

# Plan and Protect: Steps to safeguard your ginger farm against pests and diseases

A guide to farm biosecurity measures to reduce the risks of pests and diseases impacting production.

Plant Protection Series – Volume 1

Image by Australian Ginger



Front cover and back cover images by Australian Ginger.



Plant Health Australia is the national coordinator of the government-industry partnership for plant biosecurity in Australia. As a not-for-profit company, PHA services the needs of Members and independently advocates on behalf of the national plant biosecurity system.

PHA's efforts help minimise plant pest impacts, enhance Australia's plant health status, assist trade, safeguard the livelihood of producers, support the sustainability and profitability of plant industries and the communities that rely upon them, and preserve environmental health and amenity.

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Australian Ginger, also known as the Australian Ginger Industry Association (AGIA), is the peak body for Australian ginger growers. Australian Ginger represents the Australian ginger industry as a member of PHA.

[www.australianginger.org.au](http://www.australianginger.org.au)



AgriFutures Australia is a Research and Development Corporation (RDC) that represents a range of industries including the Australian ginger industry, for which it aims to deliver research and innovation to benefit farmers and producers.

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This publication is designed for use by farmers and their staff, contractors, researchers and consultants working in the ginger industry. It shows simple procedures that you can use to minimise the risk of introducing and spreading weeds, pests and diseases onto properties.

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# Easy ways to protect your farm

Pests and diseases can severely affect your farm. It makes good business sense to reduce the risk by taking measures to improve biosecurity.

# Easy ways to protect your farm

## Map your property

- ✓ Design a property map and provide copies for visitors, including utility and service providers
- ✓ Provide utility and service providers a specific map that outlines the route you wish them to take to access key infrastructure such as power poles located on your property

## Farm Inputs

- ✓ Use pest-free and disease-free ginger propagation material obtained through the Australian Ginger Industry Association's Tissue Culture Scheme
- ✓ Record the source of seed and planting material
- ✓ Source planting material and seeds for alternative crops from reputable suppliers
- ✓ Source compost, mulches and fertilisers that meet Australian Standards
- ✓ Record the source of fertilisers as well as their delivery and application dates
- ✓ Maintain records of when and where batches of inputs such as mulches are applied on your property
- ✓ Monitor and protect water sources
- ✓ Ensure that machinery and equipment coming onto your property is clean

## Production Practices

- ✓ Monitor crop and fallow areas for pests, diseases and weeds
- ✓ Plough high priority areas with low pest pressure first
- ✓ Do not transfer soil from one block or paddock to another

## People, Vehicles and Equipment

- ✓ Put up biosecurity signs at farm entrances
- ✓ Provide visitors with access to handwashing facilities, hand sanitiser, gloves, overalls and disinfectant foot baths
- ✓ Use foot baths when moving between production areas
- ✓ Ensure anyone recently returned from overseas has clean footwear and clothing before entering the farm
- ✓ Ensure clothing and footwear is free of soil or plant matter on entering or leaving the farm
- ✓ Clean and disinfect tools between uses
- ✓ Limit visitor access to production areas
- ✓ Provide a designated parking area for visitors
- ✓ Ensure visitors stick to paths and designated roadways
- ✓ Where possible, use dedicated farm vehicles to transport visitors around your property
- ✓ Provide a wash-down facility to clean vehicles

### ***Feral Animals, Weeds and Livestock***

✓	Consider exclusion fencing and other controls for feral pigs and other animals
✓	Develop an integrated wild and feral animal control program
✓	Control volunteer plants that can harbour pests and diseases
✓	Manage weeds with a combination of practices
✓	Regularly inspect your property for the presence of diseases, pests, weeds and ferals – particularly after landscaping, fires, floods and storms
✓	Record the source of livestock and use holding paddocks

### ***Farm Outputs***

✓	Dispose of general waste and waste responsibly
✓	Ensure waste disposal sites are located away from production areas
✓	Ensure runoff water from vehicles and equipment wash down areas drains away from production areas
✓	Remove any infected plant material and waste from production areas
✓	Contractors and visitors made aware if property has a declared or notifiable pest

### ***Train, Plan and Record***

✓	Train staff and visitors on biosecurity requirements.
✓	Learn about exotic pest threats and teach your staff and contractors.
✓	Report any unusual pests and diseases and make sure your staff know how to as well.
✓	Undertake training in the use of agricultural and veterinary chemicals and always follow label instructions.
✓	Maintain appropriate records for your property, for example, chemical treatments used, a register of propagation material and a visitors record
✓	Record the source of other farm inputs such as sawdust, manure and compost
✓	Record where all farm outputs are sent to
✓	Develop an on-farm biosecurity plan and share plan with staff and work through improvements
✓	Adhere to best practice standards and protocols including Freshcare

## Map your property

A **property map** is an important tool that provides a visual representation of production areas and entry points on your property. Your property map can also be given to visitors so they can adhere to your requirements. You can draw one by hand or use satellite imaging from the internet to help with the process.

