



REFERENCE

Pests and contaminants of grain and plant products

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Purpose of this document

This document has been written for authorised officers (AOs) to assist them in the recognition of pests and contaminants likely to be encountered during the inspection of prescribed grain and plant products. The tables in this reference are not an exhaustive list.

Where uncertainty exists regarding insect or contaminant identity, professional identification would be required. AOs are not expected to be able to identify all pests, diseases or contaminants.

Insect pests associated with stored products

Of the insects potentially associated with stored products, only a small portion of them are able to cause serious damage to a product that is in sound condition. Many insects are attracted only to the vegetative parts of a plant (for example, leaf/stem material), others are predatory or parasitic on the insects that are found infesting stored product.

Many of the species listed in this document may be found during the inspection of prescribed goods, registered establishments, bulk vessel cargo spaces or containers. Inclusion in the list does not necessarily imply that the species occur in Australia, for example, khapra beetle (*Trogoderma granarium*) does not occur in Australia.

Common insect species associated with stored products can be classified as major (primary) or minor (secondary) injurious pests or non-injurious pests (field species).

Major (Primary) injurious insect pests

Major (primary) injurious pests are those that can cause damage to whole, sound and healthy products. These pests are able to complete their entire life-cycle in stored products.

Minor (Secondary) injurious insect pests

Minor (secondary) injurious pests are those that are generally unable to cause damage to whole, sound and healthy product, but do considerable damage to stored product that have already been damaged by mechanical processes or by other pests.

Field species (non-injurious pests)

Field species include a range of insects/arthropods (or other organisms), such as silverfish, earwigs, wasps, bugs, spiders and ants.

Field species are not considered stored product pests. Field species are any that are not listed as injurious pests in Attachment 1 of the Guideline: [*Inspection of prescribed grain and plant products for export*](#) (the guideline), or of quarantine concern to the importing country.

Field species do not damage stored goods, rather their presence in stored products is a source of contamination. Field species are often picked up during harvest and are particularly abundant in windrowed crops, hay and straw.

Whilst field species are not likely to survive for extended periods in grain and other plant product consignments, high population levels increase the likelihood of live insects/arthropods being intercepted on arrival, especially when export transit time is relatively short.

Irrespective of whether a field species will survive or is a stored grain pest, infestation could be detrimental to Australia's international export reputation.

Rodents

Rodents may contaminate consignments of prescribed goods, either in the form of live rodents or carcasses and droppings

Rodents include rats (*Rattus* spp.) and mice (*Mus* spp.). Rodents live in burrows in warm locations on gathered nesting materials such as cloth, fur, paper and feathers. They will often nest within 5 metres of food sources in well sheltered areas, typically at ground level, and are most active at night.

Weed seeds and other contaminants

Contaminants may sometimes be referred to as foreign material, being all material other than whole or broken seeds or hulls of the grain being inspected. Tolerance levels are included in the guideline. Contaminants may include:

- foreign seeds, including weed seeds
- inert material (sand, soil, and the like)
- plant debris
- extraneous material
- odour
- Ergots, cereal smuts
- pickling compounds
- artificial colouring

Some weed seeds and contaminants are specified as pests of quarantine concern to certain countries. Refer to Micor or import permits for individual country requirements.

***Datura* species**

Datura spp. are a poisonous plant species, also known as thornapple or the false castor oil plant. *Datura* spp. seeds are generally kidney shaped with many indentations and pits, appearing pale brown in colour and are approximately two thirds the size of a grain of wheat.

Ergot

Ergot is the common name for a disease caused by the fungus *Claviceps purpurea*. The fungus parasitises the flowers of grasses and develops in the place of the seed—no other part of the plant is infected. The fungal sclerotia contain poisonous alkaloids. Ergots are purplish-black or dark grey in colour and commonly infect ryegrass, and occasionally cereals.

Australia prescribes limits on the number of pieces of ergot allowable, to ensure that export grain is within the internationally accepted 0.05 % m/m tolerance level for ergot permissible under the ISO Standard 7970 and CODEX Standard 1999. Australia has imposed this maximum tolerance of 0.05 % m/m since the early 1970s.

Tolerances (Attachment 2 of the guideline) relate to the maximum number of pieces of ergot in a defined volume. This enables AOs to count the pieces of ergot observed in a sample to facilitate decision making during inspection with a high level of confidence to adhere to the internationally recognised standard of 0.05 % m/m contamination.

Inert Material

Inert material for phytosanitary certification purposes is restricted to only sand and soil. Inspection for quality issues such as broken grains is not required.

An importing country authority may require a consignment to be free from inert material. AOs should interpret this as the consignment is to be practically free from sand and soil. Refer to Attachment 2 of the guideline.

Where sand, soil or any other contaminants are detected during inspection, the individual contaminant should be recorded on the inspection record. AOs should not use the term 'inert material' to reject a consignment.

Extraneous Matter

Extraneous matter for phytosanitary certification purposes is considered to be sand, soil and foreign plant debris. Extraneous matter does not include plant matter originating from the export commodity, such as broken grains or seed coats.

An exporter may request a Declaration and Certificate as to Condition (EX188) to certify freedom from extraneous matter (if stated on an import permit). The exporter is required to present testing documentation supporting the commodities freedom, and pass AO inspection prior to a Declaration and Certificate as to Condition being issued by the department.

The department provides certification for phytosanitary requirements and does not certify quality parameters. Phytosanitary certificates should only include statements that relate to plant health and mitigate against valid phytosanitary risks.

The department cannot include additional declarations on phytosanitary certificates for freedom from extraneous matter to meet quality requirements. Demonstrating freedom from extraneous matter to meet a quality requirements is the responsibility of the exporter, and freedom certification documents can be obtained from commercial organisations.

Tolerances

Tolerance levels for weed seeds, field species, contaminants and non-injurious pests, are included in the guideline. Tolerances may also be listed in Micor or in import permits.




Identifying common pests

A range of references may be used to support AOs to identify common pests. Some useful references include:



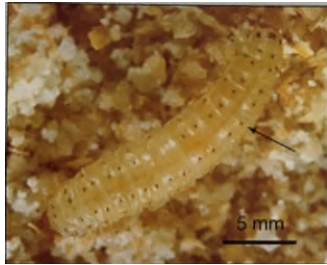
- CSIRO pocket references
- Grain Trade Australia references
- 'Ute Guides' published by state departments of primary industries/agriculture
- [Pests and Diseases Image Library](#) (PaDil)
- [CABI Crop Protection Compendium](#)
- [Atlas of Living Australia](#)




Major (Primary) injurious insect pests



The following table illustrates and describes major injurious insect pests associated with stored grain and plant products.



