NSW GOVERNMENT Department of Primary Industries

primefact

Biosecurity for organic grain farmers

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Introduction

Biosecurity is about the protection of the economy, environment and community, which could be harmed by the introduction of new pests[1].

Australia's geographic isolation means we have relatively few of the pests that affect plant industries overseas. Freedom from these exotic pests is an important part of the future profitability and sustainability of Australia's plant industries. Biosecurity allows us to preserve existing trade opportunities and provide evidence to support new market negotiations.

Biosecurity is a national priority, implemented off-shore, at the border and on the farm. Implementation of on-farm biosecurity underpins regional biosecurity, which in turn underpins national biosecurity.

The organic grain sector and on-farm biosecurity

The organic grain sector in Australia has been estimated to have a farm-gate value of $17 million (Australian Organic Market Report, 2012). The demand for organic grain is expanding for human consumption as well as for feed for the organic livestock industry (particularly intensive industry such as poultry).

Organic grain growers and handlers can play a key role in protecting themselves and the Australian organic grain industry from unwanted pests by implementing effective on-farm biosecurity measures.

Farm biosecurity is a set of management practices and activities carried out on-farm to protect a property from the entry and spread of pests, either exotic or endemic. Farm biosecurity makes good business sense and is your responsibility as well as that of every person visiting or working on your property.

Protection from invasive pests is of particular importance to organic farmers because organic standards preclude the use of most agricultural chemicals. Use of non-permitted chemicals in an organic system would result in loss of your organic status and access to organic markets.

The establishment of a new pest on-farm could also mean increased farm costs (e. g. changing of rotations, and other management strategies that need to be put in place), reduced productivity (yield and/or quality) or loss of markets.

Biosecurity planning on organic farms

Common to all certified organic grain farming operations is the production of an Organic Management Plan (OMP). In addition, organic standards require that the practices and procedures involved in the handling of grain (storage, transport, and processing) are documented in an Organic Handling Plan (OHP).

These plans document how operators will maintain the integrity of the products from their organic operation. From a biosecurity

[1] The definition of a **pest** used in this Primefact covers all invertebrates (eg insects, mites, snails, nematodes), pathogens (diseases) and weeds that may harm plants or plant products. **Exotic** pests are those not currently present in Australia. **Endemic** pests are those present within Australia.

perspective this involves identifying the potential risk of pest incursions, where these incursions are most likely to occur and documenting the measures that can be employed to minimise their impact.

Key areas to consider in these plans include:

- pest detection and management
- product management
- people management
- equipment and vehicle movement
- feed and livestock

Pest detection and management

Organic standards require pest management practices are implemented which prevent pest incursions. Strategies include the removal of pest habitat, food sources and breeding areas, as well as implementing measures to prevent the access of pests to grain storage and processing areas.

Through the development of the Grains Industry Biosecurity Plan (IBP), high priority exotic invertebrates and disease threats for the Australian grains industry have been identified. All would cause serious consequences for the entire grains industry (organic and conventional) should they enter and become established.

For more information on some of the high priority exotic pest threats for the grains industry: www.planthealthaustralia.com.au/industries/grains/

Pest surveillance

Early detection and immediate reporting of a pest incursion increases the chance of effective and efficient eradication or containment.

Conducting regular monitoring is a fundamental part of farm management practices, particularly for organic farmers, and gives the best chance of spotting a new pest soon after it arrives. This involves gaining an increased awareness of what new pests look like, the crop symptoms they cause and practices that can be employed to limit their entry or spread.

Pest & disease monitoring tools can include the installation of traps (such as sticky, pheromone, pitfall and light traps), and disease forecasting and modelling utilising weather data. Regular monitoring of weeds can prevent isolated plants turning into large incursions.