When creating a map of your property, consider including the features below:

Where entry can be gained to your property
Parking areas on your property
House and office areas
Where roadways are situated
Sheds, dams, silos, machinery parking areas and any other significant structure
Where production areas are
Any old or existing hazards (e.g. old or existing dumps)
Any significant weed or pest infestations
Water ways
Location of designated clean down/wash down facilities
Location of power poles and other utility fixtures

If property is mixed farming with stock:

Stockyards
Stock quarantine area
Drought or fodder feeding points
Watering points

A property map also allows you to identify zones on your property that might require different levels of activity.

Zoning is the division of the property into separate areas and the management of movement between and within these zones. A three-zone system helps to manage movement, create separation between different areas of farming activities and restrict movement onto and off your farm.

Cool zone (e.g. House)	Minimum to no contact with crop or animals on property. Low requirement to restrict access.
Warm zone (e.g. Sheds, silos, roadways, stockyards)	Some contact with crops or animals but can be managed by having gravelled areas or extra surveillance.
Hot zone (e.g. the production areas of the property)	Significant restricted access. Only people and vehicles that need to enter these areas should have access.

It is also important to consider access for utility and service providers. It is a good idea to have a specific property map to give to utility providers and their contractors, which outlines the location of power poles and suggested routes for the works to take to gain access. You should consider where the poles/utility fixtures are location and associated risks. For example, poles located within a cropped paddock may be more prone to associated vehicle and machinery biosecurity risks, as opposed to poles near the sheds. Have copies of this specific map printed off to help show the route you wish the site visitor to take. You may also be able to scan this and email it to the provider prior to their visit, along with your biosecurity expectations.

### Recommendations

- ✓ Design a property map and provide copies for visitors, including utility and service providers
- ✓ For utility and service providers, provide a specific map that outlines the route you wish them to take to access key infrastructure such as power poles located on your property

**Property Map**

**Date:**

# Farm Inputs

Ginger farms use a variety of inputs including planting material such as seeds and plantlets (plugs), fertiliser, compost, mulches, manure, water as well as machinery and equipment.

**Almost anything moved onto your property can be a potential source of pests and diseases.**

It is recommended to monitor all materials that enter your property to limit pests and disease entering your farm.

### Recommendations

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- ✓ Monitor all materials that enter the property
- 

## Seeds and Planting Material

Ginger planting material includes seeds, tissue culture plantlets (plugs) and rhizome pieces. To reduce the risk of introduction and spread of pests and diseases, it is essential to source ginger planting material from reputable suppliers. The Australian Ginger Industry Association (AGIA) operates a Tissue Culture Scheme to enable ginger growers to obtain clean, pest and disease-free ginger plantlets as a basis for ginger production. AGIA members are advised to refresh their planting material from tissue culture at least annually. To reduce the risk of spreading pests and diseases, the public are encouraged not to plant ginger purchased from shops or markets.

Infected planting material presents a risk to your business. Often, you will not be able to assess the quality of planting material just by looking at it. Plants that appear to be clean and healthy may still contain pests and disease.



Figure 1. Image by Australian Ginger.

**Never use poor quality or diseased planting material as it can infect your entire crop.**

Growers are advised to record the source of seed and planting material and to maintain a record of batch identifiers for plugs obtained from suppliers to allow the origin of diseases, pests or weeds to be traced if an outbreak occurs.

### Recommendations

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- ✓ Use pest-free and disease-free ginger propagation material obtained through the Australian Ginger Industry Association's Tissue Culture Scheme
  - ✓ Refresh planting material from tissue culture at least annually
  - ✓ Record the source of seed and planting material
-

## About the Australian Ginger Tissue Culture Scheme

The Australian Ginger Industry Association (AGIA) operates a Tissue Culture Scheme to enable ginger growers to obtain clean, pest and disease-free ginger plantlets for production. Tissue culture production is advantageous due to being a sterile process that enables the elimination of pests and diseases including nematodes, insects, bacteria and fungi (Australian Ginger, 2024). Hence, the Scheme functions to meet the Australian ginger industry's need for clean ginger to limit pest and diseases issues (Australian Ginger, 2017). The Scheme is fully funded by AGIA with oversight from their Tissue Culture Sub-Committee.



**Figure 2.** A ginger plantlet (or plug). Image by Sharon Hamill published in Australian Ginger E-News December 2024.

## Knowledge Bite

### Alternative Crops

Several alternative crops are also grown in rotation with ginger for example, winter green manure crops such as sugarcane, pasture species, oats (*Avena sativa*), *Brassica* spp., soybean (*Glycine max*) and forage sorghum (Smith, Smith & Stirling, 2011). The use of alternative cropping provides multiple benefits to ginger production, including improvement of soil health by increasing soil organic carbon levels and reduction of host specific species of pests and pathogens (Pattison et. al, 2017), which leads to reduced pesticide use. To avoid introducing pests and diseases, purchase planting material and seeds that are free of pests and diseases and are obtained from reputable suppliers. Fallow periods can also be used within a rotation to reduce pests and disease by limiting their access to alternative hosts.

