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Common Seasonal Pests

Your guide to prevent the spread of animal and plant pests, diseases and weeds.

The purpose of this publication is to assist in the identification of common pests and some of the more important pests of quarantine interest to Western Australia.

While the Department of Agriculture will identify insect specimens free of charge and weeds and diseases suspected of being potential agricultural pests, accurate identification can only be made if actual specimens are submitted. Department of Agriculture personnel cannot provide advice based on a description of the pest or symptoms only. However, vertebrate identification can often be made by phone. Details on how to submit specimens for identification are included at the back of the book.

In Western Australia, some animals and plants are declared pests under the *Agriculture and Related Resources Protection Act 1976 (ARRP Act)*. This legislation protects our agriculture and natural resources.

As a landholder and community member, it is wise to become familiar with your responsibilities under this Act, so that you can help prevent the introduction and spread of declared animal and plant pests, diseases and weeds.

If you see any unfamiliar animal and/or plant pest, disease or weed it should be reported to your local Department of Agriculture.

Further information on declared animals and plants can be obtained from http://www.agric.wa.gov.au

ACKNOWLEDGMENTS

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AGRICULTURE PROTECTION BOARD

NURSERY AND GARDEN INDUSTRY OF WA

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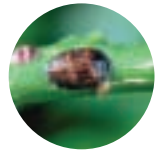


Introduction

Each year, we encounter a number of animal and plant pests, diseases and weeds that concern us when they make their regular seasonal debut.

These rogues damage our properties and are quite costly to do something about.

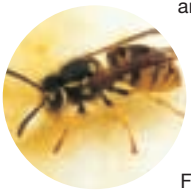
You can't barricade your property from all risks – but you can be aware of what they are, how to recognise them and how to manage them. You can take positive steps to protect your property, animals, plants, and even the health of your family and the neighbours.

This *"Common Seasonal Pests"* publication provides easy identification of the most common animal, plant, insect and bird pests, diseases and weeds.

It is hoped that *"Common Seasonal Pests"*, with its practical information, will readily assist you in locating the contact point for any of your animal or plant pest, disease or weed enquiries.

If in doubt, then it's best to look, check and ask the expert.

Plant and insect sampling kits are available from your local Department of Agriculture for those occasions when you want to identify an unfamiliar plant, seed, disease or insect. This identification service is free for insects, weeds and diseases when they are suspected of being a new threat. Suspected animal and bird pests can also be identified by contacting the Department of Agriculture.



Further information on the services provided by the Department of Agriculture is available by phoning 9368 3333 or by visiting the website at www.agric.wa.gov.au

Quarantine PESTS

The following pests

are not yet established in Western Australia.

Please report these and

any other suspected

quarantine pest immediately

to the Department of Agriculture.

BUMBLEBEE

Bumblebee
Bombus terrestris

What does a bumblebee look like?
Bumblebees are large, hairy social bees. The bumblebee is black with one yellow/ochre band across the front of the thorax and another across the abdomen. The tip of the abdomen is buff or white. Workers range from 8-22 mm in length.

What damage do bumblebees cause?
Bumblebees are not present in Western Australia but would compete with native nectar feeding fauna, reduce seed production of native plant species and increase seed production of introduced plants, or “sleeper weeds”. They also sting, and are a potential threat to the environment and primary production.

When am I likely to see this pest?
Bumblebees are not established in Western Australia but have established in Tasmania.

What if I find bumblebees?
Contact the Department of Agriculture with a description of the insect (size, colour, appearance, noise when flying), the date, time and location of the sighting, and any information on the habitat, host plant or flower and weather conditions.

Where do I seek advice?
Call the Pest and Disease Information Service on 9368 3666 or email info@agric.wa.gov.au

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘bumblebees’ in the search facility and click ‘go’.

CANE TOAD

Cane toad
Bufo marinus

What does a cane toad look like?
Cane toads are heavily built, with rough, warty skin and are typically 10-15 cm long. They range from dull brown, yellowish to blackish on top and mottled brown underneath. Cane toads have large glands behind the head, and the call of the male is a broken brrrrrrr sound like a telephone dial tone.

What damage can cane toads cause?
They destroy beneficial insects like dung beetles and present an economic threat to beekeepers, particularly in spring. They also threaten native reptiles and mammals. Dogs or cats that bite cane toads can die from cane toad poison.

When am I likely to see this pest?
Cane toads can enter WA from interstate by hitching a ride on camping gear or vehicles, so make sure you check any pot plants, garden equipment and tyres when entering the State, as these toads are prohibited in Western Australia.

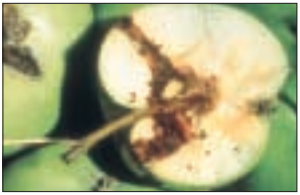
What if I find a cane toad?
These animals are prohibited in Western Australia, so make sure you contact the Department of Agriculture on 9366 2301.

Where do I seek advice?
Contact the Department of Agriculture as soon as possible.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘cane toad’ in the search facility and click ‘go’.

CODLING MOTH

Codling moth
Cydia pomonella



What does a codling moth look like?
It is the caterpillar and damage that are most often seen. The caterpillar burrow into pome fruits (apples and pears) and eat the seeds out of the core. Secondary rots may then develop. Adult codling moths are dull brown and about 1 cm long with a dark patch and metallic bronze markings at the end of each wing. Grubs reach up to 2 cm long when fully grown. Pupae are dark orange-brown and about 1 cm long.

What damage can codling moth cause?
Codling moth is the most damaging insect pest of apples and pears, and can tunnel into every single fruit on a tree. Damaged fruit may fall prematurely and is unmarketable with tunnels filled with larval excreta. Codling moths prefer apples, but they will also attack pears, nashi, quince, crab apples (the pome fruits).

When am I likely to see this pest?
Spring to autumn.

What if I find a codling moth?
If you find an apple or other pome fruit with a excreta-filled tunnel reaching into the core and the seeds are chewed, take it to the nearest Department of Agriculture office immediately. It is illegal to bring fruit into WA from the eastern states or from overseas.

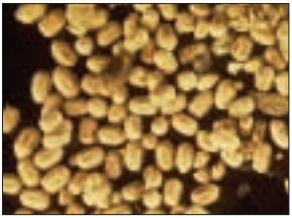
Where do I seek advice?
Contact the nearest office of the Department of Agriculture or the South Perth office on 9368 3333.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘codling moth’ in the search facility and click ‘go’.

DRYWOOD TERMITE

West Indian drywood termite

Cryptotermes brevis



What do drywood termites look like?

Drywood termites are exotic pests that appear similar to other termites (white ants) but the entire colony is contained within the timber being attacked. It is impossible to protect timber against attack using barriers as we use against native termites. The material ejected from the timber is a granular frass/excreta (about 1 mm in size like grains of sand, not fine dust), and can be seen especially under furniture or wood panelling. Look for damage to furniture without the evidence of the normal termite 'workings' or galleries.

What damage can they cause?

Drywood termites are very destructive timber pests in buildings, roof timber and furniture. They attack lower density timbers such as pine, spruce, native hoop pine, cedar and the sapwood of hardwoods, including eucalyptus species. They are most likely to occur in wooden objects imported from other countries, especially southern Africa, southern USA, Hawaii, South America and S.E. Asia.

When am I likely to see this pest?

All year round.

What if I find a drywood termite?

Submit samples of granular termite frass, termite soldiers or termite wings to the Social Insect Research Section, Department of Agriculture, Locked Bag No. 4, Bentley Delivery Centre, Bentley WA 6983.

Where do I seek advice?

Your nearest Department of Agriculture office.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘drywood termites’ in the search facility and click ‘go’.

EUROPEAN WASP

European wasp
Vespula germanica

What does a European wasp look like?
With distinct bright yellow and black markings, yellow legs and black antennae, the European wasp is slightly larger than a bee.

What damage can European wasps cause?
They are a serious pest in orchards and vineyards in summer and are attracted to raw meat at barbeques and pet bowls.
European wasps can enter opened beer or soft drink cans resulting in life-endangering stings to the inside of the mouth and throat. Additional to being agricultural pests, European wasps are serious environmental pests and can impact on human health.

When am I likely to see this pest?
Mainly from December to June. They gravitate to meat in pet bowls and barbeques.

What if I find a European wasp?
Detection of wasps relies on reports from the public. European wasps have not yet established in Western Australia, so call the Department of Agriculture's Pests and Disease Information Service on 9368 3666. Nests are shaped and sized like a soccer ball, and are usually found underground, or in wall cavities, roof voids and hollow trunks.

Where do I seek advice?
European wasp nests are treated and removed free of charge by the Department of Agriculture. Advice is also available from your local council.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type 'European wasps' in the search facility and click 'go'.

RED IMPORTED FIRE ANT

Red imported fire ant
Solenopsis invicta

What does a red imported fire ant look like?
Small ants with a reddish brown head/thorax and darker brown/black tail. Worker ants vary in size from 2-6 mm. Red imported fire ants (RIFA) have a fiery sting which blisters and pustules develop at the site of the stings. They make unusual mounds that can be up to 30 cm high with no obvious entrance hole. There is often green vegetation protruding from the mound.

What damage can RIFA cause?
RIFAs are an urban and human health pest, but also have a significant impact on agriculture and the environment. As an urban pest, RIFA thrive in backyards, school grounds, golf courses street verges and on the edges of waterways. RIFA stings can require medical attention, with severe cases requiring hospitalisation. They commonly invade indoors and can also injure pets. RIFA chew electrical insulation and cause extensive damage to electrical devices. When building mounds, they excavate huge amounts of soil, causing structural problems under paving, driveways, and retaining walls. They also damage many cultivated plants. They have been found in Queensland and can be transported in pot plants and shipping containers.

When am I likely to see this pest?
All year round.

What if I find a red imported fire ant?
A nationwide survey is underway to detect any RIFA in Australia. You can assist by submitting suspect RIFA specimens to the Department of Agriculture. Collect specimens away from the nest, spraying first, to reduce the risk of being stung. Stick a dozen or so to some sticky tape. See ‘how to send insects for identification’.

Where do I seek advice?
Contact the Pest and Disease Information Service on 9368 3666 or email info@agric.wa.gov.au

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘red imported fire ant’ in the search facility and click ‘go’.

SPARROW

Sparrow

What does a sparrow look like?

Slightly larger than a welcome swallow with a wedge-shaped finch-like bill, sparrows are small brownish birds. They hop across the ground, and are often found around human settlements or searching for food at bird aviaries.

Tree sparrow
Passer montanus

What damage can sparrows cause?

Sparrows damage cereal and fruit crops in spring and summer, while their droppings can spoil crops, animal feed and stored grain. Their nests block gutters and down pipes, damaging buildings, and they are pests in human eating areas. Sparrows may also compete with native animals for food and nesting sites.

House sparrow
Passer domesticus

When am I likely to see this pest?

Sparrows could be seen at any time of the year. They are most likely to be seen at sea ports, but could also turn up in other locations like bird aviaries or food shops.

What if I find a sparrow?

These birds are prohibited in Western Australia, so make sure you contact the Department of Agriculture on 9366 2301.