Name	Images	Main hosts	Description
<p>Bean weevil</p> <p><i>Acanthoscelides obtectus</i> (Say, 1831)</p>	<p>Adult</p>  <p>PaDil (https://www.padil.gov.au/)</p> <p>Bean weevil larvae</p>  <p>(Sunchon University)</p>	<p><i>Phaseolus vulgaris</i> (common beans) and <i>P. lunatus</i> (lima beans) are the main hosts for this weevil. It has also been recorded on a number of other legumes, such as cowpeas, chickpeas and <i>Voandzeia subterranea</i> (CABI 2019).</p>	<p><i>Acanthoscelides obtectus</i> are a significant pest of stored grain, particularly in more temperate regions, as they are able to breed at relatively low temperatures and humidity (Rees, 2004; Romano et al. 2006).</p> <p>Adults lay a single egg on the seed coat or pod. Newly hatched larvae burrow directly into the seed, where they complete their development. The white egg shell remains attached to the seed. As the larvae feeds within the seed, the egg shell is filled with frass. Infested seed have a circular translucent 'window', which is the result of the larvae feeding. Adults will emerge through this window). Adults are short lived, do not feed on grain, run quickly and are good fliers (Rees 2004).</p>
<p>Pea weevil</p> <p><i>Bruchus pisorum</i> (Linnaeus, 1758)</p>		<p><i>Cajanus cajan</i> (pigeon pea), <i>Glycine max</i> (soyabean), <i>Len culinaris</i> (lentil), <i>Vigna radiata</i> (mungbean) and <i>Vigna unguiculata</i> (cowpea) (CABI 2019).</p>	<p><i>Bruchus pisorum</i> is a major pest of peas and beans, particularly in tropical areas (Rees 2004).</p> <p>Eggs are laid individually on the seed coat or pod. Newly hatched larvae burrow directly into the seed where they complete their development. Larvae eat a round hole to the surface of the seed but leave the seed coat intact. This is visible on the</p>

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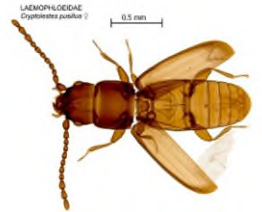
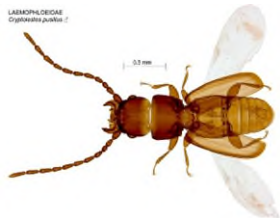

Name	Images	Main hosts	Description
	 <p>PaDil (https://www.padil.gov.au/)</p>		<p>seed surface as a circular translucent 'window'. The adult emerges through the 'window', leaving a neat circular hole in the seed (Rees 2004).</p> <p>Heavy infestations can cause quality loss and mould growth (Rees 2004).</p>
<p>Almond moth/Warehouse moth</p> <p><i>Cadra cautella</i> (Walker, 1863)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>  <p>(Rees 2004)</p>	<p>Maize, rice, wheat, sorghum, millet, oats, cereal flours, cereal products, dried cassava, groundnuts, cocoa beans, dried mango, dates, nutmeg, mace and cowpeas (CABI 2019).</p>	<p>Members of genus <i>Cadra</i> are significant pests of stored products, especially milled, processed and manufactured produce. They pests prefer warmer, tropical environments (Rees 2004).</p> <p>Adults will lay 150–200 eggs loose and at random. Egg laying occurs at dusk or dawn when the moths are most active. Larvae (caterpillars) burrow into food and will reinforce their tunnels with silk as they go. This silk may harbor other insect pests. In temperate regions, mature larvae may enter diapause. In this state they can suspend development for months, until conditions approve (Rees 2004).</p> <p>Adult moths are short lived and do not feed on the stored product (Rees 2004).</p>

Name	Images	Main hosts	Description
<p>Southern cowpea weevil</p> <p><i>Callosobruchus chinensis</i> (Linnaeus, 1758)</p>	 <p>Adult-Male</p>  <p>Adult-Female</p> <p>PaDil (https://www.padil.gov.au/)</p>	<p><i>Cicer arietinum</i> (chickpea), <i>Len culinaris</i> (lentil), <i>Vigna mungo</i> (black gram), <i>Vigna radiata</i> (mungbean) and <i>Vigna unguiculata</i> (cowpea) (CABI 2019).</p>	<p><i>Callosobruchus chinensis</i> is a major pest of legume seeds and prefers warmer, humid conditions (Rees 2004).</p> <p>Eggs are laid individually on the seed coat or pod. Newly hatched larvae burrow directly into the seed where they complete their development. Larvae eat a round hole to the surface of the seed but leave the seed coat intact. This is visible on the seed surface as a circular translucent 'window'. The adult emerges through the 'window', leaving a neat circular hole in the seed (Rees 2004).</p> <p>Heavy infestations can cause quality loss and mould growth (Rees 2004).</p>
<p>Pea and bean beetle/Cowpea weevil</p> <p><i>Callosobruchus maculatus</i> (Fabricius, 1775)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p><i>Cajanus cajan</i> (pigeon pea), <i>Glycine max</i> (soyabean), <i>Len culinaris</i> (lentil), <i>Phaseolus</i> (beans), <i>Vigna radiata</i> (mungbean) and <i>Vigna unguiculata</i> (cowpea) (CABI 2019).</p>	<p><i>Callosobruchus maculatus</i> is a major pest of peas and beans and prefers warmer, humid conditions (Rees 2004).</p> <p>Eggs are laid individually on the seed coat or pod. Newly hatched larvae burrow directly into the seed where they complete their development. Larvae eat a round hole to the surface of the seed but leave the seed coat intact. This is visible on the seed surface as a circular translucent 'window'. The adult emerges through the 'window', leaving a neat circular hole in the seed (Rees 2004).</p>



Name	Images	Main hosts	Description
			Heavy infestations can cause quality loss and mould growth (Rees 2004).
<p>Cowpea weevil</p> <p><i>Callosobruchus phaseoli</i> (Gyllenhal, 1833)</p>	 <p>Adult</p> <p>PaDil (https://www.padil.gov.au/)</p>  <p>Larvae (Rees 2004)</p>	<p><i>Lens</i> spp., <i>Lablab</i> spp., <i>Pisum</i> spp. and <i>Vigna</i> spp. (Rees 2004).</p>	<p><i>Callosobruchus phaseoli</i> is a pest of legumes. They prefer tropical conditions for development, but will breed in temperate regions also (Rees 2004).</p> <p>Eggs are laid individually on the seed coat or pod. Newly hatched larvae burrow directly into the seed where they complete their development. Larvae eat a round hole to the surface of the seed but leave the seed coat intact. This is visible on the seed surface as a circular translucent 'window'. The adult emerges through the 'window', leaving a neat circular hole in the seed. Adults do not feed on the dried seed and life span is variable (Rees 2004).</p> <p>Heavy infestations can cause quality loss and mould growth (Rees 2004).</p>