#### Recommendations

- ✓ Source planting material and seeds for alternative crops from reputable suppliers

### Alternative Crops and Biofumigation to Manage Pests and Diseases of Ginger

Growing certain plant species within a crop rotation can also offer the potential benefit of biofumigation to reduce pests and disease in your soil. Biofumigation uses the ability of plants, most commonly Brassicas, to produce chemicals called glucosinolates that decompose to become organic compounds that are toxic to soil-borne pests and diseases including bacteria, fungi and nematodes (Bandyopadhyay & Khalko, 2016; Praneetha et. al, 2025).

Biofumigation involves growing certain Brassica cultivars (i.e., mustard) which are then mulched into the soils to release toxic gas that kill pests and diseases in the soil. In addition to reducing soil-borne pests and diseases, the Brassica biomass is a valuable source of organic matter that supports plant growth by increasing soil nutrients including sulphur and nitrogen (Bandyopadhyay & Khalko, 2016; Praneetha et. al, 2025).

In ginger, biofumigation has been used to manage diseases such as bacterial wilt and soft rot (Bandyopadhyay & Khalko, 2016). In India, mustard plants are also used to reduce rhizome rot of ginger caused by *Pythium* spp. (Banjara, Chaudhary & Aditya, 2024). It is also important to note that some mustard cultivars can be a host of plant-parasitic nematodes, for this reason, if nematodes are present in your soil, a non-host biofumigant species should be used (Rudolph & Pfeufer, 2021). When considering the use of alternate crops and biofumigation for your property, speak to your agronomist about an optimal crop rotation that suits your needs.

## Fertiliser

Although fertilisers are an important input for maintaining crop yields they also have the potential to introduce diseases, pests and weeds onto your property. For this reason it is recommended to monitor all fertiliser that enter your property.

Organic fertilisers such as manure and compost can be sources of weeds if they are not composted thoroughly.

**Reduce the risk of purchasing contaminated or non-compliant fertiliser by ensuring that the supplier is following the Fertiliser Industry Federation of Australia Purchasing Code of Practice or has equivalent quality controls in place.**

It is also recommended that producers record the source of organic fertilisers, delivery and application dates so that any problems that may occur can be traced back to their point of origin.

### *Recommendations*

- 
- ✓ Record the source of fertilisers as well as their delivery and application dates
  - ✓ Use certified fertiliser
- 

## Sawdust, Manure and Compost

Sawdust mulch is used in ginger seed crops and was identified as early as the 1970s as an effective means of controlling pests and disease including root-knot nematodes (Colbran, 1974). Sawdust used on top of the planting beds also reduces runoff, maintains bed height, and increases soil organic matter all of which protect and improve your soil structure and nutrition and limits the chance of runoff entering nearby waterways.

Poultry or chicken manure may also be added to the surface of ginger growing beds to improve soil structure as well as to provide a source of nutrients such as nitrogen, phosphorous and potassium to support plant growth. An example application rate of poultry manure is 70m<sup>3</sup>/ha (Smith, Smith & Stirling, 2011).

When buying compost from suppliers, ask for testing history or a quality assurance certificate. It is also a good idea to record when batches were used on your farm and where they were applied. If you are making your own compost, do not include plant material that you know comes from diseased plants or animals.

### Recommendations

- ✓ When acquiring compost and mulches, look for compliance with Australian Standards
- ✓ Maintain records when batches are used and where they are applied on your property

## Water

Managing, monitoring and protecting water sources is important in safeguarding your and other growers' properties against pest and disease outbreaks. For example, to prevent the spread of Pythium soft rot (*Pythium myriotylum*), which can be spread both in water and in soil, it is recommended to ensure irrigation runoff is not directed to adjacent paddocks and that runoff from the cleaning of vehicles and machinery is directed away from production areas (Smith and Abbas, 2011).

It is compulsory for all members of the Australian Ginger Industry Association (AGIA) to also be members of [Freshcare](#). Businesses seeking certification under Freshcare's Food Safety and Quality (FSQ) standard must meet several requirements which include measures that govern water sources and infrastructure. Examples of these measures include, but are not limited to, identification, management and maintenance of water sources and infrastructure, design of draining systems to prevent pests entering production areas and post-harvest facilities as well as risk assessments for all pre-harvest water (Freshcare, 2021).

### Recommendations

- ✓ Monitor and protect sources of water

## Machinery and Equipment

Machinery and equipment also have the potential to introduce diseases, pests and weeds onto your property. It is therefore recommended to ensure that all machinery and equipment that enters your property is free of soil, pests, weeds and weed seeds. For more information, refer to the **People, Vehicles and Equipment** section.



**Figure 3.** Machinery and equipment also have the potential to introduce diseases, pests and weeds onto your property.

### Recommendations

- ✓ Ensure that machinery and equipment coming onto your property is clean

# Production Practices

You can reduce the risk of spreading pests and diseases by using simple biosecurity measures as part of your everyday farm management practice.

## Monitoring crops and fallow areas for pests, diseases and weeds

Monitoring your crops and fallow areas provides the best protection against new pests, diseases and weeds. Any unusual pests or symptoms should be reported. If you or any of your staff notice unusual pests, diseases or crop symptoms, contact your local agronomist or AGIA for advice. For more information on reporting, refer to **Plant Protection Series Volume 2 – Pests and Pathogens of Ginger**.