Where do I seek advice?

Contact the Department of Agriculture as soon as possible.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘sparrow’ in the search facility and click ‘go’.

STARLING

Starling
Sturnus vulgaris

What does a starling look like?
Starlings are stocky birds with fine, pointed beaks and short tails. They are about 21 cm long, and have glossy black feathers with a multi-coloured sheen, sometimes with spots. They are usually seen in flocks that turn quickly in a tight group. Starlings move across the ground by waddling, and feed in open grassland, although they are found in both urban and rural areas.

What damage can starlings cause?
Starlings attack soft fruits and cereals and destroy feed by defecating on it. They also nest in houses and tree holes, have helped kill roost trees and probably lead to the decline of native species.

When am I likely to see this pest?
Starlings could be seen at any time of the year. They are most likely to be seen in south-east coastal areas of the State, but could turn up in other areas.

What if I find a starling?
These birds are prohibited in Western Australia, so make sure you contact the Department of Agriculture on 9366 2301.

Where do I seek advice?
Contact the Department of Agriculture.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘starling’ in the search facility and click ‘go’.

Common Pests

AFRICAN BLACK BEETLE

African black beetle
Heteronychus arator

What does an African black beetle look like?
The adult is shiny black and cylindrical, slow moving, around 15 mm long and can fly. Larvae are soil dwelling, 25 mm white curl grubs with 3 pairs of legs on the thorax, a prominent brown head with black jaws. Pupae are straw-coloured, cylindrical and 15 mm long.

What damage can African black beetles cause?
These pests cause significant economic damage to horticultural crops such as young vines, olives and potatoes. They can affect young ornamental trees, such as blue gums and young thin wooded plants such as proteas. They attack newly sown pastures and lawns, particularly kikuyu, couch and tufted perennial grasses such as perennial rye.

When am I likely to see this pest?
Mid-summer through to winter.

What if I find an African black beetle?
Prior to and after planting, monitoring should be undertaken. There is also a range of control options that can be investigated. If damage is suspected in lawns, try pulling on dead grass. If the dead grass is pulled out of the ground easily then it is probably because the roots have been eaten by the larvae which may indicate that control measures may be required. Try a soil wetter or fertiliser before opting for chemical control.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘African black beetle’ in the search facility and click ‘go’.

ANTS

Common Urban Pest Ants

There are over 3,000 species of ants in Australia and most are difficult to identify without a microscope and specialist knowledge. There are very effective baits for some pest species while others require control using sprays. Send specimens of pest ants to the Department of Agriculture for identification so that the most effective control methods can be recommended.

Agricultural pests:

Ants can impact on orchards and gardens by protecting honeydew producing insects such as aphids and scales. These sap-feeding insects can damage trees if allowed to increase in numbers, and the protection they gain from predators and parasites by the presence of large numbers of ants allows them to increase to economically damaging levels.

When am I likely to see this pest?

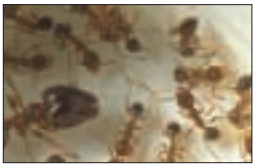
Usually from late spring to early winter.

Where do I seek advice?

Advice is not possible without the identity of the ants being known. The Department of Agriculture has a free identification service - see 'how to send pests for identification'.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'ants' in the search facility and click 'go'.



Coastal brown ants
Pheidole megacephala

Argentine ants
Linepithema humile

Black house ants
Ochetellus glaber

White-footed house ants
Technomyrmex albipes

APHIDS

Aphids
Aphididae, various species

What do aphids look like?
Aphids are small, soft-bodied insects that grow up to 1-4 mm. They are sap suckers and form colonies on the new shoots of a wide range of garden plants. Species range from yellow to green to black. Colonies include mostly wingless and some winged individuals.

Black citrus aphid
Toxoptera citricidus

What damage can aphids cause?
Many garden plants are attacked by aphids include roses, all citrus, hibiscus, impatiens and vegetables. Aphids can stunt the growth of plants, cause wilting and buds to drop, resulting in poor flower and fruit set. Heavy feeding will cause leaves to become distorted.

When am I likely to see this pest?
Numbers are highest in spring.

What if I find aphids?
A range of chemicals are registered for aphids control in home gardens – check with your local hardware store or nursery. Home made remedies include a brew made from 100g of fresh garlic and/or chilli, crushed and fermented for 2 days in 2 tablespoons mineral oil. Add 500 ml water and 2 tablespoons soap powder. Strain into a garden sprayer and dilute 1 part to 50 parts water. Garlic acts as a repellent to further aphid attack. Blasting aphids with a jet of water from your garden hose also works, but repeat every 2-3 days.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘aphids’ in the search facility and click ‘go’.

AUSTRALIAN CITRUS WHITEFLY

Australian citrus whitefly
Orchamoplatus citri

What does a citrus whitefly look like?
The adult whitefly is about 1 mm long, and both pairs of wings and the body are covered with a white and soft, feathery coating of waxy secretion. The insects may cluster on young shoots and leaves or fly in clouds when disturbed. Another indication of infestation is the presence of eggs and other immature stages sticking to the undersides of the leaves.

What damage can citrus whitefly cause?
Lemon trees are the favourite host of the whitefly, but all citrus are liable to attack. Apart from the sap sucking habits of the insect, the sooty mould on the fruit is a concern. The mould grows on the sweet sugary material secreted by the whitefly. Ash whitefly can be confused with Australian citrus whitefly but generally occurs around late autumn and will not require control.

When am I likely to see this pest?
Spring and autumn.

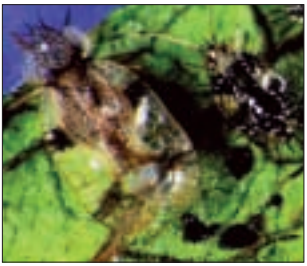
What if I find a citrus whitefly?
There is a range of control methods available. See the URL below for more information.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘Australian citrus whitefly’ in the search facility and click ‘go’.

AZALEA LACE BUG

Azalea lace bug
Stephanitis pyrioides



What does an Azalea lace bug look like?
Lace bugs have clear, lacy wings. Adults are 4-6 mm in length, juvenile lace bugs are smaller, wingless and spiny. Both are mottled black and tan in colour.

What damage can lacebugs cause?
Lace bugs suck the sap from the undersides of azalea and rhododendron leaves, causing leaf stippling and leaf bleaching. The nymphs produce a sugary substance known as honeydew. Sooty mould (a black fungus) often develops on the honeydew, reducing photosynthesis. Other pests such as thrips and mites can cause similar damage. Lace bug damage can be distinguished from these by the presence of cast skins.

When am I likely to see this pest?
Lace bugs damage plants from spring to autumn. They especially attack plants growing in sunny, exposed situations.

What if I find a lace-bug?
The bugs can be found by beating affected foliage over a tray or white cloth. Tolerate lace-bug damage where possible. In most cases, lace bugs do not seriously harm plants. Ensure that your plants are healthy and not water stressed. Plants in hot, sunny locations are more likely to be damaged than ones planted in partial shade. If necessary, apply registered systemic insecticides. Damaged foliage can be pruned.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
Contact the Pest and Disease Information Service on 9368 3666 or email info@agric.wa.gov.au

AZALEA PETAL BLIGHT

Ovulinia petal blight
caused by the fungus
Ovulinia azaleae

What does petal blight look like?

Tiny, pale or whitish spots appear on coloured petals and rust-colored spots on white petals. These enlarge rapidly and infected tissue becomes soft and watery so that the whole blossom collapses.

What damage can petal blight cause?

The petal blight damages flowers, especially on azaleas near the coast. Petal blight occurs more frequently on mid- to late-season cultivars than early ones. The disease also occurs on rhododendrons.

When am I likely to see this pest?

It is most likely to be found when the plant is flowering.

What if I find a petal blight?

Pick and destroy infected flowers and avoid overhead watering. This fungus survives in the soil, so it is important to replace the ground litter with uncontaminated mulches. In late winter/early spring, treat with an application of a registered fungicide.

Where do I seek advice?

Your local plant nursery can assist you.

Do you want to know more?

More information is available at www.agric.wa.gov.au

BEE

Honeybee (managed or feral)

Apis mellifera

What does a honeybee look like?

Bees are a dull shade of yellow or golden brown colour, have black stripes around their body and black legs. Worker bees are 13-17 mm long, while queen bees are much bigger.

What damage do bees cause?

Bees are becoming more of a problem in summer months as residential areas extend into native bushland. Swimming pools attract bees, particularly in hot weather, and they will also be located around taps. Bees sting to protect themselves, so avoid them and walk away quietly. Bees can establish their nests in wall cavities, roof voids and occupy tree hollows where they stop native birds nesting. Swarms can arrive at a property and settle on low trees and shrubs. These swarms can be the size of a football and can present a significant human health risk.

When am I likely to see this pest?

Large numbers of bees are seen during the spring and summer months when nectar and pollen are abundant or they are looking for water. Swarms are frequent in spring to January.

What if I find bee nests?

Don't take any risks with swarms or nests – contact a licensed pest controller to remove swarms or exterminate bee nests.

Where do I seek advice?

Licensed pest control operators are best qualified to deal with bee problems. See "Pest Control" in the Yellow Pages. The Department of Agriculture does not exterminate nests or remove swarms.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'bees' in the search facility and click 'go'.

BINDII, JO-JO OR ONEHUNGA

Bindii, jo-jo or onehunga
Soliva pterosperma

What does bindii look like?
A winter growing annual, bindii produces a seed capsule protected by spines and is well known to many householders. Bindii is similar to carrot weed *(Cotula australis)* which flowers in winter, but it flowers later and has no flower stalks.

What damage can bindii cause?
It is impossible to walk on a badly infested lawn in bare feet. Bindii also takes away nutrients from the soil resulting in problem areas in your lawn.

When am I likely to see this weed?
Plants first emerge with the winter rains in May and germinate for several months. Flowers appear in the spring and continue to form at the base of the leaves (axils) until early December.

What if I find bindii?
Bindii can be sprayed with products available from nurseries and hardware stores from mid-June to late September. The smaller the plants, the more easily they are destroyed. Delay spraying until a full emergence has appeared, but not for too long as flowering begins in spring and once the seed spines have formed the lawn will be prickly and uncomfortable for the rest of the season. It is better to have to spray twice than to wait too long. Note: drift from spraying can cause damage to other plants such as roses and grapevines. Follow instructions on the label.

Where do I seek advice?
Take care to avoid spray drifting on to garden plants, especially roses and grape vines. Contact your local plant nursery or rural suppliers.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘bindii’ in the search facility and click ‘go’.

CABBAGE WHITE BUTTERFLY

Cabbage white butterfly
Pieris rapae

What does a cabbage white butterfly look like?
The adult butterfly has cream wings with 1 or 2 black spots on each wing. Wingspan is 30-40 mm. They fly by day and lay singluar, bullet shaped eggs on leaves. Grubs hatch from eggs and are pale green and slow moving and grow up to 30 mm long. Mature grubs pupate in yellow-green smooth cocoons attached to the leaves or stems.

