitary import requirements (FAO 2026a).
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 2026a).
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 2026a).
Intended use	Declared purpose for which plants, plant products or other articles are imported, produced or used (FAO 2026a).

Term or abbreviation	Definition
Interception (of a pest)	The detection of a pest during inspection or testing of an imported consignment (FAO 2026a).
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 2026a).
Introduction (of a pest)	The entry of a pest resulting in its establishment (FAO 2026a).
IQA	Indonesian Quarantine Authority
Larva	A juvenile form of animal with indirect development, undergoing metamorphosis (for example, insects or amphibians).
Lot	A number of units of a single commodity, identifiable by its homogeneity of composition, origin etc., forming part of a consignment (FAO 2026a). Within this report a 'lot' refers to a quantity of fruit of a single variety, 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 Organization (NPPO)	Official service established by a government to discharge the functions specified by the IPPC (FAO 2026a).
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 a nymph's form is already that of the adult in general, but lacking wings.
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 2026a).
Pathogen	A biological agent that can cause disease to its host.
Pathway	Any means that allows the entry or spread of a pest (FAO 2026a).
Pest	Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products (FAO 2026a).
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 2026a).
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 2026a).
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 2026a).
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 2026a).

Term or abbreviation	Definition
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 2026a).
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 2026a).
Pest risk management (for quarantine pests)	Evaluation and selection of options to reduce the risk of introduction and spread of a pest (FAO 2026a).
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 2026a).
Phytosanitary action	An official operation, such as inspection, testing, surveillance of treatment, undertaken to implement phytosanitary measures or to enable phytosanitary certification (FAO 2026a).
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 2026a).
Phytosanitary certification	Use of phytosanitary procedures leading to the issue of a phytosanitary certificate (FAO 2026a).
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 2026a). 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 2026a).
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 2026a).
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 2026a).
Production site	In this report, a production site is a continuous planting of *Ananas comosus* 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.
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 2026a).
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 2026a).
Ratoon crop	A new crop that regrows from the remnants of a harvested crop.
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 2026a).
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 2026a).
Regulated pest	A quarantine pest or a regulated non-quarantine pest (FAO 2026a).

Term or abbreviation	Definition
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.
Slip	Leafy shoot that grows from the base of a pineapple fruit.
Spread (of a pest)	Expansion of the geographical distribution of a pest within an area (FAO 2026a).
SPS Agreement	WTO Agreement on the Application of Sanitary and Phytosanitary Measures.
Stakeholders	Government agencies, individuals, community or industry groups or organisations, whether in Australia or overseas, including the proponent/applicant for a specific proposal, who have an interest in the policy issues.
Sucker	A shoot that grows from the base of a pineapple stem can develop into a new plant.
Surveillance	An official process whereby information on pests in an area is obtained through general surveillance, specific surveillance or a combination of both (FAO 2026a).
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.
Trash	Soil, animal matter, splinters, twigs, stems, seeds, leaves and other plant material, other than fruit as defined in the scope of this risk analysis.
Treatment (as a phytosanitary measure)	Official procedure for killing, inactivating, removing, rendering infertile or devitalising regulated pests (FAO 2026a).
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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