Monitoring the health of your crop is a fundamental part of farm management and gives the best chance of spotting a new pest soon after it arrives. The earlier you or your staff report or respond to an issue the better chance you have of limiting its impact.

Pay particular attention to high-risk areas where pests are most likely to enter and establish on your property such as cane loading areas (sidings or pads), near wash-down areas, and along public roads, creeks, drainage lines and railways.

Fallow areas should also be monitored for signs of new weeds, or volunteer plants that can shelter pests between cane growing periods.

**Finding a new pest or disease on your property early gives you the best chance of controlling it.**

### *Recommendations*

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- ✓ Monitor crop and fallow areas for pests, diseases and weeds
- 

## Soil

To prevent the spread of soilborne pests and diseases, including those that affect ginger, which may be spread in infested soil, it is important not to transfer soil from one block, paddock or farm to another. For example, Pythium soft rot (*Pythium myriotylum*) and nematodes can be spread in soil, including soil attached to farm machinery such as tractors (Smith & Abbas, 2011). For this reason, it is also good practice to plough production areas with lower pest and disease pressure first to minimise the risk of moving pests and diseases from high pest areas to other low pest areas.

### *Recommendations*

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- ✓ Plough higher priority areas first
  - ✓ Do not transfer soil from one block or paddock to another
-

## People, Vehicles and Equipment

Pests and weeds can spread in soil and plant material on vehicles, equipment, footwear and clothing. For this reason, any visitors, vehicles, equipment or machinery coming on to the property can introduce pests and weeds onto your farm.

### People

Make sure that staff, contractors and visitors know about your biosecurity requirements. Provide visitors access to appropriate hygiene supplies including handwashing facilities, hand sanitiser, gloves, overalls and disinfectant foot baths. If possible, provide visitors with boot covers and protective clothing if they are required to move around contaminated areas.

**To ensure your property does not become a source of pests for other growers, inform visitors of any declared or notifiable pests present on your farm to prevent their spread.**



Figure 4. Image by Farm Biosecurity.

#### Recommendations

- ✓ Provide visitors with access to handwashing facilities, hand sanitiser, gloves, overalls and disinfectant foot baths and encourage their use when moving between production areas
- ✓ Use boot covers and protective clothing in contaminated areas
- ✓ Ensure anyone recently returned from overseas has clean footwear and clothing before entering the farm
- ✓ Ensure clothing and footwear is free of soil or plant matter on entering or leaving the farm

### Machinery and Equipment

Any machinery and equipment coming onto your property may introduce or spread pests, diseases or weeds on your farm. This includes contractors involved in harvesting, planting or fertilising ginger or other crops. Providing a suitable wash-down facility away from production areas is a good way of helping contractors to only use clean machinery on your property. Disinfecting equipment between uses also helps to prevent the spread of pest and disease.

**You have the right to ask contractors to clean machinery before entering and leaving your farm.**

#### Recommendations

- ✓ Ensure all machinery and vehicles entering, leaving or being used on your property are free of soil or plant material
- ✓ Clean and disinfect tools between uses



Biosecurity and people movement on farms

Farm Biosecurity

<https://youtu.be/vijE9bszf64>



## Vehicles

While it is impractical to stop all vehicle movement on and around your property, there are steps you can take to limit the risks that they pose on your crop. To minimise the risk of spreading weeds, pests and diseases, it is best practice to limit visitor access to production areas by providing a designated parking area for visitors, ensuring visitors stick to paths and designated roadways and where possible, use dedicated farm vehicles to transport visitors around your property and through production areas. Ensure all visitors' vehicles are restricted to



Figure 5. Image by Farm Biosecurity.

a designated parking area or are cleaned before entering production areas. Dedicated farm vehicles should not leave the farm. Vehicles and equipment that need to enter production areas can be cleaned using high pressure water or compressed air. Provide a wash-down facility to clean vehicles before allowing access to production areas.

### Recommendations

- ✓ Limit visitor access to production areas
- ✓ Provide a designated parking area for visitors
- ✓ Ensure visitors stick to paths and designated roadways
- ✓ Where possible, use dedicated farm vehicles to transport visitors around your property
- ✓ Clean vehicles and equipment, including those of visitors, that need to enter production areas
- ✓ Provide a wash-down facility to clean vehicles



Vehicle and equipment biosecurity on farms

Farm Biosecurity

<https://youtu.be/yjXCfbFnEJg>



## Biosecurity Signage

Biosecurity signs can be used to indicate to visitors the importance of following biosecurity procedures on your property.

Signs at the main entrance to your property alert visitors to the need to comply with the measures you have in place. Other signs can show visitors where to park and where to clean down their vehicles or equipment, if needed.

Signs should contain simple messages, for example, 'Do not enter the farm without prior approval' or 'Use wash down facilities for cleaning vehicles and machinery'.

They should also provide your contact details including your mobile phone number or UHF channel.

Signs should also be clear, visible and well maintained and be supported by additional biosecurity measures such as restricted access points.