What damage can cabbage white butterfly cause?
Caterpillars of cabbage white butterfly can consume all parts of brassica leaves and flowers. They cause irregular areas on edges of leaves and can wipe out an entire seedlings or young plants.

When am I likely to see this pest?
Numbers steadily increase over the warmer months.

What if I find a cabbage white butterfly?
Monitor for eggs or grubs on plants in the cabbage family. Control can be achieved by using chemical or biological insecticides which are available from hardware stores and nurseries.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘cabbage white butterfly’ in the search facility and click ‘go’.

CALTROP

Caltrop
Tribulus terrestris

What does caltrop look like?
Caltrop has fine fern-like leaves and grows flat against the ground. The leaves are usually a dull greyish-green colour. The tiny flowers are yellow with 5 petals. The woody prickles are similar to doublegee, however caltrop only grows in summer and doublegee grows in winter and spring. Doublegee has a broad leaf similar to English spinach.

What damage can caltrop cause?
Heavy infestations after summer rain can produce an abundance of sharp spiny burrs, which make it very uncomfortable for people and animals alike. It is also a nuisance around farm buildings, townsites, railway yards and recreation areas because of the burrs.

When am I likely to see this pest?
Summer.

What if I find caltrop?
Caltrop is not declared, therefore you are not required to report it to the Department of Agriculture.
Small numbers of plants can be eliminated by hand grubbing, or if there are only a few plants on a firm surface, the quickest method of removal is to cut through the central tap root. The plants and seeds may be placed in a bag and disposed of in a bin or they can be dried and then burnt, if permitted by local council bylaws. Carefully pick up any of the spiny seeds that fall from the plant.

Where do I seek advice?
Contact the local shire or town council.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘caltrop’ in the search facility and click ‘go’.

CAPE TULIP

Cape tulip

Moraea flaccida and *Moraea miniata*

What do cape tulips look like?

One-leaf cape tulip has a single grass-like leaf 30 cm or more high, while two-leaf cape tulip has 2 or more leaves. Both have salmon pink flowers, with two-leaf being slightly smaller and greater in number.

What damage can cape tulip cause?

Cape tulip contains toxic chemicals that can poison livestock/grazing animals (symptoms include loss of appetite, abdominal pain, stiffness of the hind legs, and other problems that can lead to convulsions or paralysis). If your animals have been poisoned by cape tulip, contact a veterinarian. Cape tulip is declared in certain areas of the State.
You can avoid introducing cape tulip to your property by not buying hay that contains cape tulip or other unwanted weeds.

When am I likely to see this pest?

Flowering in spring, cape tulip is a serious pasture weed.

What if I find cape tulip?

If you find cape tulip, report it to the nearest office of the Department of Agriculture. Control advice is available from the Department.

Where do I seek advice?

Department of Agriculture, farm supply companies, chemical re-sellers and agricultural advisers.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘cape tulip’ in the search facility and click ‘go’.

CITRUS LEAFMINER

Citrus leafminer
Phyllocnistis citrella

What does a citrus leafminer look like?
Citrus leafminer is about 2 mm long and silvery white in colour, and has wings fringed with long hairs. Eggs are found on the underside of leaves, while the moths fly at night and are rarely seen. The caterpillars are flat and yellow and 3 mm long when fully grown. They feed under the outer leaf surface, piercing the cells with their knife-like mouth parts and sucking the sap, leaving a silvery snake-like mine lined with a trail of excreta.

What damage can citrus leafminer cause?
Tiny caterpillars of the citrus leafminer moth attack soft new growth of citrus trees, distorting leaves and leaving snake-like 'mines' under the leaves. Severe infestations can retard the growth of young trees, while infestations on older trees cause unsightly damage but not significant yield losses.

When am I likely to see this pest?
Citrus leafminer is active all year, with highest numbers being found in spring and autumn.

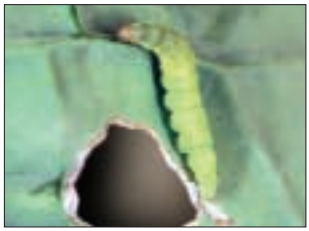
What if I find citrus leafminer?
Reduce infestations on garden trees by limiting the production of susceptible new leaves when leafminer numbers are highest. Prune growth flushes, fertilise in late winter to promote strong spring growth, don't overwater in autumn, and don't fertilise during summer. Use of white oil also helps.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type 'citrus leafminer' in the search facility and click 'go'.

DIAMONDBACK MOTH

Diamondback moth
Plutella xylostella



What does a diamondback moth look like?
The adult moth is 8-10 mm long and folds its wings over its body, forming a tent-like shape. Wings are light brown with 3 pale diamond shapes. Grubs hatch from eggs and are pale yellowish-green to green and wriggle violently and drop from the plant when disturbed. Mature grubs (10-12 mm long) pupate in white mesh cocoons attached to the leaves or stems .

What damage can diamondback moths cause?
Diamondback moth is a major caterpillar pest of brassica and crucifer vegetable crops and, in some seasons, canola crops in Australia. Only the caterpillars (grubs) cause damage by feeding on leaves, buds, flowers and seed-pods of brassica species. The level of damage varies greatly and depends upon the plant growth stage, the numbers, size and density of grubs.

When am I likely to see this pest?
Populations are lowest during the colder months. Large flights of egg-laying moths occur in spring; each female can lay up to 200 eggs. Numbers steadily increase over the warmer months, then diminish at the end of autumn.

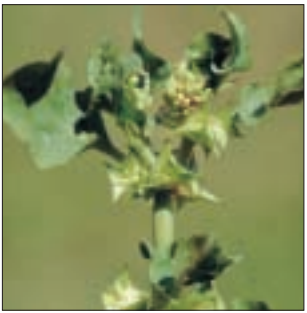
What if I find a diamondback moth?
Control this pest at the grub stage by using chemical or biological insecticides which are available from hardware stores and nurseries.

Where do I seek advice?
Contact the nearest office of the Department of Agriculture or the South Perth office on 9368 3333.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘diamondback moth’ in the search facility and click ‘go’.

DOUBLEGEES

Doublegees
Emex australis and *Emex spinosa*



What do doublegees look like?
Doublegees have long spreading stems with smooth oval to triangular green leaves. Inconspicuous red-green flowers form in the leaf axils soon after germination and quickly produce viable seeds.

What damage can doublegees cause?
Treading on a doublegee with bare feet is very painful. The weed has high levels of oxalic acid, which can cause poisoning in sheep. However, the main concern is that it competes strongly with cereal crops and legumes in early growth stages, causing significant reductions in yield.

When am I likely to see this pest?
Spring and summer.

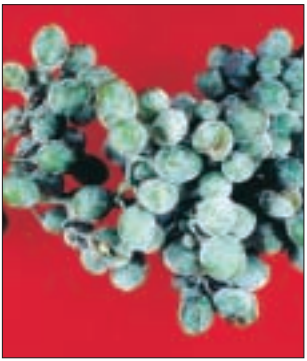
What if I find doublegee?
Doublegees are declared in parts of the State – check the declared plants web page. If you find doublegee in these areas, report it to the nearest Department of Agriculture office. When buying hay, check that it doesn't contain doublegee or other unwanted weeds. The best form of weed control is prevention, so take care not to introduce unwanted weeds to your property and always treat weed infestations when they are small to ensure they don't become established.

Where do I seek advice?
Contact the Department of Agriculture, farm supply companies, chemical re-sellers and agricultural advisers.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type 'doublegees' in the search facility and click 'go'.

DOWNY MILDEW

Downy mildew
caused by *Plasmopara viticola*



What does downy mildew look like?
Downy mildew of grapes starts as small green or yellow translucent spots, eventually spreading over entire leaf, stem, flower or fruit. Infected plants usually look brown or bronze. After suitable warm humid nights, a dense, raised, white cottony growth develops on the underside of the yellow oilspots.

What damage does downy mildew do?
Downy mildew destroys leaves, stems, flowers and fruits of many plant species – and particularly green parts of a grapevine.

When am I likely to see this pest?
Usually during spring, summer and autumn.

What if I find downy mildew?
You need to manage downy mildew, and this is dependent on good monitoring of favourable weather conditions for primary and secondary infection events and of disease progress in the vineyard.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘downy mildew’ in the search facility and click ‘go’.

FERMENT/VINEGAR FLY

Ferment/vinegar fly
Drosophila spp.

What does a ferment/vinegar fly look like?
Ferment flies are often confused with Mediterranean fruit fly, but are much smaller (3 mm compared to 4-5 mm). They have a tan to brownish black body with distinctive red eyes.
The ferment/vinegar fly is a small, yellowish fly with distinct red eyes and is seen around rotting fruit. The larvae feed on the bacteria and yeast found in rotting fruit and can cause great problems for wineries and fruit-juice producers. The ferment/vinegar fly is not actually a fruit fly as it does not feed on fruit directly, just the yeasts associated with rotting fruit.

What damage can ferment/vinegar fly cause?
The ferment/vinegar fly tend to be more of a nuisance, but can contaminate food with bacteria. The flies are attracted to all fresh and rotting fruit and vegetables. This includes bananas, grapes, peaches, pineapples, tomatoes and potatoes. Fermenting liquids such as beer, cider, vinegar, and wine can also attract ferment/vinegar fly.

When am I likely to see this pest?
Ferment/vinegar flies are present all year round but more likely to be a problem in summer/autumn.

What if I find a ferment/vinegar fly?
Sanitation is the key to control. Elimination of larval food and developmental sites is very important. Unless you eliminate the breeding site, ferment/vinegar fly will continue to be a problem. If adults are present, this means that larvae are developing in fermenting material nearby. Breeding sites include fruit bowls, garbage bins or juice spilled under a refrigerator. Reduce adult numbers by constructing a trap by placing a paper funnel (rolled from a sheet of notebook paper) into a jar which is then baited with a few ounces of cider vinegar, or other fermenting material.

Where do I seek advice?
Contact the Department of Agriculture or your local plant nursery.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘flies’ in the search facility and click ‘go’.

FLEAS

What does a flea look like?

Fleas are parasitic, wingless insects that feed on warm-blooded animals, and are known for their ability to jump. The different species are commonly named for the host they favour eg cat, dog, rat and human fleas.
A blood meal is needed before the adult female can lay eggs. The eggs may be laid on the host animal, but they fall to the ground. Usually the eggs are laid at night, so they tend to be in the nest or lair of the host animal. In a short time, a legless larva emerges which feeds on organic material in the soil or nest.
Once the larva completes its development it forms into a pupa, an inactive stage. Larvae and purae can occur deep in the pile of carpets, in cracks and crevices in the floor or in open soil. The adult flea can remain inactive inside the silky pupal cocoon for a long time, until a host is detected, which also explains the sudden appearance of fleas in dwellings that have been empty for long periods. The dormant fleas detect the vibrations of the new occupants and are stimulated to become active and seek a host.

What damage can fleas cause?

Fleas are not generally associated with disease transmission in Australia, but it's best to locate and treat the host animal/s. If the source of the infestation is not treated, the problem will continue. Dogs often show they have a flea problem by frequent scratching, but cats can carry heavy infestations without obvious signs. The eggs of cat fleas have a sticky coating which sticks to the fur. Hundreds of their pearl-like bodies may be shed wherever the animal shakes or grooms itself.