Documenting and implementing a monitoring strategy for pests are integral components of your OMP & OHP. All pest (exotic and endemic) surveillance and management practices should be recorded. These records can be used in the response to a pest outbreak and provide support to industry surveillance activities. An example of a pest surveillance datasheet can be found in the Farm Biosecurity Manual for the Organic Grains Industry on-line at: www.planthealthaustralia.com.au/industries/grains/

Report suspect pests

If you observe a pest or pest damage you are not familiar with, you should have it checked. Early detection and reporting of symptoms is vital before pest populations build up, by which time control or eradication may be more difficult or require more extreme measures.

If you see anything unusual, call the Exotic Plant Pest Hotline on 1800 084 881.

If you find a suspected exotic plant pest, the following precautions should be taken immediately to contain the pest and protect other parts of your farm:

- Do not touch, move or transport affected plant material.
- Wash hands, clothes and footwear that have been in contact with affected plant material or soil.
- Mark the location, limit access by people, stock and equipment and establish a quarantine area in the pest detection area.

Beneficial surveillance

An integrated approach to pest management is important in controlling unwanted pests within an organic farming system. One tactic can be to encourage and utilise the beneficial insects and/or pathogens that naturally occur within your farming system that may prey on, parasitise or attack unwanted pests.

It is important that you can identify the useful organisms and implement farm practices which encourage these organisms whilst not providing conditions suitable for pest build-up only. Surveillance for beneficial organisms can be as useful as monitoring pest populations.

Practises which encourage beneficials (for example, predatory insects and pest eating birds) should be identified in your OMP and may involve including areas of appropriate plant species that encourage the build up of

particular beneficial species, for example strips of a particular crop species or larger areas of trees and shrubs along boundaries. These can have the additional benefit of providing a physical barrier between farms, particularly where neighbouring areas involve conventional farming (e.g. protection from spray drift).

Figure 1: Providing habitat and monitoring for beneficial species is an important biosecurity tool for organic farmers. Lacewings are general predators of pests such as aphids and small caterpillars. Source: Unknown.

Genetically Modified Organisms

While Genetically Modified Organisms (GMOs) do not specifically fit the definition of a pest, they do represent a major risk to the organic grains industry which has a zero tolerance for GMOs, including residues or contamination from external sources. Employing good farm hygiene practices, sourcing inputs from reputable (certifiable) suppliers and ensuring good communication with neighbours can all positively contribute to minimising the risk of GMO contamination on your grain farm.

Crop rotation and resistant varieties

The use of crop rotation and resistant varieties are important tools in the fight against established pests in organic grain production. They should not however be relied upon as methods of protecting against exotic pest incursions. In the event of a pest incursion and establishment, some rotations or resistant varieties may become ineffective, particularly if pest strains mutate, and alternatives may need to be selected.

Water management

The quality and sources of water (such as bores, dams, rivers and streams), used for irrigation, stock and any on-farm processing, should be assessed for potential contaminants such as weed seeds, chemicals and other pests. This is not only a biosecurity risk, but also a risk for organic certification. OMP and OHP require that the sources and the quality of water are identified and monitoring strategies established.

Use of manures, composts and slurries

Manures, composts and slurries, particularly when obtained from off-farm sources, have the potential to contain pests and other unwanted contaminants. Organic Standards require that details of the compost ingredients (feedstocks) and their sources be checked and that documentation is provided to this effect by the supplier. Manures and non-organically certified composts which are purchased externally must be re-composted on-farm prior to application.

Product management

Purchasing seed

Where crop and pasture seed needs to be obtained from outside your farming operation, it is important to ensure it is from a reputable supplier in order to reduce the risk of introducing new pests. Infected, infested or contaminated seed is a major source of introduction and spread of pests and weeds to a farm.

It is a requirement of organic standards that, in the first instance, every effort is made to utilise organic seeds, however this should not compromise the biosecurity of your farming operation. Seed that is certified organic does not necessarily mean it is pest free; ideally, the seed should be certified to be pest free. Whilst a provision does exist in organic standards to utilise conventional seed if suitable organic seed is unavailable, the seed may not be chemically treated with non-approved pest control products.

