

General Prevention Tips

- Rotate crops to keep weeds, disease, and insect pests at bay.
- Crop rotation is beneficial for pests that do not migrate far from their wintering grounds.
- Use methods that expose pests to natural enemies or environmental stress
- Adjust planting schedules to prevent peak insect abundance.
- Plant disease-free seeds and transplants
- Irrigate the root system (rather than the leaves) to encourage low humidity and better air circulation
- Plant cover crops after harvest to keep weeds from sprouting.
- Physical barriers, such as netting over tiny fruits and screening in greenhouses, can keep insects out of crops, while mulch can keep weeds out of valuable plants.
- Establish areas of blooming plants and bushes to provide nectar, alternate hosts, and shelter for the pest's natural adversaries.

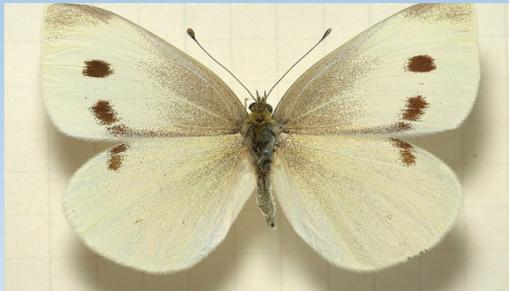
Refer to the APVMA chemical database, PUBCRIS, to find current registrations and agrochemical permits. When using agricultural chemicals always follow the label or permit. Only use products registered for the targeted crop and pest.

The following agencies provide the best available information:



mplantcare.org.au

IPM Technologies:
ipmtechnologies.com.au
Farm Biosecurity:
farmbiosecurity.com.au
Agriculture Victoria:
agriculture.vic.gov.au/
biosecurity
Cesar Australia:
cesaraustralia.com/pestnotes/



Cabbage White Butterfly

Pieris rapae (naturalised)

Hosts: Brassicas (e.g., broccoli, kale, Brussels sprout)

Description

The adult stage has a black body white wings with a black tip on the forewing (and two black dots in females). Mature caterpillars grow up to 30mm in length. They are green in colour with a yellow dorsal line running from head to tail. A few weeks after emerging from pupal cases, females lay greenish-yellow eggs on the underside of leaves.

Damage

Caterpillars can leave traces of their excrement (frass) as they make their way into the hearts of cabbages, damaging the cabbage head and outer leaves. In addition to leaf damage, caterpillars leave traces of their excrement (frass) as they make their way into the hearts of cabbages.

Management

Cotesia glomerata attacks the larvae of P. brassica, and Pteromalus puparum controls it during the pupal stage. Steinernema carpocapsae, a pathogenic nematode, can be bought commercially and used when foliage is wet.



Diamondback Moth

Plutella xylostella (naturalised)

Hosts: Brassicas (e.g., Canola, broccoli, kale, Brussels sprout, Raphanus raphanistrum)

Description

Adult diamondback moth can be up to 10mm long when wings are folded, have pronounced antennae, and a dark brown body with a broad, light brown band running down their wings, which is evident when at rest. Females can lay eggs singularly or in clusters along leaf veins. Eggs are pale yellow, oval and about 0.5mm long. The larvae are yellow-green caterpillars that feed on the inside of leaves when immature. Older larvae feed on the outside of leaves and are more easily spotted. Adults are poor fliers but can migrate long distances on the wind.

Damage

The larvae dig tunnels in the leaf tissue or scrape the surface of the leaf blade, leaving windowing damage. Older larvae can eat the whole leaf, stems and pods. On florets, they can disrupt the formation of heads in broccoli or cauliflower. During spring, they may be observed in canola crops.

Management

Diadegma semiclausum is an identified parasitoid. Sequential planting is a cultural control that can be used. Biological control applications containing entomopathogenic fungi or nuclear polyhedrosis virus or Bacillus thuringiensis can also be used. Resistance to several chemical groups has been identified. Check the resistance status before applying a chemical.



Codling Moth

Cydia pomonella (naturalised)

Hosts: Walnut, pome fruits (e.g., apple and pear)

Description

Adults have brown-grey wings, with a wingspan up to 18mm. Mating occurs over 16°C, often during spring bloom. Eggs are flat, white, oval and about 1mm, laid singularly per fruit/leaf. In 3-5 weeks, larvae with a white body and black head emerge. They form cocoons under loose bark or leaf litter. Generations can be staggered during the year – first in spring or early summer, and a second in late summer or early autumn. Larvae can survive the winter by dropping to the ground and spinning cocoons, ready to emerge when it's warm.