When am I likely to see this pest?

Any time of the year.

What if I find fleas?

Flea larvae develop where animals sleep or spend a lot of time. Infestation within and around houses may require treatment by a licensed pest control operator.

Thoroughly vacuum carpeted areas. Minor infestations can be controlled by treating the infested floor surfaces and furnishings with pressurised surface sprays. Entire rooms can be sealed and treated with specialised "flea bombs", which provide extended periods of control with a single treatment. Outdoor areas can be treated with spray applications of proprietary products.
Do not contaminate animal drinking vessels, food containers or feed with insecticide residues. Animals should be treated with either tablets and pour-ons available from your veterinarian or insecticidal washes or flea collars. The active life of the flea collar depends on the chemicals in them and the length of the animal's fur – they are less effective on long-haired animals.

Where do I seek advice?

Consult your local veterinarian for fleas on animals. Infestations within and around houses may require treatment by a licensed pest control operator.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'fleas' in the search facility and click 'go'.

Stickfast flea
Echidnophaga gallinacea

What does a stickfast flea look like?
The small wormlike larvae feed on organic material, and shelter in the surface dust and litter on the soil. After several moults, they grow to about 3 mm, cease to feed and burrow down into the soil to a depth of about 15 cm. They spin silken cocoons and develop into adult fleas. The adult fleas then emerge, burrowing their way to the surface and search for a host. Poultry show evidence of infection on the comb, wattles and face. With a heavy infestation, the greater part of the head may appear black. In autumn when fowls moult, fleas may sometimes be seen under the wings, on the breast and around the vent.

What damage can stickfast fleas cause?
The stickfast flea is found on all classes of poultry and on native birds. Dogs, cats, horses, rabbits and numerous native animals spread the flea, which has been reported as affecting humans. Young chickens or ducklings are most at risk from stickfast fleas, with some dying as a result of severe infestation.

When am I likely to see this pest?
In summer.

What if I find a stickfast flea?
You can get rid of stickfast fleas by smearing a non-burning greasy substance such as petroleum jelly over the infected parts of the birds. Other chemical options are available. Clean out the fowl shed, remove all loose items of equipment and litter. Clean up all debris in the yards and burn this rubbish and the litter. The floor of the night quarters of the birds needs to be concrete and kept clean.

Where do I seek advice?
Contact your local veterinarian or a licensed pest control operator.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘stickfast flea’ in the search facility and click ‘go’.

FOX

Fox
Vulpes vulpes

What does a fox look like?
Foxes are small and dog-like, reddish in colour with whitish underparts. They have bushy tails that are usually tipped with white or black.

What damage can foxes cause?
Foxes cause economic losses by preying on free-range poultry, and occasionally on young lambs and kid goats. They have caused the decline of many small to medium-sized species of Australian native mammals.

When am I likely to see this pest?
Most foxes are seen during the late summer/early autumn when they become more mobile; cubs emerge in late spring. The best option is to control foxes before they become a problem.

What if I find a fox?
Combining control options can be more effective, and these options include:
- Baiting
- Husbandry methods
- Exclusion fencing
- Trapping
- Fumigation

Foxes are widespread in both cities and towns. There is no obligation or need to contact the Department when foxes are found.

Where do I seek advice?
Contact the nearest Department of Agriculture office, or the South Perth office on 9368 3333.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘fox’ in the search facility and click ‘go’.

LICE

Sheep body louse
Bovicola ovis

What do lice look like?
Adults are about 1.6 mm long with a pale brown body and dark bands in adults. They often cling to wool fibres close to the skin surface and will move away from the light when exposed. Immature lice are smaller, lighter in colour and have less obvious bands on their body.

What damage can lice cause?
Severe infestations of lice in sheep can result in considerable fleece damage usually in autumn and winter.

What if I find lice?
Check for lice during the 6 months before shearing. They are hard to detect on sheep with short wool as shearing removes at least half the population. Checking for lice on sale sheep and treating infested animals is the responsibility of flock owners. After eradication, check sheep at every opportunity and prevent re-introduction (ensure sheep proof boundary fences; quarantine and check introduced sheep for lice).

Where do I seek advice?
You don't have to report lice or fleas to the Department of Agriculture. Consult your local pet shop.

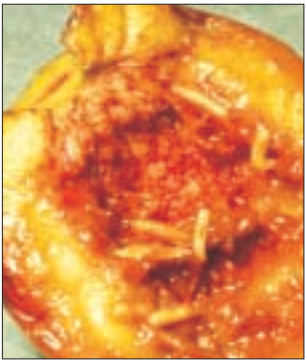
Do you want to know more?
More information is available at www.agric.wa.gov.au Type 'sheep lice' in the search facility and click 'go'.

MEDITERRANEAN FRUIT FLY

Mediterranean fruit fly
Ceratitis capitata

What does a Mediterranean fruit fly (Medfly) look like?
Most people initially find the larvae (maggots) of Mediterranean fruit fly. The larvae are white with a flat, pointed head, and are about 1 mm long when they hatch. They quickly grow to 8 mm.
The adult fly is 3-5 mm long, light brown and slightly smaller than a housefly. The wings have distinct brown bands, the abdomen is brown and the middle has irregular patches of black and silver.

What damage can Medfly cause?
Medfly is known to infest over 200 fruit and vegetable species. In Western Australia, stone fruit, pome fruit, citrus, loquats and guavas are particularly susceptible. The larvae feed on the flesh of the fruit, causing it to decompose. When fully grown, larvae stop feeding and leave the fruit and burrow into the soil. Control needs to be started in spring to protect developing fruit.



Nectarine infested with Medfly larvae.

When am I likely to see this pest?
Medfly are found year round. They are likely to become a problem for backyard growers in spring and summer.

What if I find a Medfly?

Contact the Department of Agriculture for information on control methods. Fly-infested or unwanted fruit can be destroyed by soaking it in water, topped with a layer of kerosene for 4-5 days. Medfly larvae can survive in water for a few days unless their oxygen supply is cut off. The kerosene layer prevents oxygen exchange between the air and water. Freezing, cooking or pureeing fruit are other methods of disposal, although burial is not recommended. If you are finding maggots in crops such as green tomatoes, green capsicums, passion fruit and avocadoes, you may have Queensland fruit fly on your property and this should be reported to the Department of Agriculture.

Where do I seek advice?

Report any suspicious flies to your nearest Department of Agriculture office or the Pest and Disease Information Service on 9368 3666 or email info@agric.wa.gov.au

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'Mediterranean fruit fly' in the search facility and click 'go'.

Bait for Medfly.

MITES

Mites (two-spotted mite, broad mite, citrus bud mite, citrus rust mite)

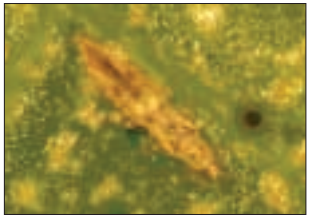
What do mites look like?

Mites are very small, often less than 1 mm. Mites are not insects, but are related to spiders. Like spiders and ticks, mites have 8 legs, though the nymphs have 6 legs.

Two-spotted mite
Tetranychus urticae

What damage can mites cause?

Mites damage leaves and fruit by sucking out the cell contents. This can cause stippling and/or distortion of leaves, leading to leaf drop if populations are high. In citrus, the citrus bud mite causes damage by feeding on the developing fruit.



Mite predator, 6 spotted thrips
Scolothrips sexmaculatus

When am I likely to see this pest?

Mites are present all year round, but are likely to be more active during warmer months.

Citrus bud mite
Aceria sheldoni

What if I find mites?

A small number of mites is not a cause for concern, but high populations can damage plants. Spraying with insecticides may cause an outbreak of mites, since natural enemies that keep mites under control are killed off. To treat mites, use mite specific miticides or horticultural oil. Do not use soaps or oils on water-stressed plants or

when temperatures are high. Check the label and/or test them out on a portion of the foliage several days before applying a full treatment. Good coverage is important.

Where do I seek advice?

Your local plant nursery can assist you.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'mites' in the search facility and click 'go'.

Mite damage to grapefruit.

Distortion of lemons caused by citrus bud mite. Control of this mite is rarely required.

PIGEON

Pigeon
Columba livia

What does a pigeon look like?

Pigeons are around 33 cm long, and are usually blue-grey, although they can vary in colour from pale pink to black, often mixed with white. Pigeons have white underwings, orange eyes, black bills and red/purple legs and feet.

What damage can pigeons cause?

Pigeons can foul buildings, statues and other structures with droppings all year round. They are also generally regarded as potential health hazards to humans in urban environments, and while not usually agricultural pests, they do occasionally interfere with crops.

When am I likely to see this pest?

Pigeons can be present at any time of the year.

Where do I seek advice?

Combining control options can be more effective and these options include:

- Limiting food availability
- Trapping
- Exclusion (netting, plastic curtains, spikes)
- Baiting
- Scaring devices
- Removal and humane destruction of nests/eggs

Licensed pest control operators with bird experience can advise on the available options.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'pigeon' in the search facility and click 'go'.

PORTUGUESE MILLIPEDES

Portuguese millipede
Ommatoiulus moreletti

What does a Portuguese millipede look like?
These pests have a smooth, cylindrical body, with adult millipedes ranging in colour from slate-grey to black. Juveniles are light brown with a darker stripe along each side. Adult millipedes range from 20-45 mm. They can occur in large numbers, especially after rain, and curl up into a tight spiral when disturbed.

What damage can they cause?
Portuguese millipedes are nuisances in autumn and spring when they invade houses and gardens, and can occasionally damage crops such as melons, strawberries, tomatoes and potatoes. They are attracted to lights at night, but cause no harm in small numbers and do not breed inside.

When am I likely to see this pest?
Following rain from April onwards with another peak in activity in September/October.

What if I find a Portuguese millipede?
Turn off lights close to buildings, and close curtains, blinds and doors to minimise escaping light. Physical barriers can stop millipedes from entering houses. Also, clean away decaying leaves, other garden litter and compost near the house to reduce areas where they might shelter. Biological and chemical control methods are also available.

Where do I seek advice?
Contact the Department of Agriculture or your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘portuguese millipedes’ in the search facility and click ‘go’.

RABBITS

Rabbits, wild and domestic

Oryctolagus cuniculus

What does a rabbit look like?

Wild rabbits are typically grey-brown with a pale belly. Domestic rabbits may be almost any colour.

What damage can rabbits cause?

Wild rabbits compete directly with livestock and many native animals for food, particularly in winter. They tend to graze near refuge areas, resulting in severe localised degradation of both pasture and bush reserves, and significant soil erosion.

Domestic rabbits can be a nuisance in neighbouring gardens when they are not in their hutches.

When am I likely to see this pest?

Wild rabbit numbers are highest in late winter and spring.

What if I find a rabbit?

Wild rabbits are widespread, so you don't have to contact the Department of Agriculture when you find them. However, all landholders are legally obliged to control wild rabbits. Control methods include:

- Baiting
- Warren fumigation
- Rabbit-proof fencing
- Warren ripping

- Destruction
- Cage-trapping
- The use of ferrets

Persistence and using the best control method for the situation are keys to success. An approach combining some options will give the best long-term result.