A range of products are used by organic farmers as alternative seed treatments these include hot water, approved disinfectants, compost teas, herbal and biological treatments (eg essential oils) and commercial products. The efficacy of some of these treatments is unknown and therefore may or may not protect seed against pests. If unsure, seed should be inspected by an accredited laboratory prior to use.

You cannot accurately assess seed quality just by sight. Seed which appears clean and healthy can still carry diseases without showing symptoms, and may also contain weed seeds. Hence, you should ask where the seed originally came from and always try to purchase certified or quality assured seed. Read the label for information on pure seed content or obtain a Statement of Analysis

detailing seed purity, weed seed content and germination quality.

Keep a copy of the certification report on record as this will assist with any trace-back activities should a new pest be found. As well as records of your seed source, also keep trace-forward records of produce that has left your property. These records not only aid in containment / eradication of a potential exotic pest incursion but organic certification inspectors are required to sight copies of seed invoices detailing the purchase source as part of the certification process.

Harvest and post harvest strategies

Grain harvesting and storage are important aspects of organic grain production, especially in a closed system where grain may be retained for sowing future crops.

Ideally, measures should be taken to reduce the risk of infestation in the first place, rather than relying on control measures after the event. This relies on maintaining good hygiene around your storage areas, including making sure grain handling equipment like headers, augers, field bins, silos and bulk storages are clean before use. This can be achieved using either high pressure air or water. Areas around grain storages should be kept clean to limit places where mice and insects can multiply.

There are a number of organic compatible practices available to maintain grain quality and stop or eliminate a pest infestation prior to and during harvest:

- Ensuring header settings are correct to avoid grain damage. Likewise, grain handling equipment such as conveyors should also be designed to minimise damage. Damaged grain is more susceptible to attack by insect pests.
- Harvest grain at the correct moisture content. Grain that is harvested too moist will cake and mould quickly when stored, which creates heat and provides an ideal environment for insects. Grain drying and cooling facilities allow for grain to be harvested as soon as maturity is reached, which also reduces the opportunity for weather damage.
- Separate the first grain to pass through harvesters at the start of each season as there is a high risk that it may contain storage pests.
- Weed seed collectors attached to harvesting equipment help to reduce the build-up of the weed seed bank and the spread of weeds.
- Harvesting contractors should be made aware that equipment must be thoroughly cleaned down prior to entry on the farm, both to comply with organic standards and to minimise the risk of biosecurity issues arising.

For more information on storage of organic grain see Primefact 1030 ‘On-farm storage of organic grain’: www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/353321/On-farm-storage-of-organic-grain.pdf

Waste management

It is important to include a waste management system as part of the biosecurity plan and OHP. Waste by-product that is allowed to accumulate can attract pests. Types of waste could include old grain or spoiled fodder. A waste management plan should identify the most appropriate disposal methods to minimise the risks and could include strategies such as the use of on-site dumpsters or off-site waste removal services, material recycling, composting, field application, and burial.

People and biosecurity

Biosecurity signs

Well designed signage informs visitors that biosecurity on your farm is a focus and that they share responsibility for maintaining it. Signs also demonstrate your commitment to farm hygiene, safety and audit systems, such as organic certification. A sign can incorporate the organic status of your farm, communicating your particular needs to visitors, contractors and passers by.

Biosecurity signage should be placed at key entry points, visitor parking areas and wash-down facilities. Signs at entrances or near storages should direct visitors to contact the owner or farm manager to formally register their presence, before entering any production areas. The sign should include important contact details, such as telephone number, and/or UHF channel.