**Biosecurity signs are a good way to alert visitors of potential risks that their visit poses to your business and inform them of your requirements while on your property.**

### Recommendations

- ✓ Put up biosecurity signs at entrances



**Figure 6.** Install signage around your property, particularly at entrances, advising of quarantine areas.



Biosecurity Gate Sign Template

*Farm Biosecurity*

<https://www.farmbiosecurity.com.au/wp-content/uploads/2019/03/Farm-Biosecurity-sign-900x600-V2.pdf>

<https://www.farmbiosecurity.com.au/toolkit/gate-signs/>



Farm Biosecurity Aluminium Signs

<https://www.k2ksigns.com.au/products/visitors-please-respect-farm-biosecurity-sign?variant=31215373516843>



## Setting Up a Washdown Facility

### Why do I need a washdown facility?

Vehicles and machinery have the potential to spread soil borne pests and diseases as well as invasive plants which can harm your property and the environment. The risk of spreading pests and diseases is particularly prevalent during and after harvest in soil or plant material attached to machinery, trucks and vehicles.

One of the best ways to manage the risk posed by vehicles and machinery is to set up a washdown facility and clean them when they enter and leave your property.

### How do I set up a washdown facility?

#### Select your location

Position your washdown facility near the entry/exit points of your property away from any production areas and at least 30 metres away from any watercourse or waterbody. This reduces the risk of introducing contaminated material such as plant debris, which may harbour pests and diseases, as well as runoff water, from entering and contaminating production areas.

If possible, select a location that has access to power and high-pressure water. Alternatively, at non-powered sites, ensure a supply of petrol is available to enable use of alternative cleaning equipment such as a petrol-powered cleaning pressure washer.

#### Define the dimensions of your washdown bay

Your washdown facility should be large enough to accommodate various sizes of vehicles and machinery. As a guide, ensure the washdown bay pad is approximately 2 metres bigger in length and width than the largest vehicle or machine for which it is to be used. This is to reduce the likelihood that water used for cleaning will splash and spread beyond the washdown area. Remember to clean down the wash pad between uses so it is ready for the next vehicle.

#### Select your surface

Ideally, the surface of a washdown facility should be sealed and constructed from a material such as concrete or bitumen. Alternatively, gravel or blue metal can be used, however use of compacted gravel or blue metal should be avoided if runoff water is likely to drain elsewhere away from the washdown area.

#### Ensure your washdown facility is well signed

Ensure your washdown facility is clearly signed and displays instructions to visitors about how to use it.



**Figure 7.** Ideally, the surface of a washdown facility should be sealed and constructed from a material such as concrete or bitumen. Image by Chris Anderson.



**Figure 8.** Soil and plant material can adhere to machinery, trucks and vehicles, therefore posing a risk of spreading pests and diseases.

### Manage runoff responsibly

Ensure that runoff water is directed away from production areas and will not drain into waterways, watercourses or waterbodies, including into ditches that lead to production areas. This is important not only for reducing the risk of spreading pests and diseases, but also for safeguarding the environment from pollution by chemicals such as detergents and oils, which may be present in wastewater from your washdown bay.



### Develop a Biosecurity Vehicle Kit

Keeping essentials stocked in a 'Biosecurity Vehicle Kit' ensures appropriate equipment is on hand to decontaminate vehicles, machinery and equipment entering and leaving your property as well as hands and shoes of personnel. It is suggested to keep a plastic tub handy to store these items, so they are kept together and accessible when needed.

Some suggestions of things to include are:

- ✓ Hard brush and pan to dislodge soil and plant matter and clean vehicle floors and surfaces as well as shoes, clothes and equipment
- ✓ Disposable gloves
- ✓ Handwash or hand sanitiser
- ✓ Spray bottle containing a cleaning agent such as a detergent, dilute bleach solution of 70% methylated spirits in 30% water
- ✓ Paper towel
- ✓ Hessian bag/mat (to place on the ground if setting up a foot bath near a field)
- ✓ Plastic bags for storing dirty clothes, shoes or equipment



### Using a washdown facility



Wash all vehicles and machinery\* entering and exiting the washdown bay with high pressure water, such as delivered by an electrical-powered or petrol-powered high-pressure washer.



Apply a disinfectant solution to all surfaces that have come into contact with mud and dirt such as tools, footwear, floor mats and foot pedals.



Use high pressure water to rinse off the disinfectant. Move the vehicle off the wash pad to a dry surface. Clean the wash pad down so it is ready for its next use.

\*Do not use water on machinery with sensitive electronic equipment.

## Quarantine tips for your farm



**SECURE** Fence off growing areas where possible and ensure entry and exit points to your property are secured with a locked gate. Ensure visitors are advised that the farm is a quarantine area and that entry is not permitted without authorisation. If possible, appointments with visitors, such as sales personnel, are advised to be conducted off-site. If possible, electricity supply meters should be located at the gate before entry to the property to ensure service providers do not need to enter a substantial part of your property to perform meter readings.



**SIGNAGE** Install signage around your property, particularly at entrances, advising of quarantine areas and instructions for key activities such as use of vehicle wash-down bays and footbaths.