Myxomatosis and Rabbit Haemorrhagic Disease (RHD) (formerly called RCD) continue to cause rabbit population declines but should be followed up with other controls to remove any survivors.

Domestic rabbits can be cage-trapped.

Where do I seek advice?

For wild rabbits, contact the nearest Department of Agriculture office, or the South Perth office on 9368 3333.

For domestic rabbits, contact your local shire. Cage traps are available for sale – see traps in the 'Yellow Pages'.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'rabbit' in the search facility and click 'go'.

RATS AND MICE

Rats
Rattus spp.

Mice
Mus domesticus

What do rats and mice look like?
There are different types of introduced rats and mice.
Brown rats are grey-brown above and white or grey below, with a head and body length of 240 mm and a tail of 200 mm.
Black rats are dark grey/brown and slightly smaller than brown rats, with a head and body length of 190 mm and a tail of 230 mm.
Mice are light brown to black above and white to pale below; head and body length of 60-95 mm and a tail of 75-95 mm.

What damage can rats and mice cause?
Rats and mice can cause considerable losses to agriculture in spring and summer by eating recently sown and/or germinating seedlings, seed heads of maturing cereals, canola, lupins and stored grain. They also damage electrical wiring, buildings, farm machinery and foodstuffs.

When am I likely to see this pest?
Rats and mice can be present at any time, but they can be more often found inside buildings in cold wet months.

What if I find rats and mice?
Rats and mice can be trapped or baited. When numbers are small, use spring-back type traps, and set them undercover at right angles to walls, with the trigger adjacent to the wall. Bait with vegetable oil, peanut paste or pumpkin seeds. Poisoning, using baits containing anticoagulants, which are available from retail stores are used for larger infestations.

Make sure you observe recommended safety precautions and be careful of secondary poisoning of pets if they eat affected rats/mice – check bait before purchase. Control can also be carried out by licensed pest control operators.

Where do I seek advice?

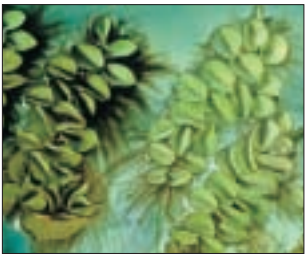
Licensed pest control operators or your local shire ranger. See “Pest Control” in the Yellow Pages.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘rats’ or ‘mice’ in the search facility and click ‘go’.

SALVINIA

Salvinia
Salvinia molesta



What does salvinia look like?
Salvinia is a free-floating aquatic fern, made up of pairs of oval, green to brown leaves connected by a horizontal stem. The top of each leaf has many tiny, hairlike structures that split then rejoin at the tips to form an eggbeater-like structure. Under the water, each plant has another leaf that looks like a small bunch of brown roots.

What damage can Salvinia cause?
Salvinia disrupts the use of waterways for recreation, boating, fishing and swimming. It helps accumulate litter and promotes water stagnation that encourages breeding of disease-carrying pests, providing a good habitat for larval development (eg mosquitoes).

When am I likely to see this pest?
Any time of the year.

What if I find salvinia?
Report any plant that could be salvinia to the nearest office of the Department of Agriculture. It is illegal to cultivate, sell or transport it, and any known plants must be destroyed.

Where do I seek advice?
Call the nearest Department of Agriculture office immediately.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘salvinia’ in the search facility and click ‘go’.

Alternatively, ask the Department for the brochure "Wetlands not Weedlands".

SCALES

What does a scale look like?

Scales are broadly divided into 2 types: the soft scales and the hard scales. The soft scales are those whose outer covering appears to form an integral part of the insect, while the covering of the hard scales can be lifted off to expose the insect beneath.

White wax scale is 6 mm long, and is covered by a soft waxy cover. The insect underneath is a uniform dull red.

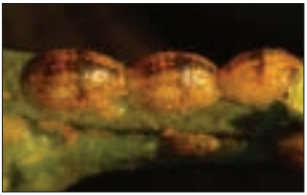
Pink wax scale is similar to the white wax scale, but the covering is pink 3-4 mm long. Adult pink wax scale can be similar in appearance to white wax, but the wax is hard.

Soft brown scale is 2-5 mm long, brown, oval and flattened.

Cottony cushion scale is 5 mm long, reddish brown with black legs and usually covered by a white, mealy secretion.

Red scale is 2 mm, females are round in shape and males are oval protected by a hardened reddish brown scale.

Black scale is 3-5 mm long. Black scale are often found on olive trees.



Soft brown scale
Coccus hesperidium

Pink wax scale
Ceroplastes rubens

White wax scale
Gascardia destructor

Scales are pests of citrus. The waxy covering that protects them from desiccation and predators. Cottony cushion scale mainly attacks wattles, along with roses, citrus and mulberries.

Mealybugs are scale-like insects which are free living, and completely mobile although sluggish in movement. Mature females produce a mass of mealy filamentous material into which the eggs are laid. An oval,

flattened, reddish or bluish insect is revealed when the mealy covering is removed. The average length of mature insects is around 5 mm.

What damage can they cause?

The main hosts of scale in the home garden are citrus trees and most perennial plants, but pears and a wide variety of ornamental trees and shrubs may be infested. Scale insects are sap suckers like aphids. They insert a needlelike sucking tube into the plant and draw out the sap, and then excrete it as honeydew. A black fungus known as sooty mould often develops on this honeydew, reducing photosynthesis and discolouring the fruit.

When am I likely to see this pest?

All year round.

What if I find wax scales?

Scale insects can be controlled using products such as petroleum oil. However, oils can damage plants so consult your local nursery to find out what is safe to use.

Red scale,
Aonidiella aurantii
Red scale on lemons

Cottony cushion scale
Icerya purchasi

Black scale
Sassetia oleae

Where do I seek advice?

Control is dependent on timing, so contact your local plant nursery.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘wax scales’ in the search facility and click ‘go’.

SLATERS

Slaters

What do slaters look like?

Slaters are also known as woodlice, sowbugs and pillbugs, and are crustaceans completely adapted to living on land. Slaters grow through a series of moults with the juveniles looking like small versions of the adults.

What damage can slaters do?

Slaters are scavengers, feeding mainly on decaying organic matter. They help break down organic matter and can be beneficial to the garden at low population densities. But at high population densities, they can damage new seedlings and ripe fruit in contact with the ground, such as strawberries. They can damage orchids in pots by feeding on roots and damaging the growing tips of the plants.

When am I likely to see this pest?

All year, but particularly spring and summer.

What if I find a slater?

Greater use of mulch and compost in gardens, and regular watering, favours the development of dense slater populations. Try to reduce compost, and rake it frequently in the middle of warm dry days. Reduce the amount of harbourages by removing empty pots and stacks of timber, bricks and rocks. Registered pesticides can be used to protect susceptible plants or where high populations occur

Where do I seek advice?

Your local plant nursery can assist you.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘slaters’ in the search facility and click ‘go’.

SLUGS

Slugs

What do these slugs look like?

Slugs do not have shells and so generally live in areas of high humidity. The black-keeled slug is a uniform black to grey and up to 50 mm long and is slow-moving. The reticulated slug is a pale fawn colour with dark brown to grey markings. It is also slow moving.

Black-keeled slug
Milax gagates

Reticulated slug
Deroceras reticulatum

What damage can slugs cause?

These introduced pests can damage a wide range of plants from seedling ornamentals to vegetable and broad acre crops such as canola.

When am I likely to see this pest?

Use a torch to inspect areas at night time from April to October. Slugs are rarely seen active during the daytime. Slugs tend to be a bigger problem on clay soils which retain moisture. In crop situations, outbreaks can occur after unusually wet summers.

What if I find slugs?

Slugs are controlled by baits, which should be applied in early April before they have a chance of laying eggs.

CAUTION: Most baits are toxic to dogs and cats.

Where do I seek advice?

Control products are available from your local plant nursery or hardware store.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘slugs’ in the search facility and click ‘go’.

SNAILS

Common garden snail
Helix aspersa

What does a common garden snail look like?
Common garden snails are large, brown snails with shell diameters exceeding 30 mm in mature specimens. The brown shell has alternating dark and lighter brown spiral bands, and the body is dark grey. They are mainly found in cultivated and irrigated areas containing exotic plants.
Common garden snails hide in shady protected areas, under creepers or hedges, or climb trees or other vertical surfaces and spend the summer in a sealed, inactive state.

When am I likely to see this pest?
April to October.

What damage can common garden snail cause?
Common garden snails damage a broad range of seedlings, garden plants and vegetables. They are a significant pest of citrus, damaging fruit, leaves and removing the bark from small branches. They occur in vineyards and deciduous fruit tree orchards, usually feeding on leaves but occasionally damaging young fruit.

What if I find a common garden snail?
Abundant ground cover and vegetation growth provide ideal moisture levels, shelter and harbourages for snails and slugs to thrive. Practice good hygiene, control weeds and remove harbourages to reduce the problem. Use cultural and biological methods, and baits to control snails. Baits are best applied in April to kill snails before they get a chance to lay eggs. Baits can also be applied opportunistically in summer when thunderstorms activate snails. Most baits can be toxic to dogs and cats.

Where do I seek advice?
Your local plant nursery can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘snails’ in the search facility and click ‘go’.

Green snail
Helix aperta

What does a green snail look like?
The shell of mature green snails can become dark brown, but this colour is uniform without any bands of different colour. Green snails rarely exceed 25 mm in shell diameter, while immature snails have a yellow-green shell and a creamy-coloured body.

What damage can green snails cause?
Green snails can damage most vegetables, cereals, lupins, grasses and some native Australian plants particularly in autumn. They thrive in open grassland situations and inhabit areas of natural bush.

When am I likely to see this pest?
April to October.

What if I find a green snail?
If you suspect you have green snails on your property, get a specimen and contact the Department of Agriculture for confirmation.

Where do I seek advice?
Contact the Department of Agriculture. Control is similar to that of the common garden snail.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘snails’ in the search facility and click ‘go’.

Small pointed snail
Cochlicella barbara

What does a small pointed snail look like?
The small pointed snail has a greyish-brown conical shell with brown bands of varying width, and is usually less than 10 mm long.

What damage can the small pointed snail cause?
This snail can be a minor crop and pasture pest usually in autumn. It can contaminate grapes at harvest. Over summer, it remains inactive under the shelter of ground debris or in crops where it can contaminate them during harvest.

When am I likely to see this pest?
April to October.

What if I find a small pointed snail?
Pointed snails are not always attracted to and controlled by baits. Plants can be protected by application of registered sprays containing copper.

Where do I seek advice?
Control products are available from your local plant nursery or hardware store.

CAUTION: Most baits are toxic to dogs and cats.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘snails’ in the search facility and click ‘go’.

White Italian snail

Theba pisana

What does a white Italian snail look like?

The shell is creamy-white, usually less than 20 mm in diameter, and usually with fine brown concentric lines of varying thickness. The umbilicus of the shell is obscured.

What damage can white Italian snails cause?