Figure 2. To obtain biosecurity signs for your property contact your state Grains Biosecurity Officer (details at: www.planthealthaustralia.com.au/national-programs/grains-farm-biosecurity-program/

Managing people movement

It is not uncommon for organic farmers to regularly host contractors, seasonal workers, students, overseas visitors and WWOOFers (Willing Workers on Organic Farms). People moving between farms and regions can spread pests on vehicles, equipment, boots and clothing. The most obvious risks are pests carried in soil and plant material.

To help reduce the threat of people movement introducing new pests onto your farm:

- Maintain a Visitor Register which will record visitor movements and help manage safety issues.
- Brief all workers, contractors and visitors on your farm biosecurity measures.
- Ensure employee and visitor footwear and clothing is free of soil and plant material before they enter or leave the farm.
- Provide scrubbing brushes, footbaths, boot covers, and protective clothing such as disposable overalls, for people entering your farm, moving from contaminated to clean areas, or moving from non-organic to organic areas.

Contractors and utility providers

The term ‘contractors’ includes certification inspectors, farm contractors, earthmoving companies, utility providers, research personnel, consultants and mining operators who enter a farm in their day to day operations. Because they move from farm to farm and region to region they can potentially spread pests from and to susceptible plants on their clothing, equipment and vehicles.

Pests can be transported onto your farm in many different ways. For example, they can be contained within the final bale of hay in the contractors’ machine from a previous job. In this case, all hay in the machine should be removed before entering your paddocks.

OMP and OHP require organic producers to provide detailed protocols relating to use of contractors and the precautions taken to avoid contamination from external sources.

Placing biosecurity signs on external farm gates will raise farm biosecurity awareness with contractors. Request that all contractors’ vehicles and equipment are cleaned before starting work on your property. Provide or find a suitable wash-down bay to complete this task.

Providing a Contractors Checklist of biosecurity requirements (such as that available from: http://www.planthealthaustralia.com.au/industries/grains/), or leaving copies at external gate entrances will help raise awareness of your farm hygiene.

You also have a responsibility to inform contractors of any declared or notifiable pests already present on your farm, to enable them to clean down properly or take other appropriate actions.

Equipment and vehicles

Vehicles and farm equipment can carry pests in soil and plant material, introducing pests to a previously clean property or crop.

Contractors, re-sellers, service providers and drivers of delivery trucks and earth moving equipment entering the property should clean vehicles and equipment before entering your farm. Inspecting and cleaning machinery is more time and cost effective than managing a new pest.

Figure 3. Weed seeds are easily transported to clean areas of the farm by vehicles and machinery

Properties open to the public for field days have a heightened risk. Designated parking areas should be established and should:

- Be located away from production sites
- Be well sign-posted. A biosecurity sign in the parking area will remind visitors of the threat of spreading pests.
- Be regularly monitored for the presence of new pests.
- Be restricted to visitors only with no access for farm vehicles and machinery.

Wash-down facilities

Providing a high-pressure wash-down facility allows farm employees, contractors and visitors to clean their vehicle and equipment in an easily managed area where waste water is contained.

For additional protection, adding an organically approved detergent-based degreaser or disinfectant that is compliant with organic standards and approved (in writing) by your certifier, may be appropriate.

Wash-down areas should:

- Be readily accessible.
- Be isolated from organically certified production areas.
- Have access to power and high-pressure water.
- Have a sealed (concrete or bitumen) or packed gravel surface.
- Not drain into waterways or cropping areas.
- Have a sump or collection area for easy inspection.
- Be checked regularly for the presence of pests and weeds.

In some cases, using compressed air is a better method for cleaning machinery (for example, when cleaning a harvester), while machinery with mud attached will need to be cleaned down with high-pressure water.

Clean machinery from the top down to avoid contaminating areas already cleaned, and consider the following points:

- Dismantle as far as practically possible to give access to internal spaces.
- Leave covers off after cleaning to allow inspection.
- Get a second opinion – a fresh look may see contamination that is missed.

Feed and livestock

Pests can be easily introduced and spread onto the farm when you bring in grain, hay or livestock. While not always possible, buying locally can help prevent the introduction of new pests into the region.