*Figure 9. Ensure signs are visible at entrances advising of biosecurity and quarantine areas.*



**MANAGING RISKS OF MACHINERY AND VEHICLES** Ensure machinery and vehicles entering or leaving your property are sterilised. Any farm machinery, including new equipment, should be sterilised on entry and preferably never leave. Personnel, including contractors, entering the property with their vehicles should be queried on their previous farm visits either upon or prior to their arrival. If possible, ensure a vehicle wash-down station is located at all entrances to your property to allow machinery and equipment to be high-pressure washed or sprayed on entry. Instructions should be visible that outline the steps required. Refer to the above guide to 'Setting up a Washdown Facility'.



*Figure 10. Washing down machinery is an important step to discourage the spread of pests and diseases.*



**HARVESTED PRODUCT** Ensure any pallets or bins used for harvested products are recently sterilised plastic or new cardboard and when brought onto the property at delivery, are received in a delivery area away from growing areas. Ensure harvested product leaves with a transport contractor that adheres to agreed quarantine protocols.



**MANAGE WASTEWATER RESPONSIBLY** Ensure wastewater from wash down activities, including vehicle and machinery wash down bays, is managed responsibly and directed away from growing areas and not used for irrigation.



*Figure 11. It is important to manage wastewater from wash down activities responsibly. Image by Weedstop.*



**SOURCE CLEAN PLANTING MATERIAL** To reduce the risk of introducing contamination onto your property, source planting material from reputable sources, including certified seed or an inspected farm seed source.



**RECORD** Keep records of all movements on and off your property such as deliveries, sterilisation procedures performed and movement of all personnel, including visitors and contractors.



*Figure 12. Recordkeeping is an important step in protecting your property, crop, staff and visitors.*

## Sterilisation tips for your ginger farm



Ensure machinery and vehicles entering or leaving your property are cleaned and free from soil and crop debris. This is important to reduce the risk of spreading pests and diseases. Refer to the above guide to 'Setting up a Washdown Facility'.



Ensure wastewater from wash down activities, including vehicle and machinery wash down bays, is managed responsibly and directed away from growing areas and not used for irrigation. This is important for avoiding cross-contamination between different vehicles and machinery as well as for safeguarding the environment from pollution by chemicals such as detergents and oils, which may be present in wastewater.



Ensure tools and equipment, including bins, cutting knives and cutting benches are sterilised regularly to reduce the risk of spreading pests and diseases.



Use footbaths throughout your property, particularly at the entrances to your farm and to each block. This is to discourage the spread of pests and diseases on footwear, which has the potential to carry pests and diseases on soil, seeds and plant material. As disinfectants work best on shoes and boots that are relatively clean and free from dirt, mud, manure and plant material, remove all visible debris with a strong bristled brush before using a footbath.



Ensure appropriate disinfectants and detergents are used when cleaning and disinfecting footwear, tools and other equipment. Refer to **Table 1** below for more information on disinfectant options.

The above information was adapted from the publication Smith, M. & Abbas, R. (2011). Controlling *Pythium* and Associated Pests in Ginger, *Australian Government Rural Industries Research and Development Corporation*, RIRDC Publication No. 11/128 RIRDC Project No. PRJ-005612. Available online at: <https://agrifutures.com.au/wp-content/uploads/publications/11-128.pdf>.

### Want to learn more?



Biosecurity Basics: Make your own footbath

*Farm Biosecurity*

<https://www.farmbiosecurity.com.au/biosecurity-basics-make-your-own-footbath/>



## Disinfection for your ginger farm

A range of different disinfectants are currently available to Australian producers to help limit pest and disease spread. The Australian Pesticide and Veterinary Medicine Authority (APVMA) is responsible for approving chemical disinfectants for retail sale in Australia and publishes information about available registered products on its PubCRIS (<https://portal.apvma.gov.au/pubcris>) and permits (<https://portal.apvma.gov.au/permits>) databases. State and territory governments are responsible for regulating the use of these chemicals once purchased. It is important to use disinfectants that are registered for use in your state or territory and to follow the product label or APVMA permit directions for use. It is recommended to wear disposable gloves to minimise cross contamination or skin irritation when disinfecting surfaces and equipment and to follow all safety and use recommendations on the product label.

**Table 1.** Products currently registered for agricultural use by the Australian Pesticide and Veterinary Medicine Authority (APVMA) as of 1<sup>st</sup> July 2025. All products are registered in all Australian states and territories unless otherwise stated.