White Italian snails thrive in areas of alkaline sandy soils with high calcium content, mainly near the coast. They damage pastures and cereal crops, and contaminate harvested grains and grapes. In pastures, they compete with farm animals for vegetative growth, and their slime can reduce pasture palatability to stock.

What if I find a white Italian snail?

Send a sample to the Department of Agriculture for confirmation. Apply baits in April before snails have a chance to lay eggs. In open paddocks, removal of standing vegetation by grazing reduces survival over summer.

Where do I seek advice?

Contact the Department of Agriculture for crop situations and your local plant nursery in urban areas.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘snails’ in the search facility and click ‘go’.

Vineyard snail
Cernuella virgata

What does a vineyard snail look like?
The vineyard snail is similar to the white Italian snail. The spiral banding can be more pronounced and the 'umbilicus' (the hole about which the shell spirals) appears as an open circular hole, not partly obscured as in the white Italian snail.

What damage can vineyard snails do?
The vineyard snail inflicts damage similar to that of white Italian snails, including contamination of harvested grain.

When am I likely to see this pest?
April to October.

What if I find a vineyard snail?
The distribution of vineyard snails in Western Australia is very limited. If you think it occurs on your property, send specimens to the Department of Agriculture for confirmation.

Where do I seek advice?
Contact the Department of Agriculture. Apply baits in April to prevent snails laying eggs. In open paddocks, removal of standing vegetation by grazing reduces survival over summer.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘snails’ in the search facility and click ‘go’.

Spiders

What do these spiders look like?

There are several spiders that are commonly encountered, some of which are of human-health significance. Some of these are described below:

White tail: Dark coloured, matt black finish with (legs stout and dark reddish-brown) cylindrical (greyish-brown oval-shaped abdomen) bodies with a distinct white spot on the tip of the dark abdomen. Female spiders can reach 18 mm long.

Trapdoor: Spiders are often mistaken for funnel-web spiders, to which they are related. This is an ancient group with the fangs only able to strike downwards – hence they rear up defensively when threatened. The spiders are usually large and black or dark brown.

Huntsman: Large brown spiders, flattened with the first 3 pairs of legs at least, bent forwards.

Black house: Also known as window spiders due to their messy funnel-like webs often built at window corners. These are dark robust spiders ranging from 9-18 mm. The carapace and legs are dark grey to black, and the abdomen is charcoal grey with a dorsal pattern of white markings.

White tail
Lampona cylindrata

Trapdoor
Mygalomorphae

Huntsman
Sparassidae

Daddy long legs: Found in thin, tangled webs attached to ceilings and upper walls or corners of rooms, sheds and caves, these spiders grow to about 9 mm with thin, long legs (up to 50 mm).

Redback: Black to brown (pea shaped abdomens) medium sized spiders with a median scarlet-red to orange-yellow stripe on the back (and underside) of the abdomen. The stripe is sometimes broken and outlined with fine white markings. They are found all over Australia in dry open forest to shrubland habitats, often associated with rocky areas, logs, stumps or low shrubs, and commonly occur in urban situations. Seek medical advice if bitten.

Wolf spiders: Also known as lawn or garden wolf spiders, as this is where we often encounter them. Most wolf spiders are wanderers and some build burrows, either with or without a trapdoor entrance. Species range in size from 1-8 cm across the legs and are distinguished from other ground dwelling spiders by their large eyes used for hunting at night. Most wolf spiders are typically drab brown/grey with variegated black or fawn patterns on them. They are not dangerous to humans, although one species can cause a painful bite, and cause blistering skin lesions and infection. Always wear gloves when gardening.

Black house
Badumna insignis

Daddy long legs
Pholcus phalangiodes

Redback
Latrodectus hasselti

Garden orb weaver spider:
Common across Australia, and reaching 20-24 mm in length. They are famed for their large orb (wheel)-shaped webs often seen in the home garden. Garden spider abdomens have a variety of patterns of colour and shape but two features common to these spiders is the red colouring in the leg joints and their ability to change colour to suit their surroundings. They build their webs at dusk and usually remove all but a single strand in the morning when they retreat to surrounding shrubbery where their camouflaged bodies are rarely seen. These spiders are considered harmless to humans and bites are extremely rare.

Wolf
Lycosa species

Garden Orb Weaver
(Eriophora transmarina).

When am I likely to see spiders?

Spring to autumn.

What if I find spiders?

Most spiders are beneficial and should be left alone. However, redbacks should be controlled in the vicinity of houses and children's play areas. White-tailed spiders are commonly found indoors and their bites have been implicated in causing severe necrosis, although this is not proven. To reduce the risk, keep clothes and shoes off the floor (and check bedding before sleep). Use of pressurised surface sprays on the internal corners (skirting, corners and cornices or entrances) of rooms can reduce populations.

Where do I seek advice?

Contact The Museum of Western Australia for further information on spiders or Poisons Information on 13 11 26 for treatment of severe bites.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘spiders’ in the search facility and click ‘go’.

THRIPS

What do thrips look like?

Thrips are small, slender, soft-bodied insects, just visible to the naked eye.

What damage can thrips cause?

Thrips pierce plant cells with their mouthparts and feed on plant juices. The collapse of plant cells can result in the formation of deformed flowers, leaves, fruit, stems and shoots. Thrips can attack ornamentals, vegetables, strawberries, and fruit tree crops such as citrus, avocado, pomefruit and stonefruit. Some species, such as western flower thrips, also vector plant viruses such as tomato spotted wilt virus (TSWV). TSWV can kill lettuce, tomato, capsicum, chilli and ornamental plants (e.g. asters, chrysanthemum and dahlias).

When am I likely to see this pest?

Thrips tend to be highly secretive and can be found in flowers, between touching fruit, or deep in the leaves of vegetables such as lettuce and broccoli. Thrips are present year round, but are more active during spring-autumn.

Kelly's citrus thrips
Pezothrips kellyanus

Cuban laurel thrips
Gynaikothrips ficorum

Western flower thrips
Frankliniella occidentalis

What if I find thrips?

Not all thrips are a problem. Thrips such as Cuban laurel thrips, which are found on *Ficus*, cause unsightly damage to leaves but are not usually a problem.

Where do I seek advice?

There are many different species of thrips and their identification is difficult. Your local plant nursery can provide control advice.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'thrips' in the search facility and click 'go'.

WASP

Paper wasp

What does a paper wasp look like?

The yellow paper wasp is slender, 15 mm long with distinct yellow and black stripes and orange-brown antennae. The common paper wasp is similar but with brown, black and yellow stripes on its body and brown antennae. Their nests are a single layer of honey comb often attached under fence capping, patios or under roof tiles.

Yellow paper wasp
Polistes dominulus

Common paper wasp
Polistes humilis synoecus

What damage can they cause?

People are usually stung when pruning, mowing or gardening as they disturb unseen nests. Some people can have an allergic reaction to the stings. Paper wasps prey on pest caterpillars, and aggressively defend their nests particularly in summer and autumn

When am I likely to see this pest?

All year round but particularly from October to June.

What can I do if I find a Paper Wasp?

Destroy the nests and all the wasps. You can either do this yourself or employ a licensed pest control operator. Paper wasp nests can be found under eaves, fence capping, roof tiles and in dense shrubs. Nests can be sprayed with fly spray at night-time when all the wasps are on the nest and inactive. The nests need to be removed once all the wasps have been killed or they can re-activate via emerging pupae. Seal the nests in a plastic bag and dispose in the bin.

Where do I seek advice?

The Department of Agriculture or your local council can give you more information about paper wasps.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type ‘paper wasp’ in the search facility and click ‘go’.

WATER HYACINTH

Water hyacinth
Eichhornia crassipes

What does water hyacinth look like?
Water hyacinth is a free-floating aquatic plant, with the spongy bulbous leafy bases helping it to float. Its leaves are about 5 cm in diameter, with long feathery roots and attractive large light purple flowers with a yellow centre.

What damage can water hyacinth cause?
Water hyacinth can block boat traffic, prevent swimming and fishing, as well as prevent sunlight and oxygen from getting into the water. Decaying plant matter reduces oxygen in the water, reducing fisheries, shading out submersed plants, crowding out plants, and reducing biological diversity.

When am I likely to see this pest?
Any time of the year, but flowering mainly in summer.

What if I find water hyacinth?
Water hyacinth is illegal to cultivate, sell or transport, and any known plants must be eradicated. Dry it out on newspaper and dispose of it with other green waste. Be vigilant for declared aquatic plants and report any plant that could be water hyacinth to the nearest Department of Agriculture office.

Where do I seek advice?
Contact your nearest Department of Agriculture.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘water hyacinth’ in the search facility and click ‘go’. Alternatively, ask the Department for the brochure "Wetlands not Weedlands".

Weevils

What do weevils look like and what damage do they cause?

Garden weevil (adults) are about 7 mm long, dark greyish brown and have a pale white V stripe across the rear. The abdomen is noticeably bulbous. They have a characteristic weevil 'snout', and when disturbed, they remain still, pretending to be dead. They attack vines, strawberries, root vegetables, asparagus and ornamentals, as well as causing severe damage to foliage and fruit on apple and nectarine trees.

Fuller's rose weevil is an 8 mm long dull grey-brown weevil with a broad snout. This insect is a defoliating pest of grapevines, citrus and ornamental trees.

Apple weevil (adults) are about 8 mm long and shiny dark-reddish brown with a slightly bulbous abdomen. They are flightless and all are females. They attack young and mature grapevines, fruit and foliage of apple, summer fruit trees and olives and ornamentals.

Garden weevils
Phlyctinus callosus

Fuller's rose weevil
Asynonychus cervinus

Apple weevil
Otiorhynchus cribricollis

When am I likely to see this pest?

Spring to autumn. These weevils are active at night and are best found using a torch.

What if I find weevils?

Larvae of all these weevils feed on the roots of plants. Removing weeds will lessen the pest's presence. Avoid moving soil, fruit, tree prunings, machinery, bins or other equipment from infested to non-infested areas to confine weevils to infested parts of the orchard. Do the same when travelling from one orchard to another.

All the adults of these weevils are flightless so re-infestation is quite slow if good control is achieved. Registered sprays should be applied in October to kill adult weevils before they lay eggs. Sprays should be applied to the butts of shrubs or vines. The adults are active at night and sprays can be applied at night to kill adult weevils in dense garden beds.

Where do I seek advice?

Your local plant nursery can assist you.

Do you want to know more?

More information is available at www.agric.wa.gov.au Type 'garden weevil' in the search facility and click 'go'.

WHITE CEDAR MOTH

White cedar moth
Leptocneria reducta

What does a white cedar moth look like?
It is the larvae (caterpillars) that are the biggest problem. Large numbers of dark brown hairy caterpillars strip the leaves off Cape Lilac (also known as White Cedar) trees and can invade indoors. Adult white cedar moths are grey/ brown with a wingspan of over 40 mm. Grey coloured eggs are laid in clusters on Cape Lilac, or under shadecloth, and hatch as brown/black hairy caterpillars with a yellow stripe.