Name	Images	Main hosts	Description
<p>Rice moth</p> <p><i>Corcyra cephalonica</i> (Stainton, 1866)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p><i>Oryza sativa</i> (rice), <i>Panicum miliaceum</i> (millet), <i>Pennisetum glaucum</i> (pear millet), <i>Sorghum bicolor</i> (sorghum), <i>Triticum aestivum</i> (wheat), <i>Vigna radiata</i> (mungbean), <i>Vigna unguiculata</i> (cowpea) and <i>Zea mays</i> (maize) (CABI 2019).</p>	<p><i>Corcyra cephalonica</i> is a major pest of rice (CABI 2019) and prefers to breed in tropical regions (Rees 2004).</p> <p>Adults lay 150–200 eggs loose and at random on the stored product. Egg laying occurs at dusk or dawn when the moths are most active. Larvae (caterpillars) burrow into food and will reinforce their tunnels with silk as they go. Silk produced can block machinery and harbor other insect pests. Mature larvae emerge and wander in search of a pupation site, during which time they become obvious. Adult moths are short lived and do not feed (Rees 2004).</p> <p>Infested food becomes contaminated with silk, frass, cast skins, pupal cases and dead moths (Rees 2004).</p>
<p>Flat grain beetles</p> <p><i>Cryptolestes ferrugineus</i> (Stephens, 1831)</p> <p><i>Cryptolestes pusillus</i> (Schönherr, 1817)</p>	 <p><i>Cryptolestes ferrugineus</i>-female</p>	<p><i>Cryptolestes</i> species attack all types of grain, preferably wheat. The pest will also feed on beans, bulbs, cacao, cereal products, citrus pulp, copra, cottonseed, cowpeas, maize, malt barley, filberts, nutmeg, rice, sorghum, soybeans and sunflower (Canadian Grain Commission 2019).</p>	<p><i>Cryptolestes</i> spp. are significant pests of cereals and dried processed foods of vegetable origin. They are highly tolerant of low temperatures and can be found in cool temperate areas (Rees 2004).</p> <p><i>Cryptolestes</i> spp. breed most rapidly on milled product and damaged grain (Rees 2004). Eggs are laid in crevices in grains or loosely amongst the food. Larvae are active and move freely through the commodity feeding preferentially on grain germ. <i>Cryptolestes</i> spp. are apparently unable to feed on sound grain. Larvae enter minute cracks in the seed coat and burrow into the endosperm or germ. Pupation occurs either in a larval burrow in,</p>

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Name	Images	Main hosts	Description
<i>Cryptolestes pusilloides</i> (Steel & Howe, 1952)	 <p><i>Cryptolestes ferrugineus</i>-male</p>  <p><i>Cryptolestes pusillus</i>-female</p>  <p><i>Cryptolestes pusillus</i>-male</p> 		or between grains. The long-lived adults feed on grain and grain products (Rees 2004).

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Name	Images	Main hosts	Description
	<p><i>Cryptolestes pusilloides</i>-adult</p> <p>PaDil (https://www.padil.gov.au/)</p>		
<p>Cacao moth/Tobacco moth</p> <p><i>Ephestia elutella</i> (Hübner, 1796)</p>	 <p>Adult</p> <p>Larvae</p> <p>PaDil (https://www.padil.gov.au/)</p>	<p><i>E. elutella</i> infest cereals, cereal products, dried fruit, cocoa beans and nuts (CABI 2019).</p>	<p>Members of the genus <i>Ephestia</i> are pests of stored products, especially milled, processed and manufactured produce. Breeding occurs at low temperatures and pests are found in cool temperate regions (Rees 2004).</p> <p>Adults lay 150–200 eggs loose and at random on the stored product. Egg laying occurs at dusk or dawn when the moths are most active. Larvae (caterpillars) burrow into food and will reinforce their tunnels with silk as they go. Silk produced can block machinery and harbour other insect pests. Mature larvae emerge and wander in search of a pupation site, during which time they become obvious. Larvae preferentially feed on the germ and bran layer of whole grains. Adults moths are short lived and do not feed (Rees 2004).</p> <p>Infested food becomes contaminated with silk, frass, cast skins, pupal cases and dead moths (Rees 2004).</p>
<p>Mediterranean flour moth</p> <p><i>Ephestia kuehniella</i> Zeller, 1879</p>	 <p>Male-adult</p>	<p><i>E. kuehniella</i> is a pest of wheat, flour, maize, rice, sorghum, oats and barley, almonds, date palms, carob pods, fruits and flowers, pollen, leaves, roots (dried), biscuits, human food and animal feed (CABI 2019).</p>	




Name	Images	Main hosts	Description
	 <p>Female-adult</p>  <p>Larvae</p> <p>PaDil (https://www.padil.gov.au/)</p>		
<p>Merchant grain beetle</p> <p><i>Oryzaephilus mercator</i> (Fauvel, 1889)</p>	 <p>Adult</p>	<p><i>Oryzaephilus mercator</i> is primarily a pest of products with a high oil content, but may also infest processed cereals, dried fruit, nuts and a range of stored products (PaDil 2019). Some other hosts include coconut, dates, maize, palm kernel, melon seed, cocoa, wild mango, bitter melon and groundnut (Dudu, Okiwelu & Lale 1998).</p>	<p><i>Oryzaephilus</i> spp. are significant pests of stored products. They are more often found on dried fruit and oilseeds, rather than cereals. This pest will breed in high temperate conditions (Rees 2004).</p> <p>Eggs are laid loose or in cracks and crevices in grains. Several hundred eggs are laid over the life span of the female. Larvae move freely amongst the foodstuff and eventually pupate within a cocoon-like structure made from small grains or food particles. Adults are long lived and feed on the product (Rees 2004).</p>