Registered Product	APVMA Approval Number	Active constituent	Uses		
			Facilities including packing sheds	General equipment and/or machinery	Footwear, Foot dips and Food baths
Agrisan Disinfectant and Litter Spray <b>Registered in NSW, QLD and VIC only</b>	41451	CRESYLIC ACID			✓
Bacrasan Phenolic Sanitiser	60300	CHLOROPHEN ORTHO BENZYL PARA CHLORO PHENOL   ORTHOPHENYLPHENOL		✓	✓
Bactex cf sanitiser	59643	BENZALKONIUM CHLORIDE		✓	✓
Biovx Broad Spectrum Concentrated Water-Soluble Powder (Sp) Disinfectant	89005	POTASSIUM PEROXYMONOSULPHATE TRIPLE SALT   SODIUM CHLORIDE   SODIUM DODECYL BENZENE SULFONATE	✓	✓	✓
Chemisan	93437	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
Des-O-Germ	62317	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
EuroChem Sanitex Horticultural Disinfectant	88875	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
Hyperox Farm Disinfectant	61606	HYDROGEN PEROXIDE   ACETIC ACID   PERACETIC ACID	✓	✓	✓
Neogen Viroxide Super Broad-Spectrum Disinfectant	90354	POTASSIUM PEROXOMONOSULFATE TRIPLE SALT   SODIUM CHLORIDE   SODIUM DODECYL BENZENE SULPHONATE   SULFAMIC ACID	✓	✓	✓
Path-X	53331	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
QT-SAN Disinfectant	92751	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
Sporekill Agricultural Disinfectant	51141	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
Steri-Max Biocide	59462	DIDECYL DIMETHYL AMMONIUM CHLORIDE	✓	✓	✓
Viralx The Broad Spectrum Virucidal, Bactericidal, Fungicidal Disinfectant and Cleaner	65691	POTASSIUM PEROXOMONOSULFATE TRIPLE SALT   SODIUM CHLORIDE   SODIUM DODECYL BENZENE SULFONATE	✓	✓	✓
Virkon Aquatic Broad Spectrum Virucidal Bactericidal Fungicidal Disinfectant	68503	POTASSIUM PEROXYMONOSULFATE   SODIUM CHLORIDE		✓	✓
Virkon H The Broad Spectrum Virucidal Bactericidal Fungicidal Disinfectant	89517	SODIUM DODECYL BENZENE SULFONATE   POTASSIUM PEROXOMONOSULFATE TRIPLE SALT   SODIUM CHLORIDE	✓	✓	✓
Virkon Professional Tablets	92230	POTASSIUM PEROXOMONOSULFATE TRIPLE SALT   SODIUM CHLORIDE	✓	✓	✓
Virkon S Tablets Broad Spectrum Virucidal Bactericidal Fungicidal Disinfectant	68502	POTASSIUM PEROXYMONOSULFATE   SODIUM CHLORIDE	✓	✓	✓
Virkon S The Broad Spectrum Virucidal Bactericidal Fungicidal Disinfectant	48185	POTASSIUM PEROXOMONOSULFATE TRIPLE SALT   SODIUM CHLORIDE   SODIUM DODECYL BENZENE SULFONATE	✓	✓	✓
Virocid Broad Spectrum Disinfectant	86445	GLUTARALDEHYDE   DIDECYLDIMETHYLAMMONIUMCHLORIDE   ALKYLDIMETHYLBENZYLAMMONIUMCHLORIDE	✓	✓	✓
YM-FAB NYLATE	47352	BROMOCHLORODIMETHYL HYDANTOIN		✓	

# Feral Animals, Weeds and Livestock

## Wild and Feral Animals

Wild and feral animals pose a risk to your property through direct impact on production and their potential to carry diseases, pests and weed seeds.

Vermin like rats can damage crops, spread diseases and contaminate water sources. Rat management therefore reduces yield losses and the risk of cane quality. Similarly, feral pigs are among Queensland's most widespread and damaging pest animals. They degrade soil and water, damage crops and livestock, and carry diseases.

### *Recommendations*

- 
- ✓ Consider exclusion fencing and other controls for feral pigs
  - ✓ Develop an integrated wild and feral animal control program
- 

## Volunteer Plants and Weeds

Volunteer plants and weeds in production areas can also harbour pests and diseases, enabling them to reinfest future crops. Ensure crops and volunteers are controlled from production areas by cultivating the soil after harvest or herbicide applications. Where possible control volunteers and weeds along roadways and head ditches. Consider developing a weed management plan for your property, including plans to eradicate, contain or manage current weeds and to prevent the introduction of new ones. You are likely to need a combination of practices to manage existing weeds, including herbicides and cultural practices like trash blanketing, strategic tillage and farm hygiene.

Fires, floods and storms can often provide an opportunity for pests and weeds to become established, and for animals to come onto your property. To ensure this does not become an issue, regularly inspect your property for the presence of diseases, pests, weeds and ferals, particularly areas such as new roads or dams, or areas damaged in storms such as fences. Keep an eye out for new weeds in the areas where flood waters may have run across your property.

### *Recommendations*

- 
- ✓ Control volunteer plants that can harbour pests and diseases
  - ✓ Manage weeds with a combination of practices
  - ✓ Regularly inspect your property for the presence of diseases, pests, weeds and ferals – particularly after landscaping, fires, floods and storms
- 

## Livestock

To reduce the risk of pests and diseases, as well as possible contamination, use holding paddocks for livestock. It is also best practice to record the source of livestock.

### *Recommendations*

- 
- ✓ Record the source of livestock and use holding paddocks
-

# Farm Outputs

## Managing and Disposing of Waste and Wastewater

Maintaining good farm hygiene is essential in preventing the spread of pests and diseases and should extend to responsible disposal of general waste including from packing sheds. This is particularly important where there is a suspected or known incidence of a pest or disease. Examples of risk materials include discarded plant material, soil, water and packing and storage boxes and crates. It is best practice to have disposal sites located away from your production areas.