What damage can white cedar moths cause?
These are serious pests of the Cape Lilac tree only, and can invade homes, cars and out-buildings. They have at least two generations per year.

When am I likely to see this pest?
Late spring to autumn.

What can I do if I find a white cedar moth?
The caterpillars feed at night and descend to the ground to hide during the day. Control treatments, such as trunk banding and spraying should start in October, and you need to monitor trees for the pest on a weekly basis. There are very simple control measures that can be implemented to stop populations increasing, from as little as $5 per tree per year or simply have the tree removed.

Where do I seek advice?
Your local council, local plant nursery or licensed pest control operator can assist you.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘white cedar moth’ in the search facility and click ‘go’.

WHITEFLY

Whitefly
Aleyrodidae

What does a whitefly look like?
Whiteflies are usually first noticed when they rise in a cloud from a tree or shrub when disturbed. Their eggs may be seen on the backs of the leaves of the host plant and are often confused with scales. The pupae of the native species are black and look like fly specks.

What damage can whitefly cause?
Severe infestations can occur on some native eucalyptus and bottle brushes, vegetable crops (eg tomatoes) and tree crops (eg citrus). Whiteflies and scales frequently occur together.

When am I likely to see this pest?
There are several generations of whitefly a year. The greatest populations usually occur in spring and autumn. All growth stages can often be found on trees at one time.

What if I find whitefly?
These flies are of little importance and any trouble they may cause is on a few backyard trees. However, white oil sprays applied for scale control help keep the whitefly in check. The spray should be applied in spring, and a second treatment 2 or 3 weeks after may be advisable in the case of severe outbreaks. If you have a problem controlling whitefly with oils and an integrated approach does not work contact the Department of Agriculture or your local plant nursery.

Where do I seek advice?
Contact the nearest office of the Department of Agriculture or your local plant nursery.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type ‘flies’ in the search facility and click ‘go’.

WINGLESS GRASSHOPPER

Wingless Grasshopper
Phaulacridium vittatum

What does a wingless grasshopper look like?
The wingless grasshopper is grey and 13-18 mm long. Most have short, undeveloped wings but some have functional wings and are capable of wind assisted flight. Some wingless grasshoppers have a pair of white stripes on each side of the thorax, while others don't. Immature grasshoppers are very small, (about the size of a matchhead) and difficult to see. Damaged capeweed petals are often an indication of an infestation.

What damage can wingless grasshoppers do?
Wingless grasshoppers are summer pests that cause most damage when eating green feed in the late nymphal and adult stages. They attack pastures, young and mature grapevines, orchards, vegetable gardens and native trees (especially if newly planted). They can completely defoliate and kill newly planted cuttings and rootlings.

When am I likely to see this pest?
Look out for and control young wingless grasshoppers in October. By December, they are too big and difficult to control and will cause serious damage.

What if I find a wingless grasshopper?
Wingless grasshoppers are not declared pests, so as a landholder, you are responsible for their control. Avoid high stocking rates which result in short open pastures as these encourage grasshopper outbreaks by increasing the amount of bare ground available for egg-laying. If you think you have wingless grasshoppers, send a sample to your nearest Department of Agriculture office.

Where do I seek advice?
Advice on the control of wingless grasshoppers is available from the Department of Agriculture.

Do you want to know more?
More information is available at www.agric.wa.gov.au Type 'wingless grasshoppers' in the search facility and click 'go'.

Common household pests

Have a good close look at the contents of your pantry, linen and wardrobes every 6-12 months to ensure there are no pests lurking, such as meal moths, grain weevils, flour beetles and cigarette beetles. Dried fruit and milled cereal products are products constantly attacked by insects that live inside each food product they infest.

Carpet and hide beetles damage fabrics, furnishings and clothing that contain wool, silk, hair, bristles, fur, or feathers. Synthetic items are resistant to attack, but mixtures of synthetic and natural fibres can be damaged. The adult beetle is a rounded insect about 4 mm long, dark grey with four distinct wavy white bands across the body. Indoors, adults are attracted to light and are often found on window sills.

Control: Protect stored clothes in drawers using moth balls. Carpets often show damage along the edges and under heavy furniture where traffic and cleaning access is reduced. Frequent vacuuming of carpets can reduce populations and residual surface sprays in pressure cans can be used to treat affected areas. The insect is most destructive at the larval or grub stage. It is hairy, with a tapering brush of hairs at the rear, has legs and is quite active.

Cigarette beetles are primarily pests of stored tobacco, but can breed in milled cereal, stored grain and even curry powder, cayenne pepper and paprika. They are oval shaped, reddish-yellow and 2-3 mm long. Females can lay up to 100 eggs, with emerging adults chewing through plastic, paper and cardboard packaging leaving small circular holes.

Control: Protect all condiment products by removing from plastic bags and packaging and place in sealed containers. Alternatively, freezing the products will destroy the beetles.

Clothes moths: Tiny white caterpillars (larvae) eat holes through fabrics but the adult moths do not feed on fabric. Damaged fabrics often have silken cases or silken threads on the surface. Clothes moth larvae feed on animal products such as wool, feathers, fur, hair, upholstered furniture, animal and fish meals, milk powders, bristles, dried hair and leather. Common clothes moths are the webbing clothes moth and the case-making clothes moth. The adults are small (1 cm) buff or straw coloured moths. Adult moths may be found running over the surface of infested garments or materials.

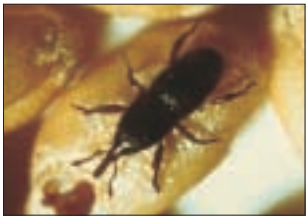
Control: Protect stored clothes in drawers using moth balls. Carpets often show damage along the edges and under heavy furniture where traffic and cleaning access is reduced. Frequent vacuuming of carpets can reduce populations and residual surface sprays in pressure cans can be used to treat affected areas.

Flour beetles infest products such as flour, oatmeal and bran, and can be found in dried fruits, spices and chocolates. They are 3-4 mm long and reddish-brown. Each female lays 400 eggs among food materials, and larvae hatch and feed on food fragments. The rust red flour beetle and the sawtoothed grain beetle are the most common in WA.

Control: Protect all products by removing from plastic bags and packaging and place in sealed containers. Alternatively, freezing the products will destroy the beetles.

Grain weevils in Western Australia include the rice weevil (2.5-3.5 mm long and reddish brown with 4 brown spots on the wings) and the granary weevil (2.5-4 mm long and shiny dark brown-black). These weevils are pests of stored grain and seeds. The female chews a small hole into grain or other solid food material, lays an egg and seals the hole with a gelatinous substance. The larvae hatch and feed on the foodstuff until they pupate and then emerge as adults. It's best to locate the source of infestation and quickly get rid of it.

Rice weevil



Granary weevil

Control: If practical and regulations allow, dispose of heavily infested foods in wrapped, heavy plastic bags or in sealed containers for garbage removal, or bury deep in the soil.

Itch mites can be a problem when dried foodstuffs (fruits, seeds, cereal products and pet food), animal feeds or hay infested with the larvae of storage insects are placed in warm, humid environments, allowing large numbers of these predatory mites to develop. After contact with infested produce, skin irritations may develop. If you think you have been attacked by itch mites, remove the infested clothing, shower and put on clean clothing. When the welts appear, try not to scratch them. Seek medical advice to reduce symptoms and decrease the likelihood of skin infections or dermatitis.

Red rust beetle

Control: Keep stored food free of insects, by either oven-drying it, or by storing it at temperatures below 15°C to minimise the development of host larvae.

Silverfish cause damage by eating foods or other materials that are high in protein, sugar, or starch. They eat cereals, moist wheat flour, paper on which there is glue or paste, wallpaper and book bindings, starch in clothing, and rayon fabrics. They are frequently found trapped in sinks and bathtubs, in bookcases, around closet shelves, behind skirting boards and window and door frames. The adult silverfish is about 2 cm long including the long tail filaments. The most common house species is covered with smooth glistening silvery scales.

Control: A range of silverfish bombs and sprays are available from supermarkets and hardware stores.

Stored product moths in WA generally refer to 3 major pests – the Indian meal moth, the Mediterranean flour moth and the tropical warehouse moth. The Indian meal moth is found in home groceries, has a wingspan of 15 mm and is the parent of the pinkish-white grubs found in raisins, dates and figs, and sometimes biscuits, powdered milk and chocolate. They contaminate foodstuff with webbing. Larvae grow to 17 mm long, have a dark head and 3 pairs of legs. The moth lays eggs on or near foodstuffs.

Control: All products should be destroyed. Undertake regular cleanouts including vacuuming shelved in the pantry and stored dried product areas.

Indian Meal Moth

Sending Specimens for Identification

Correct identification is central to effective control of pests and diseases and for the detection of new exotic pests and diseases which have penetrated our quarantine barrier.

Since many hundreds of animal, plant and insect samples are received by the Department of Agriculture each year, the process for identifying them can be made a lot easier if the specimens are freshly gathered and are undamaged.

Alternatively, electronic copies of photographs can be emailed to the Department at the following address – **info@agric.wa.gov.au** Where possible, photos should include a ruler or other common object to give an indication of the size of the specimen.

Details describing where samples are collected assist the identification process.

IMPORTANT

It is not necessary to personally deliver the specimens to the Department of Agriculture. Simply mail to:

Department of Agriculture
Pest and Disease Information Service
3 Baron Hay Court
South Perth WA 6151

OR Locked Bag 4, Bentley Delivery Centre WA 6983

It is important not to mail specimens on a Thursday or Friday. This avoids deterioration while in transit over a weekend.

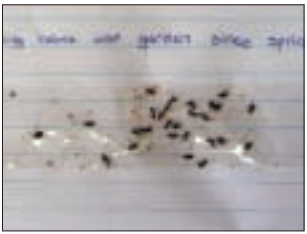
Also provide these details:

- the locality where the specimens were collected: that is, the address and the wider area, such as name of suburb, town or shire;
- the date when collected;
- the name of the collector and a contact telephone number; and
- a description of the damage caused or other reason for submitting the sample.

SENDING INSECTS, SPIDERS, MITES AND OTHER INSECTS FOR IDENTIFICATION

- Send the specimens live unless recommended otherwise as below.
- Gather 10-20 specimens if the insects are small and if this is practicable. Insects with strong jaws such as ground beetles or plant feeders such as scarab larvae are best sent with a handful of soil or leaves as they may otherwise damage each other in transit (see killing methods below).
- Place the specimens in a plastic or glass vial or small jar, or in a crush-proof box with tissues.
- Containers of live insects should have ventilation holes which are sufficiently small to prevent the escape of the specimens.
- **Kill butterflies** and **moths immediately** by freezing for 24 hours or by placing them in an airtight container with a tissue or cotton wool that has been soaked in nail polish remover.

- Also, **kill hard-bodied insects** such as beetles and grasshoppers by freezing for 24 hours.
- **Do not kill** soft-bodied insects such as grubs or caterpillars.
- Leave insect larvae (grubs, caterpillars or maggots) in grain or other seed or fruit as this will help to preserve them.
- Include loosely crumpled facial tissues or similar in the bottom of containers to help prevent damage to fragile insects and absorb any free fluids.
- A preferred method of sending ant specimens is to first spray them with fly spray, then stick to **clear** sticky tape. Stick this to a piece of paper on which are listed the location where caught and the collector's name and contact details.