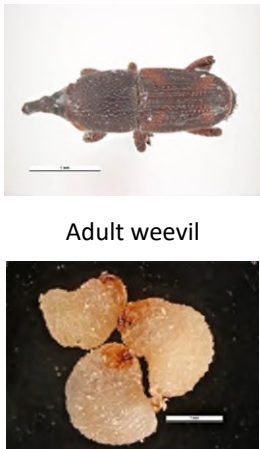
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Name	Images	Main hosts	Description
	 <p>Larvae PaDil (https://www.padil.gov.au/)</p>		
<p>Saw-toothed grain beetle</p> <p><i>Oryzaephilus surinamensis</i> (Linnaeus, 1767)</p>	 <p>Adult PaDil (https://www.padil.gov.au/)</p>  <p>Larvae (Rees 2004)</p>	<p>Pest of cereals including oats, barley, rice, millet, sorghum, wheat, maize, and cereal products. It may also be found on copra, spices, nuts and dried fruit (CABI 2019).</p>	<p><i>Oryzaephilus</i> spp. are significant pest of stored products. They are more often found on dried fruit and oilseeds, rather than cereals. This pest will breed in high temperate conditions (Rees 2004).</p> <p>Eggs are laid loose or in cracks and crevices in grains. Several hundred eggs are laid over the life span of the female. Larvae move freely amongst the foodstuff and eventually pupate within a cocoon-like structure made from small grains or food particles. Adults are long-lived and feed on the product. At higher temperatures, adults will live 6–8 months, and in cooler temperatures this may extend to several years (Rees 2004).</p>



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Name	Images	Main hosts	Description
<p>Indian meal moth</p> <p><i>Plodia interpunctella</i> (Hübner, 1813)</p>	 <p>Adult</p> <p>PaDil (https://www.padil.gov.au/)</p>  <p>Larvae</p> <p>(USDA-Stored Grain Insect Reference 2016)</p>	<p>Stored grain including oats, sunflower, barley, rice, maize and wheat; milled products, nuts, spices, peas, beans, lentils and other commodities (CABI 2019).</p>	<p><i>Plodia interpunctella</i> is one of the most commonly reported pests of stored grains. This pest prefers warm, tropical regions (Rees 2004).</p> <p>Adults lay 150–200 sticky eggs at random, which adhere to the product. Egg laying occurs at dusk or dawn when the moths are most active. Larvae (caterpillars) burrow into food and will reinforce their tunnels with silk as they go. Silk produced can block machinery and harbor other insect pests. Mature larvae emerge and wander in search of a pupation site, during which time they become obvious. Larvae preferentially feed on the germ and bran layer of whole grains. Adult moths are short lived and do not feed (Rees 2004).</p> <p>Infested food becomes contaminated with silk, frass, cast skins, pupal cases and dead moths (Rees 2004).</p>

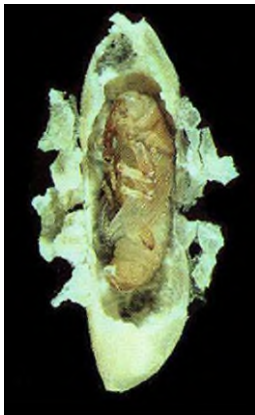


Name	Images	Main hosts	Description
<p>Lesser grain borer</p> <p><i>Rhyzopertha dominica</i> (Fabricius, 1775)</p>	 <p>Adult</p> <p>PaDil (https://www.padil.gov.au/)</p>  <p>Larvae</p>  <p>Pupa</p>	<p>Cereal grains such as wheat, barley, sorghum and rice, dried fruit, pharmaceutical drugs, cork, timber and paper products (Canadian Grain Commission 2019).</p>	<p><i>Rhyzopertha dominica</i> is a major pest of whole cereals, especially wheat, barley, sorghum and rice. This pest prefers warm, humid regions (Rees 2004).</p> <p>Eggs are laid singly or in batches of up to 20. Under optimal conditions, some 400 eggs can be laid over adult's life span. Newly hatched larvae bore into grain or feed amongst damaged grain and flour produced by adults. Mature larvae become increasingly 'C'-shaped and immobile. Pupation occurs within a grain or in debris and flour. Adults are long lived, can fly well and feed voraciously (Rees 2004).</p> <p>Grain heavily infested with <i>R. dominica</i> may emit a characteristic sweet odour (Rees 2004).</p>

Name	Images	Main hosts	Description
	(USDA-Stored Grain Insect Reference 2016)		
Granary weevil <i>Sitophilus granarius</i> (Linnaeus, 1758)	 PaDil (https://www.padil.gov.au/)	Stored grain including wheat, barley, corn, maize, sorghum and rice (CABI 2019; Campbell 2002).	<p><i>Sitophilus granarius</i> is a pest of whole grains, cereal products and pulses. This pest prefers warm, humid areas, but development may take place in lower temperate regions (Rees 2004).</p> <p>Females lay up to 150 eggs over their lifespan. Eggs are laid singly into holes chewed into grains. Holes are plugged with waxy secretions. Larvae develop hidden within the hollowed out cavity. Adults chew their way out, leaving a ragged hole. Adult beetles will continue to feed on grain and are long lived (Rees 2004).</p> <p>Infestations encourage mould growth and attracts other insect species (Rees 2004).</p>
Rice weevil <i>Sitophilus oryzae</i> (Linnaeus, 1763)	 Adult weevil Larvae	Stored grain including wheat, barley, corn, maize, sorghum and rice (CABI 2019; Campbell 2002).	<p><i>Sitophilus</i> species are major pests of whole cereal grains (Rees 2004). <i>S. oryzae</i> prefers tropical or subtropical environments but can survive temperate regions if in protected conditions (Canadian Grain Commission 2019).</p> <p>Adults lay 300–400 eggs into small holes chewed into the grain surface. The hole is then plugged with waxy secretion. More than one larva can develop in a single grain kernel (Rees 2004). Adults make a small, circular emergence hole. Upon emergence adults have the ability to fly and will eat the commodity (Canadian Grain Commission 2019).</p>



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Name	Images	Main hosts	Description
	PaDil (https://www.padil.gov.au/)		
<p>Maize weevil</p> <p><i>Sitophilus zeamais</i> (Motschulsky, 1855)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>  <p>Larvae</p>	<p>Stored grain including wheat, barley, corn, maize, sorghum and rice (CABI 2019; Campbell 2002).</p>	<p><i>Sitophilus</i> species are major pests of whole cereal grains (Rees 2004). They are abundantly distributed in tropical environments (Canadian Grain Commission 2019).</p> <p>Females chew a small hole on the surface of grain to lay eggs into it. The hole is then plugged with waxy secretions. Development occurs within the grain (Rees 2004). Adult beetles leave a ragged hole upon emergence, have the ability to fly and are long lived (Canadian Grain Commission 2019).</p> <p>Maize weevil infestations will also produce heat and moisture within pockets of the commodity (Canadian Grain Commission 2019).</p>