It is also important to manage waste from washdown and decontamination areas and ensure runoff water is dealt with responsibly. Ensure that runoff water from vehicle and equipment wash down areas do not drain into waterways including into ditches that lead to production areas. This is important not only for reducing the risk of spreading pests and diseases, but also for safeguarding the environment from pollution caused by fertiliser run-off, chemicals such as detergents and oils, which may be present in water used for cleaning purposes entering waterways and ensures you meet your Freshcare requirements.

It is also best practice to remove any infected plant material and waste from production areas, for example, from blocks and paddocks, as this material has the potential to harbour pests, diseases, weeds and vectors.

The risk of spreading pests and diseases is particularly prevalent during and after harvest in soil or plant material attached to machinery, trucks and vehicles. If your business relies on sharing machinery, reduce the risk of spreading pests and diseases between properties by removing plant material and cleaning and disinfecting machinery before it enters your property.

### *Recommendations*

- 
- ✓ Dispose of general waste and waste responsibly
- 
- ✓ Ensure waste disposal sites are located away from production areas
- 
- ✓ Ensure runoff water from vehicles and equipment wash down areas drains away from production areas
- 
- ✓ Remove any infected plant material and waste from production areas
- 
- ✓ Consider post-harvest risks including transport to other facilities
- 
- ✓ Contractors and visitors made aware if property has a declared or notifiable pest
-

## Train, Plan and Record

An important part of farm limiting pests and diseases and yours and surrounding farms is ensuring staff are well trained, that you can trace where farm inputs including planting material came from, and that you have records of purchases, sales and machinery movement.

### Training Staff

Anyone working on your property, including friends, family and contractors, may not know how easily diseases, pests and weeds can spread and how to prevent them from impacting your business. Inform staff of the biosecurity standards required on site and provide training if necessary. Display signs to remind staff and visitors of the importance of biosecurity.

Make sure your staff keep a lookout for unusual pests, can recognise **established** and **exotic** species and know how to report them. If you don't know what a pest is, it is also advisable to consult a trained agronomist. Refer to **Plant Protection Series Volume 2 – Pests and Pathogens of Ginger** for more information on how to support a suspect pest.

Training is also important to ensure the safety of yourself and others on your property such as when handling agricultural and veterinary chemicals.

#### *Recommendations*

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- ✓ Train staff and visitors on biosecurity requirements.
  - ✓ Learn about exotic pest threats and teach your staff and contractors.
  - ✓ Report any unusual pests and diseases and make sure your staff know how to as well.
  - ✓ Undertake training in the use of agricultural and veterinary chemicals and always follow label instructions.
- 

### Recordkeeping

Recordkeeping is an important step in protecting your property, crop, staff and visitors. A variety of records should be kept for your property for different purposes including sources of inputs, pesticide use and having a visitor's log (hardcopy, electronic or via an app).

For example, it is best practice to maintain records for purposes including:

- Chemical treatments used on your property
- The source of organic fertilisers, delivery and application dates so that any problems can be traced back to the origin
- When batches of compost were used on your farm and where they were applied
- Propagation material
- Where all outputs are sent to

#### *Recommendations*

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- ✓ Maintain appropriate records for your property, for example, chemical treatments used, a register of propagation material and a visitors record
  - ✓ Record the source of other farm inputs such as sawdust, manure and compost
  - ✓ Record where all farm outputs are sent to
-

## Biosecurity Planning

The best defence against pests and diseases is to implement sound biosecurity practices on your farm. A biosecurity action plan will help you identify and prioritise the implementation of biosecurity practices relevant to your property. Templates to help you develop your on-farm biosecurity plan are available on the [Farm Biosecurity](#) website.

### *Recommendations*

- ✓ Develop an on-farm biosecurity plan and share plan with staff and work through improvements

## Adhering to industry best practice standards and protocols.

It is also advised to adhere to other best practice standards required by the Australian ginger industry. Examples include using seed sourced from a certified Tissue Culture Scheme program, equipment sterilisation and quarantine protocols for ginger farms and the Freshcare assurance standards. Note: It is compulsory for AGIA members to be members of Freshcare.

### *Recommendations*

- ✓ Adhere to other best practice standards and protocols as required, for example, Freshcare

## Freshcare



Freshcare are internationally recognised assurance standards for the fresh produce and wine grape industries (Freshcare, 2025). To ensure best-practice standards are adopted and maintained across the Australian ginger industry, **it is compulsory for AGIA members to be members of Freshcare.**

To be accredited as a Freshcare Certified Business, a business must be assessed by third-party auditors as successfully demonstrating adherence to Freshcare standards.

Certified businesses are listed on a directory on the Freshcare website

(<https://www.freshcare.com.au/about/certified-businesses/>).

For example, several businesses in the ginger industry hold a Freshcare 'Food Safety & Quality Standard (FSQ)– On farm' certification. The FSQ standard outlines good agricultural practices to be undertaken on farm to ensure fresh produce is safe for consumption and meets customer requirements (Freshcare, 2021). Whilst the practices in the FSQ standard have a food safety focus, they also align with biosecurity practices to reduce the risk of pests and diseases in the production environment. To view the full list of criteria for Freshcare's Food Safety & Quality Standard (FSQ), view the latest version on the [Freshcare website](#).

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