A simple and effective way to send ant specimens – attached to sticky tape.

- Clues to the identification of the specimens can be found from the plants they feed on. Examples where the specimen may be attached to the host plant include scale insects, mealy bugs and lerps. Where appropriate, send leaves of freshly-damaged plants. (See instructions for sending plant specimens.)

SENDING PLANT SPECIMENS FOR IDENTIFICATION

In many cases these will be unfamiliar plants suspected of new weed potential.

- Collect fresh samples of the growing plant.
- Send whole plants where practicable. That is, include part of the root system, leaves (mature and immature) and flowers, seed pods or fruit. If there are presently no flowers or seed heads, wait until the plant is mature.
- Send more than one plant, if possible.
- Keep plant specimens out of direct sunlight.
- Place the plant samples between several sheets of absorbent paper, such as newspaper.
- Enclose the samples and their separating paper with a sheet of cardboard on either side to prevent crushing during transit.

- Seal the sample inside a paper bag (it will 'sweat' and deteriorate faster in a plastic bag).
- Label with the locality where collected, date and collector's contact details.

SENDING ANIMAL SPECIMENS FOR IDENTIFICATION

Although they are less often sent for identification, animals such as frogs, which are suspected of being cane toads, are sometimes caught. Usually, the identification of frogs can be done over the phone (either the Western Australian Museum, tel. 9427 2700, or the Vertebrate Pest Research Section (VPRS) of the Department of Agriculture, tel. 9366 2301). In most cases native frogs are misidentified as cane toads and are sometimes killed unnecessarily. If, after a phone call it is necessary to send a frog specimen to confirm its identity, the following procedure should be followed:

If alive:

- Place frog in an escape-proof container.
- Add to the container a wet tissue (frogs can drown if placed in a container full of water with no where to rest) and provide ventilation.
- Label with the location where caught and the name and phone number of the collector.

Deliver to:

The Museum of Western Australia
Department of Terrestrial Invertebrates
Francis Street
Perth WA 6000

Or

Department of Agriculture
Bougainvillea Avenue
Forrestfield WA 6000

If dead:

- Place frog in a leak-proof container containing 70 per cent alcohol or 7 parts methylated spirit and 3 parts water).
- Label with the location where caught and the name and phone number of the collector.
- Send or deliver to the Museum or the Department of Agriculture.

There is sometimes a need to determine the identity of other animals. For example, birds are often seen that require identification to determine if they are declared species such as sparrows or starlings. This identification can also be done over the phone (ring the Museum or VPRS) if sufficient information is supplied. Dead specimens can also be sent to the Museum or VPRS for identification:

- Preferably, wrap sample in absorbent paper, place in a sealed plastic bag, then a suitably sized box. Alternatively, preserve in 70 per cent alcohol (made up of 7 parts methylated spirit and 3 parts water), in a leak-proof container.
- Label with the location where caught and the name and phone number of the collector.
- Send or deliver to the Museum or VPRS at the addresses above.

SENDING SAMPLES OF DISEASED PLANTS

These situations will mainly apply to suspected diseases of fruit trees or garden plants.

- Where practicable, send the whole plant (where it is clearly not a leaf, stem or fruit disease).
- Dig up plants so the roots remain intact. Soil on the roots will keep the plant alive in transit.
- Seal the roots and soil in a plastic bag near the base of the plant, then enclose the whole sample in another plastic bag.

For suspected fungal or bacterial diseases:

- Wrap leaves in paper and enclose in a paper envelope.

For suspected viral diseases:

- For vegetative plants, collect new growth or whole shoots.
- For potatoes, shoots are better than tubers.
- For grapevines, collect dormant canes (instead of leaves).
- Package leaves to prevent them getting crushed in transit (as for plant specimens in previous section).
- Enter the locality where collected, date and collector's contact details.

Good garden companions

YOUR FRIENDS IN THE GARDEN

There are many natural "friends" in your garden, and like human friends, they are worthwhile keeping!

Frogs eat mosquitoes, cockroaches, flies and slaters, and are an 'indicator' species, which means they are a sign that everything is going well in the garden. They need to be kept moist, and require food, shelter and places to breed. Build a pond to attract frogs and offer them a breeding place.

Numbers of **native butterflies** have been reduced with clearing of native vegetation. Add local plant species to urban gardens to bring colourful butterflies back into the garden. To attract butterflies, plant coojong, green stinkwood or red-eye wattle (if you are near the coast). Provide plants as a food source for caterpillars to ensure butterflies stay in your garden to breed – including native grasses. This will help butterfly conservation.

Birds are a part of the natural ecosystem, and many are attracted to insects and flowers. Create a diverse community of different insects and flowers by planting local native plant species. One high tree can provide a high perch, which birds love. They also need access to water, and native plants such as wattle produce seeds that some birds can eat. Don't spray spiders, as birds (eg willy wagtails) use the webs to construct nests.

Adult lacewings eat pollen and honeydew, and some prey on aphids. Larvae eat aphids, mealybugs, mites, whitefly, scale and moth eggs.

Preying mantis eat whatever they can catch, including pests, beneficials (good bugs) and other mantids. They are found on leaves, flowers and the branches of plants. They can blend into the background, making them difficult to see.

Hover fly larvae are often found among large populations of aphids. Adults feed on pollen and nectar, while larvae feed on aphids and other soft-bodied insects.

Ladybirds are found year round, but are seen more in spring and summer. They are found among large pest populations, particularly aphids. Adults and larvae feed on aphids, scales, mealybugs, whitefly and insect eggs.

The garden is a miniature ecosystem, and provides food and shelter for both good bugs and pests. Some beneficial invertebrates (good bugs) in your garden prey on and kill pests, either by living in the body of the host (parasite); or eating whatever they can catch (predator). Parasites attack a particular species of prey while predators consume a wide range of prey. Wasps, however, can be predators as well as parasites. Flies and nematodes are parasites, while ladybirds, hover flies, assassin bugs and preying mantids are predators.

Large numbers of beneficials (good bugs) help reduce pest populations, so help conserve them by:

- Providing food, shelter and water – some plants are excellent "lures" for beneficials, providing both shelter and food. These include plants in the parsley (Apiaceae), sunflower or daisy families (Asteraceae). So plant parsley, dill, caraway, coriander, marigolds, dahlias, daisies, asters, cosmos, calendula, zinnia, sunflowers and native plants and flowers.
- Reducing insecticide use, as beneficial insects are more susceptible to insecticides. If you have to spray, use one that has the least impact on beneficials.
- Leaving a few pests to serve as food for beneficial insects – one way to conserve natural enemies is to leave a few pests as food. Aphids are often a good host for many beneficials including lacewings, ladybirds and syrphids. Aphids populations can be left alone if they are not damaging the plant.
- Identifying beneficial insects – beneficial insects can look similar to pests they feed on, so learn how to identify them. Most are predators and are easy to find, but parasites are smaller and hard to find. Some natural enemies are available and are used by commercial growers on their farms and orchards as part of an integrated pest management program.

Pearls of backyard wisdom

ANIMALS AND INSECTS

- Remove food scraps and sources like dog bones and compost heaps. Don't give foxes, rodents, cats and other feral animals a free feed.
- Become familiar with the normal animals around your area. You'll then be quickly aware when something unusual and potentially pesty arrives.
- Don't feed wild animals – they can become reliant on you and/or their numbers can increase to pest proportions creating problems for them and for people.
- Learn to identify good insects from bad.
- Don't leave compost or other garden waste lying around in heaps – it might harbour unwanted pests like cockroaches.

PLANTS

- Weeds – learn to know them, but please don't grow them.
- Keep records of when pest and disease problems occur. You may be able to avoid growing that flower or vegetable at that time next year, select a different variety or grow it in a different way to avoid problems in the future. Knowing when a pest or disease is likely to occur can allow you to take preventative action.

- Heavy mulching will reduce the number of weeds.
- After you whipper snip, don't blow the cuttings onto the road.
- Grow some local native species – help save water and attract insects, birds and lizards to your garden.
- Don't dump garden waste in bush or rivers. Either compost or take it to the rubbish tip or local greenwaste facility wrapped in black plastic bags.

Arrest those pests

Monthly guide to pest, disease and weed control

January

Check for insects (eg thrips, cabbage white butterfly, spider mites) on vegetables and spray or dust for white fly, caterpillars and aphids.

Control caterpillars of white cedar moth.

Control fruit fly and put fly traps through the trees.

Watch out for European and paper wasps.

February

Control caterpillars of white cedar moth.

Control paper nest wasps.

Control fruit fly and dispose of all fallen fruit.

Watch out for and control mildew on vines.

Watch out for and remove weeds before they seed.

Watch for scales on citrus.

March

Control caterpillars of white cedar moth.

Control paper nest wasps.

Watch for citrus and glasshouse whitefly, and fruit fly.

Check vegetables for powdery and downy mildew, and watch for early blight on tomatoes.

Undertake wild rabbit control before the break of season and planting of crops or other plants.

Increase monitoring of mice prior to the planting of crops and during the growing season.

Check for mealybug and scale and control with an insecticidal spray.

April

Control snails and slugs early with baits before they lay eggs.

After rain, watch for snails and slugs around new seedlings.

Watch for millipedes.

Control new season weeds before they spread.

Control caterpillars of white cedar moth.

Control paper nest wasps.

Spray citrus trees to control scale.

May
Watch for and control caterpillars, snails, slugs and slaters.
Check lawns for bindii bindii weeds and remove or spray.

June
Watch for snail damage on bulbs.
Watch out for scale on indoor plants.
Check lawns for winter weeds and implement control.

July
Check for fruit fly on fruit in season (oranges, grapefruit and mandarins) and look for scale on deciduous fruit trees.
Watch out for and control caterpillars.
Check azaleas for petal blight and spray if necessary.
Check for white cedar moth, thrips and citrus white fly.

August
Watch for caterpillars, snails, slugs, vegetable weevil and aphids.
Watch out for scale and aphids on citrus trees and new roseshoots.
Undertake fox control while the vixen is suckling and feeding young cubs, and prior to lambing.

September
Spray bindii in lawns with weed killer.
Check for fruit fly.
Spray for Azalea lace bug if azalea leaves show symptoms.

October
Check for fruit fly on fruits in season.
Look for aphids and black spot on roses and shrubs.
Spray for weevils. Check for vegetables for caterpillars of diamondback moth and cabbage white butterfly.
Watch out for and control two-spotted mite.
Look out for wingless grasshoppers.

November
Look out for wingless grasshoppers.
Watch out for slugs and slaters.
Check for fruit fly and control with baits.
Check for caltrop and control.
Check for water hyancinth and destroy.

December
Watch for insects and caterpillars on vegetables and dust or spray when necessary.
Check for fruit fly and if present bait and/or spray.
Check grapevines for powdery mildew.
Fruit trees may need bird netting to protect the crop.
Watch for ants and implement control.
Look out for wingless grasshoppers.
Regularly check for salvinia during the year.

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