When buying fodder, be aware of where it has come from and inspect it for pests and weed seeds. When buying grain, ask the seller about pests that are present on their farm or crop. If possible, obtain a vendor declaration of weed status or have a sample checked by a seed/plant testing laboratory. If in doubt have the grain cleaned.

Organic producers must feed organic feed to livestock to maintain their organic status[2] so the sources of feed are more limited, and therefore the risks of bringing in unwanted pests may be greater. Like organic certified seed for grain production, stockfeed that is certified organic does not necessarily mean it is certified pest free.

Additionally, livestock should be fed out in the same paddock or in the same area of each paddock. Inspect for unwanted germinated weeds or new pests at the break of the season or after sufficient rain.

Newly purchased certified organic livestock are required to be isolated in a quarantine paddock for at least seven days, whilst organic standards require that non-organic livestock are contained for a minimum period of 3 weeks. This allows weed seeds to pass through their digestive system and also helps to contain any weeds transported in fleeces, coats and hooves. Ideally, the holding paddock should be conveniently located so that regular checks can be conducted on the animals and to control germinated weeds.

In summary

Organic grain growers and handlers can play a key role in protecting themselves and the Australian organic grain industry from exotic pests by implementing effective on-farm biosecurity.

As a requirement of organic certification, organic grain producers are required to develop Organic Management (OMP) and Organic Handling Plans (OHP). OMP and OHP should identify the potential risk of pest

[2] Note there are some exceptions during drought – check with your certifier

incursions, where these incursions are most likely to occur, and document the measures that can be employed to minimise their impact. The plans should:

- Incorporate risk management strategies for the production & processing of organic grain.
- Identify high risk areas on-farm and specify management plans for these areas.
- Identify a biosecurity communication strategy which incorporates farm signage, a pest notification action plan, visitor and contractor briefing and a Visitor Register

Remember: If you see anything unusual, call the Exotic Plant Pest Hotline

EXOTIC PLANT PEST HOTLINE
1800 084 881

More information

Further reading and useful websites

This Primefact has been written utilising information contained in: Plant Health Australia Ltd (2013) *Farm Biosecurity Manual for the Organic Grains Industry* (Version 1 – April 2013) Plant Health Australia, Canberra, ACT. The Manual can be viewed on-line at: http://www.planthealthaustralia.com.au/industries/grains/

More information on how to secure your farm and secure your future can be found online at www.farmbiosecurity.com.au, a joint initiative of Plant Health Australia and Animal Health Australia.

Biosecurity NSW
http://www.dpi.nsw.gov.au/biosecurity

Plant Health Australia
http://planthealthaustralia.com.au/

Riddle, J. 2012. GMO contamination prevention. What does it take? Best Management Practices for Producers of GMO and Non-GMO Crops. University of Minnesota. http://swroc.cfans.umn.edu/prod/groups/cfans/@pub/@cfans/@swroc/documents/article/cfans_article_390283.pdf

Useful contacts

Organic Industry Development Officer
NSW DPI
Berry District Office
Berry NSW 2535
Phone: 02 4464 6003

Grains Biosecurity Officer
Biosecurity NSW
161 Kite Street,
Orange, NSW, 2800
Phone: 02 6391 3188

NSW DPI Diagnostic and Analytical Services (DAS), Customer Service Units.
http://www.dpi.nsw.gov.au/aboutus/services/das/locations

Plant Health Australia
Deakin ACT 2600
Phone: 02 6215 7700
Fax: 02 6260 4321
Email: biosecurity@phau.com.au
www.planthealthaustralia.com.au

Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) Organic Program:
http://www.daff.gov.au/aqis/export/organic-bio-dynamic

Approved organic certification organisations:
http://www.daff.gov.au/aqis/about/contact/aco

For Primefact updates go to:
www.dpi.nsw.gov.au/factsheets

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