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Name	Images	Main hosts	Description
	 <p>Pupa</p> <p>(USDA-Stored grain insect reference-2016)</p>		
<p>Angoumois grain moth</p> <p><i>Sitotroga cerealella</i> (Olivier, 1789)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>  <p>(Rees 2004)</p>	<p>Stored products including oats, barley, rice, sorghum, wheat and maize (CABI 2019).</p>	<p><i>Sitotroga cerealella</i> is a pest of whole cereal grain. It prefers mild to warm temperate regions (Rees 2004).</p> <p>Females lay up to 150 eggs on the outside of grains, either singly or in groups. Eggs become red in colour. Newly hatched larvae burrow into grain and leave emergence windows for adults to emerge. Adults are short lived and do not feed (Rees 2004).</p> <p>It is characteristic for adults to leave the pupal case sticking out of the emergence hole. Infestations produce heat and moisture that may encourage mould growth and attract other insect species (Rees 2004).</p>

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Name	Images	Main hosts	Description
Rust-red flour beetle <i>Tribolium castaneum</i> (Herbst, 1797)	 <p>PaDil (https://www.padil.gov.au/)</p>  <p>(Rees 2004)</p>	Cereals, millet, wheat bran, flour, beans, peas, lentils, butter beans, lucerne seed, groundnut seed, flax, flax seed, rubber seed, cotton seed, safflower seed, sunflower seed, soybean meal, ginger, chillies, cinnamon, nutmeg, cocoa, copra, yams, tapioca, dried fruit, areca nuts, brazil nuts, walnuts and almonds (Kumar 2017).	<p><i>Tribolium castaneum</i> is one of the most important pests of stored grain worldwide. It is tolerant in a large temperate range and low humidity (Rees 2004).</p> <p>Each female lays 400–500 eggs and has one of the highest rates of population growth for stored-product pests (Canadian Grain Commission 2019).</p> <p>The pest is usually found within heated grain. The grain may develop a pinkish tinge when a large number of insects are present. The adult beetle releases a noxious secretion when disturbed that results in a pungent odour in the infested commodity, rendering it unfit for consumption (Canadian Grain Commission 2019).</p>


Name	Images	Main hosts	Description
<p>Confused flour beetle</p> <p><i>Tribolium confusum</i> (Jacquelin du Val, 1868)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p>Oats, rice, pearl millet, sorghum, wheat, wheat flour, maize and some other dried stored products (CABI 2019)</p>	<p><i>Tribolium confusum</i> is one of the most important pests of stored grain worldwide. It is tolerant in a large temperate range and low humidity (Rees 2004).</p> <p>Each female lays 200–700 eggs loosely in the stored product and has one of the highest rates of population growth for stored-product pests (Canadian Grain Commission 2019).</p> <p>Infested grain may develop a pinkish tinge when a large number of insects are present. The adult beetle releases a noxious secretion when disturbed that results in a pungent odour in the infested commodity, rendering it unfit for consumption (Canadian Grain Commission 2019).</p>
<p>Khapra beetle</p> <p><i>Trogoderma granarium</i> (Everts, 1899)</p> <p>Important: This pest is absent from Australia. If suspected contact the department's See. Secure.</p>		<p>Khapra beetle is a generalist pest of dried, stored products. This pest has been intercepted in the United States on more than 75 hosts. The vast majority of khapra beetle interceptions were found in shipments of seeds, although other plant materials also served as hosts (for example, fruits, flowers and spices). Species of seeds containing khapra beetle included <i>Allium cepa</i>, <i>Apium graveolens</i>, <i>Apium graveolens</i> var. <i>dulce</i>, <i>Arachis hypogaea</i>, <i>Brassica carinata</i>, <i>Cajanus cajan</i>, <i>Capsicum</i> sp.,</p>	<p><i>T. granarium</i> ranks as one of the most destructive pests of stored products and is especially serious in hot dry climates (Rees 2004).</p> <p>The lifecycle of <i>T. granarium</i> is dependent on conditions. Females lay eggs amongst the commodity. Larvae moult multiple times and are able to enter diapause if conditions are unfavourable. Adults are unable to fly and do not feed (Canadian Grain Commission 2019).</p> <p>Infestation of <i>T. granarium</i> are often identified due to accumulation of cast larval skins (Canadian Grain Commission 2019).</p>

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Name	Images	Main hosts	Description
Report Hotline 1800 798 636 for advice.	<p>PaDil (https://www.padil.gov.au/)</p>  <p>Adult and larvae (MAFF)</p>	<i>Cicer arietinum</i> , <i>Citrullus lanatus</i> , <i>Citrullus</i> sp., <i>Coriandrum sativum</i> , <i>Corylus</i> sp., <i>Cucumis melo</i> , <i>Cucumis</i> sp., <i>Curcurbita maxima</i> , <i>Curcubita</i> sp., <i>Curcurbitaceae</i> , <i>Cuminum</i> sp., <i>Cupressus</i> sp., <i>Cyamopsis</i> <i>tetragonoloba</i> , <i>Cydonia oblonga</i> , <i>Elettaria cardamomum</i> , <i>Fabaceae</i> , <i>Foeniculum vulgare</i> , <i>Glycine max</i> , <i>Gossypium</i> sp., <i>Hordeum vulgare</i> , <i>Lathyrus</i> sp., <i>Lens culinaris</i> , <i>Momordica charantia</i> , <i>Oryza sativa</i> , <i>Oryza</i> sp., <i>Phaseolus lunatus</i> , <i>Phaseolus</i> sp., <i>Phaseolus vulgaris</i> , <i>Pinus</i> sp., <i>Pistacia</i> sp., <i>Pistacia vera</i> , <i>Pisum sativum</i> , <i>Prunus amygdalus</i> , <i>Prunus dulcis</i> , <i>Prunus</i> sp., <i>Sesamum</i> <i>indicum</i> , <i>Solanaceae</i> , <i>Tamarindus</i> <i>indica</i> , <i>Trigonella foenum-graecum</i> , <i>Triticum aestivum</i> , <i>Triticum</i> sp., <i>Vicia</i> <i>faba</i> , <i>Vigna radiata</i> , <i>Vigna</i> sp. and <i>Vigna unguiculata</i> (Pasek 1998).	
Larger cabinet beetle <i>Trogoderma</i> <i>inclusum</i> (LeConte, 1854)	 <p>PaDil (https://www.padil.gov.au/)</p>	Larvae are usually found within infested, stored items such as cereals, dried plant products, cocoa, corn meal, milk powder, dried soups, wheat, rice, seeds, dried insects and wool (PaDil 2019).	<i>Trogoderma inclusum</i> is a major pest of stored grains. The beetles are pests of granaries, flour mills, food-packaging plants and warehouses (PaDil 2019). The adult female beetle lays up to 100 eggs, depositing them singly usually in cracks or crevices or among the food source itself (Canadian Grain Commission 2019).

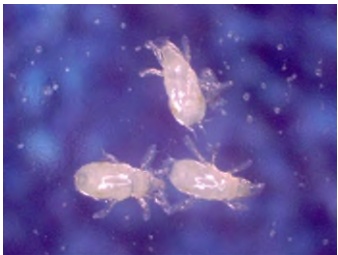

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Name	Images	Main hosts	Description
<p>Important: This pest is absent from Australia. If suspected contact the department's See. Secure. Report Hotline 1800 798 636 for advice.</p>			<p>The most readily identifiable sign of infestation is the presence of cast larval skins among the commodity (Canadian Grain Commission 2019).</p>
<p>Warehouse beetle</p> <p><i>Trogoderma variabile</i> (Ballion, 1878)</p>	 <p>Adult-Male and Female</p>	<p>Cereals and cereal products such as rice, wheat, maize, barley, oatmeal, pasta and breakfast cereals, but has been found on pulses, fruit and nuts (CABI 2019).</p>	<p><i>Trogoderma variabile</i> is a frequent pest of storage structures and is becoming a pest of bulk-stored canola in Australia (Rees, Starick & Wright 2003).</p> <p>Females lay eggs randomly on dried plant or animal material. Larvae are able to enter diapause (dormant state) when developmental conditions are unsuitable (Canadian Grain Commission 2019).</p> <p>The larvae cause damage when they feed and damage all parts of the seed except for the shell. Larvae can infest bagged grain and processed, packaged food. The most readily identifiable sign of infestation is the presence of cast larval skins among the commodity (Canadian Grain Commission 2019).</p>




Name	Images	Main hosts	Description
	 <p>Larvae PaDil (https://www.padil.gov.au/)</p>		

Minor (Secondary) injurious insect pests

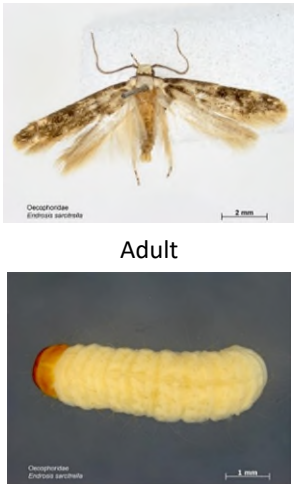

The following table illustrates and describes minor injurious insect pests associated with stored grain and plant products.

Name	Images	Main hosts	Description
<p>Flour mite/Grain mite</p> <p><i>Acarus siro</i> (Linnaeus, 1758)</p>	 <p>(Canadian Grain Commission 2019)</p>	<p><i>A. siro</i> has been recorded in various foodstuffs, including fresh, dried and mouldy, cheese, flour, grains, hay, soils, and bird nests (PaDil 2019).</p>	<p><i>Acarus siro</i> is a secondary pest of grain and flour. They prefer high humidity conditions (Canadian Grain Commission 2019).</p> <p>Females lay up to 250 eggs in a month. Adult mites mainly feed on the germ, but can subsist on organic debris in cracks, crevices and corners of storage areas (Canadian Grain Commission 2019).</p> <p>Signs of infestation include grain dust appearing to move. Very high mite populations cause a sweet odour. Germ of grain is often completely destroyed, and it may cause the product to be rendered unsuitable for consumption (Canadian Grain Commission 2019).</p>
<p>Stored grain moth</p> <p><i>Aglossa caprealis</i> (Hübner, 1809)</p>	 <p>(Sarefo 2007)</p>	<p>The larvae feed on dry plant waste, grain, hay, straw and decaying manure. Sometimes, they even eat animal carcasses, suet, lard, pork rinds and other fatty materials (Grabe 1942).</p>	<p><i>Aglossa caprealis</i> is a minor pest of residue and is associated with maize seed.</p> <p>The larvae feed in a silken tube or gallery amongst hay or wheat stacks and on associated vegetable matter (UK Moths 2019). The adult moth flies from June to August, depending on location (Atlas of Living Australia 2019).</p>




Name	Images	Main hosts	Description
<p>Foreign grain beetle</p> <p><i>Ahasverus advena</i> (Waltl, 1832)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p>Cereal grain, oilseeds, copra, peanuts, dried fruit, dried herbs and cocoa beans (Rees 2004).</p>	<p><i>Ahasverus advena</i> is a minor secondary pest of a wide range of commodities, especially moist, mouldy grain (Rees 2004). The foreign grain beetle is found in both tropical and temperate regions (Canadian Grain Commission 2019).</p> <p>Eggs are laid singly or in small clusters in cracks and crevices in grain. Larvae move freely among the foodstuff and pupate within cocoons (Rees 2004).</p> <p>Signs of infestation include heated, damp grain with mould present (Canadian Grain Commission 2019).</p>
<p>Corn sap beetle</p> <p><i>Carpophilus dimidiatus</i> (Fabricius, 1792)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p>Attacks maize, but is a more serious pest of dried fruit commodities such as dates (PaDil 2019). Primarily on mouldy grain residues (Rees 2004).</p>	<p><i>Carpophilus</i> spp. are a minor pest of stored grain (Rees 2004). This pest occurs throughout tropical, subtropical and milder temperate regions of the world (PaDil 2019).</p> <p>Females lay up to 1000 eggs over a 3–4 month period. Larvae and adults feed on the commodity. Larvae may burrow into mouldy grain residues. Populations develop rapidly and adults fly readily. Sap beetles may transmit mould spores, bacteria and yeasts (Canadian Grain Commission 2019).</p>

Name	Images	Main hosts	Description
<p>Dried fruit beetle</p> <p><i>Carpophilus hemipterus</i> (Linnaeus, 1758)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p><i>Carpophilus</i> spp. attack corn, but are a more serious pest of dried fruit commodities such as dates (PaDil 2019). Primarily on mouldy grain residues (Rees 2004).</p>	<p><i>Carpophilus</i> spp. are a minor pest of stored grain (Rees 2004). This pest occurs throughout tropical, subtropical and milder temperate regions of the world (PaDil 2019).</p> <p>Females lay up to 1000 eggs over a 3–4 month period. Larvae and adults feed on the commodity. Larvae may burrow into mouldy grain residues. Populations develop rapidly and adults fly readily. Sap beetles may transmit mould spores, bacteria and yeasts (Canadian Grain Commission 2019).</p>
<p>Sap beetle</p> <p><i>Carpophilus ligneus</i> (Murray, 1864)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>		
<p>Sap beetle</p> <p><i>Carpophilus obsoletus</i> (Erichson, 1843)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>		




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Name	Images	Main hosts	Description
<p>White-shouldered house moth</p> <p><i>Endrosis sarcitrella</i> (Linnaeus, 1758)</p>	 <p>Adult</p> <p>Larvae</p> <p>PaDil (https://www.padil.gov.au/)</p>	<p>Stored grain, dried foods, animal and plant products, cereals, pulses, dried dog food and fungi. May be associated with bird nests (Canadian Grain Commission 2019).</p>	<p><i>Endrosis sarcitrella</i> is associated with stored products, primarily as a scavenger. The presence of this species in large numbers suggests poor hygiene (Rees 2004). These moths prefer high humid conditions (Canadian Grain Commission 2019).</p> <p>Eggs are elliptical and dull white. About 200 eggs are laid in rows or masses of 10–50, adhering together (PaDil 2019). Irregular holes may be present in the infested commodity. Grain connected by silken material is a sign of infestation, though not unique to this species. The presence of silk and frass is also a sign of infestation (Canadian Grain Commission 2019).</p>
<p>Broadhorned flour beetle</p> <p><i>Gnatocerus cornutus</i> (Fabricius, 1798)</p>	 <p>Adult female</p> <p>Adult male</p>	<p>This insect prefers to feed in flour and meal but is found in a variety of grains (USDA 2015).</p>	<p><i>Gnatocerus cornutus</i> is a minor pest of stored products and is found in flour and feed mills as scavengers on grain debris (Rees 2004).</p> <p>Females lay 100–200 small white eggs amongst the commodity, which will hatch in 4–6 days in warm weather (USDA 2015). Larvae hatch and move freely among the commodity, feeding. Adults are relatively long lived, feed on the commodity and are able to fly. This species is also partially predatory, feeding on living and dead insects, as well as other animal protein sources when available (Canadian Grain Commission 2019).</p>



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Name	Images	Main hosts	Description
	PaDil (https://www.padil.gov.au/)		When infested there will be a disagreeable odour in the commodity (Canadian Grain Commission 2019).
Cigarette beetle/Tobacco beetle <i>Lasioderma serricorne</i> (Fabricius, 1792)	 <p>Adult beetle</p>  <p>Larvae</p> <p>PaDil (https://www.padil.gov.au/)</p>	<i>L. serricorne</i> has a very wide host range including stored grains and seeds, packaged food products, and animal and plant derived items and commodities (especially dried tobacco) (PaDil 2019).	<i>Lasioderma serricorne</i> is a major pest of dried processed food and a minor pest of grain. They prefer subtropical and tropical regions (Canadian Grain Commission 2019). Females lay around 100 eggs loosely on the substrate. Larvae are active and will move around and bore into cracks and crevices in product to feed (Atlas of Living Australia 2019; Rees 2004). Adults are short lived and do not feed on the commodity, but they may cause damage by chewing on surrounding structures (Canadian Grain Commission 2019).
Long-headed flour beetle <i>Latheticus oryzae</i> (Waterhouse, 1880)	 <p>PaDil (https://www.padil.gov.au/)</p>	Commodities affected include pasta, dried cassava, oats, tea, sorghum, maize and cereal grains (Canadian Grain Commission 2019).	<i>Latheticus oryzae</i> is a generalist feeder and a minor pest of whole grain and milled products (Rees 2004). This beetle prefers high temperate conditions for development (Canadian Grain Commission 2019). It readily infests damaged grain (PaDil 2019). Eggs are laid at random throughout the food source and larvae actively move through the food (Canadian Grain Commission 2019).



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Name	Images	Main hosts	Description
			When infested, there will be an unpleasant odour in the commodity (Rees 2004).
Northern Spider Beetle/Shiny Spider beetle <i>Mezium affine</i> (Boieldieu, 1856)	 PaDil (https://www.padil.gov.au/)	Spider beetle larvae infest dry animal and vegetable matter including grain, spices, fish meal, dog biscuits, dried fruit and a wide variety of miscellaneous debris (PaDil 2019).	<p><i>Mezium affine</i> and <i>M. americanum</i> are minor pests and are typically associated with residue in a storage structure (Rees 2004). Spider beetles generally prefer higher humidity areas (Canadian Grain Commission 2019).</p> <p>In bulk commodities, infestations remain near the surface (Rees 2004). Commodities are contaminated with silk, granular materials and silken cocoons. Larvae may feed in clusters and web kernels together. Webbing will often reduce the grain quality (Canadian Grain Commission 2019).</p>
American Spider beetle <i>Mezium americanum</i> (Laporte, 1840)	 PaDil (https://www.padil.gov.au/)		
European grain moth <i>Nemapogon granella</i> (Linnaeus, 1758)	 Adult moth	Commodities affected include rye, wheat, barley, oats, corn, soybeans, rice, nuts, seeds, dried fruits and mushrooms (Canadian Grain Commission 2019).	<p><i>Nemapogon granella</i> is found in dried material of vegetable origin and is a minor pest of stored grain (Rees 2004).</p> <p>Females lay one to two eggs on each grain, laying up to 100 eggs. Eggs are oval and a yellowish white colour (PaDil 2019). Adults are most often seen during the summer months (Atlas of Living Australia 2019).</p> <p>Damage is caused by the larvae feeding. Larvae infest the top 5–6 cm of the bulk grain, feeding first</p>

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Name	Images	Main hosts	Description
	 <p>Larvae PaDil (https://www.padil.gov.au/)</p>		on the germ and then on the endosperm. Infested grain has a disagreeable odour, is clumped and contaminated with silk and frass (Canadian Grain Commission 2019).
<p>Small-eyed flour beetle</p> <p><i>Palorus ratzeburgii</i> (Wissmann, 1848)</p>	 <p>Canadian Grain Commission (grainscanada.gc.ca)</p> <p>(USDA-Stored grain insect reference-2016)</p>	Primarily associated with residues or slightly damp grain, heated grain, mill machinery or grain that has been damaged by other insects (Rees 2004).	<p><i>Palorus</i> spp. are minor pests of a wide range of stored products and breed in moderate to tropic temperate areas (Rees 2004).</p> <p>Eggs are laid at random as females move throughout the food source. Eggs are sticky and will become coated in the flour or other particles. Larvae are active and move through the food source. Pupation takes place within a cell made amongst the substrate. Adults can fly and feed on the commodity (Rees 2004).</p> <p>Infested product has a disagreeable odour (Rees 2004).</p>

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Name	Images	Main hosts	Description
<p>Depressed flour beetle</p> <p><i>Palorus subdepressus</i> (Wollaston, 1864)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>		
<p>Psocids or Booklice</p> <p>Psocoptera</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p>Almost any stored product of animal or plant origin will be attacked. Huge populations have been found infesting stored grain in warm temperate and tropical areas (Rees 2004).</p>	<p>Species are associated with stored products mostly belong to four families: Lachesiilidae, Liposcelididae, Psylliposcidae and Trogidae. Liposcelididae is considered the most important family of all the four mentioned above. These pests prefer moderate to warm temperatures (Rees 2004).</p> <p>Females lay 3–4 unfertilised diploid eggs per day (PaDil 2019). Eggs are laid at random throughout the food source. Adults may be winged or wingless; nymphs are always wingless (Canadian Grain Commission 2019).</p> <p>Psocoptera feed preferentially on germ of broken or damaged kernels (Canadian Grain Commission 2019).</p>




Name	Images	Main hosts	Description
<p>White-marked spider beetle</p> <p><i>Ptinus fur</i> (Linnaeus, 1758)</p>	 <p>Male</p>  <p>Female</p> <p>PaDil (https://www.padil.gov.au/)</p>	<p>Flour, corn meal, bran, seeds, grain, pepper, cocoa and sugar. Will feed on almost any organic matter of vegetable origin including stored food (Canadian Grain Commission 2019).</p>	<p><i>Ptinus fur</i> is a minor pest of starchy materials such as grain and flour. Moderate temperatures are optimum for development (Howe & Burges 1951).</p> <p>Larvae will normally moult around three times and adult beetles will live for several months (Howe & Burges 1951).</p> <p>Signs of infestation webbing, granular material and chew holes (Canadian Grain Commission 2019).</p>
<p>Australian spider beetle</p> <p><i>Ptinus tectus</i> (Boieldieu, 1856)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>	<p>Grain and flour. May also attack all kinds of substances of both plant and animal origins (PaDil 2019).</p>	<p><i>Ptinus tectus</i> is a minor pest of starchy materials such as grain and flour. Mild to moderate temperatures are optimum for development (Ewer & Ewer 1942).</p> <p>Female <i>P. tectus</i> lay 100–120 sticky eggs over a 4–5 week period. Larvae are fleshy, curved, covered with hair and relatively immobile. Larval development takes at least 6 weeks. When mature, larvae wander in search of a pupation site. Adults emerge after 20–30 days and will live for as long as 12 months (Atlas of Living Australia 2019).</p>

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Name	Images	Main hosts	Description
Meal moth <i>Pyralis farinalis</i> (Linnaeus, 1758)	 <p>PaDil (https://www.padil.gov.au/)</p> <p>(USDA-Stored grain insect reference-2016)</p>	Usually associated with aged residues, sweepings and composting matter (Rees 2004).	<p><i>Pyralis farinalis</i> is a minor pest of mills and storage residue. High temperatures are optimum for development (Rees 2004).</p> <p>Adult moths do not feed, have a short life span and lay eggs at dusk or dawn when moths are most active. Larvae (caterpillars) feed on the germ and bran layer of whole grains. Mature larvae become more obvious when they emerge from feeding sites in search of a pupation site. Adult moths display highest flight activity at dusk with a smaller peak at dawn and are generally less active during daylight hours (Rees 2004).</p> <p>Infested product becomes contaminated with silk, frass, cast skins, pupal cases and dead moths (Rees 2004).</p>
Yellow mealworm <i>Tenebrio molitor</i> (Linnaeus, 1758)		<i>Tenebrio</i> spp. are scavengers of a wide range of cereals and cereal products, especially if damp and in poor conditions such as aged residues (Rees 2004).	<p><i>Tenebrio</i> spp. are minor pests of stored grain (Rees 2004).</p> <p>Adults lay their eggs amongst the commodity. Adults are long lived and will feed on the commodity. Adults also have the ability to fly.</p>

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Name	Images	Main hosts	Description
	<p>PaDil (https://www.padil.gov.au/)</p>  <p>(USDA-Stored grain insect reference-2016)</p>		<p>Larvae are mobile and will also live within the commodity (Rees 2004). Fully developed larvae leave the stored product to bore into surrounding fabrics to pupate (Oz Animals 2019).</p> <p>These pests damage stored product by feeding on both whole grains as well as processed products. They will also feed on the larvae of other grain-infesting insect pests (Oz Animals 2019). Damage to stored product is generalised and not easily recognisable as being caused by these pests (Canadian Grain Commission 2019).</p>
<p>Dark mealworm</p> <p><i>Tenebrio obscurus</i> (Fabricius, 1792)</p>	 <p>PaDil (https://www.padil.gov.au/)</p>		

Name	Images	Main hosts	Description
	 <p>(USDA-Stored grain insect reference-2016)</p>		
<p>Cadelle beetle</p> <p><i>Tenebroides mauritanicus</i> (Linnaeus, 1758)</p>	 <p>5 mm</p> <p>Adult</p> <p>PaDil (https://www.padil.gov.au/)</p>  <p>Larvae (Oz Animals, 2019)</p>		

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Name	Images	Main hosts	Description
<p>Hairy fungus beetle</p> <p><i>Typhaea stercorea</i> (Linnaeus, 1758)</p>	 <p>Adult</p> <p>PaDil (https://www.padil.gov.au/)</p>  <p>Larvae</p> <p>USDA-ARS-GMPRC Image Database</p>	<p>Mouldy cereals, tobacco, cocoa and hay (PaDil, 2019).</p>	<p><i>Typhaea stercorea</i> is a common pest in a wide range of mouldy stored grain products (Rees 2007).</p> <p>Eggs are laid on or loosely attached to the grain. Larvae are able to move easily and adults are short lived with the ability to run fast and fly (Rees 2004).</p> <p>These pests are commonly found in moist environments on ripening hay and grain crops before harvest in temperate and tropical areas (Rees 2004). Damage caused is a result of the pest feeding on fungi growing on moist grain rather than the grain itself (PaDil, 2019).</p>

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Related material

- *Export Control Act 2020*
- Export Control (Plants and Plant Products) Rules 2021
- [Manual of Importing Country Requirements \(Micor – Plants\)](#)
- [Plant Exports Operations Manual \(PEOM\)](#)
 - Guideline: *Inspection of prescribed grain and plant products for export*
 - Work Instruction: *Inspecting prescribed grain and plant products for export*
 - Work Instruction: *Inspecting processed plant products for export produced under quality systems recognition*
 - Reference: *Plant exports guide—prescribed grain and plant products inspection techniques*
 - Reference: *Plant exports guide—equipment*
 - Reference: *Plant exports guide—specimen collection*

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The following table details the published date and amendment details for this document.

Version	Date	Amendment details
1	11/03/2020	First publication of this reference.
2	3/06/2020	Document re-published from IML Archive with no changes.
3	16/11/2021	Amendments for the <i>Export Control Act 2020</i> and associated Plant Rules.