Damage

Larvae bore into fruit and can be found near the core or feeding on seeds. Entry holes have a red ring capped with reddish-brown, crumbly larval droppings (frass). Infestation in stored fruit leave them exposed to secondary bacterial and fungal infection. Damaged fruits tend to ripen and drop early.

Management

Mastrus ridens is an identified parasitoid that attacks larvae in cocoons. Beneficial nematodes that penetrate and destroy immature stages of this pest are commercially available. Commercially available pheromone lures can disrupt mating patterns to reduce eggs laid. This tactic is best implemented at a regional scale. Wettable kaolin clay can also be used to deter moths and reduce damage by 50-60%.



Greenhouse Whitefly

Trialleurodes vaporariorum (naturalised)

Hosts: Solanaceae (e.g., eggplant, tomato, capsicum), and fabaceae (e.g., beans)

Description

Greenhouse whitefly prefers temperate climates. It is often found in greenhouse or protected cropping environments of Victoria. Adults look like small moths with pale yellow wings that are covered in a white, waxy substance. They are 1.5 mm long.

Eggs are laid on the lower leaf surface. The immature stages (crawlers) are light green to yellow to white. Adults gregariously feed on a host plant for a few days, living under the leaves and will emerge en masse if disturbed.

Damage

Honeydew is excreted on leaves, roots, and fruits by both adults and nymphs. On the infected tissues, chlorotic spots and sooty moulds clump together and spread over the entire leaf. Greenhouse whitefly can transmit viruses like Beat Pseudo Yellows Virus.

Management

Encarsia and Eretmocerus are wasps that attack whitefly. Nasidiocorus is also a predator but can damage fruits. Natural insecticides such as sugar-apple oil (Annona squamosa), insecticidal soaps, and neem oil can be used. Beauveria bassiana, Isaria fumosorosea, Verticillium lecanii, and Paecilomyces fumosoroseus are pathogenic fungal options for control.



Western Flower Thrip

Frankliniella occidentalis (naturalised)

Hosts: Flowering ornamentals (e.g., carnations, chrysanthemums, gerberas, geraniums, marigolds, pansies, and roses)

Description

Adults are 1.5-2 mm long, yellow to light brown, with two feathery wings. They can live 9-40 days, with mild conditions being optimal. Eggs are kidney-shaped and laid on flowers or leaves. Nymphs are bright yellow, slender, and wingless. When a mature nymphal stage is reached, they pupate in the soil or plant litter. Thrips can spread through the wind or on plant material, equipment or machinery.

Damage

Adults and nymphs use their mandibles to puncture and feed on flower and leaf cells. Foliage turns silvery, leaves and flowers become flecked, stained, and deformed, buds refuse to open, scarring appears on capsicum, cucumber, bean fruits

Management

Orius is a thrip predator that is attracted to nectar from basil flowers. Farmers should either grow their own seedlings or source them from nurseries screened with thrips-grade mesh and tested for TSWV. Resistance to several chemical groups has been identified. Check the resistance status before applying a chemical.



Green Peach Aphid

Myzus persicae (naturalised)

Hosts: A very wide host range. Common in brassicas (e.g., broccoli, canola)

Description

In comparison to other aphid, GPA have long legs and antennae. While some aphid species have a 'matte' texture, GPA looks shiny. Colours vary from yellow, green, orange or pink. From a small nymph, they can grow up to 3mm long. Winged adults have a dark patch on the abdomen, while wingless adults are a uniform colour. They thrive in mild climates (20-25°C), and in Australia they reproduce asexually. Populations are typically found in the lower canopy of the plant. They pierce plant tissues with their proboscis and extract sap.

Damage

Low numbers are usually harmless, but a severe infestation can cause curling, wilting, stunting, leaf senescence or seedling death. GPA can transfer yellow virus (turnip, beets), and mosaic virus (cauliflower, turnip, cucumber) when they feed. They also produce honeydew on leaves that can encourage fungal growth.

Management

Its natural enemies are ladybugs, lacewings, hoverflies or key parasitoids likes the Aphidius sp. Wasp. Insecticidal soap solutions, neem oil or even water can be used to spray them. When it is hot, aphids are more vulnerable to fungal diseases, but heavy rains and sustained frost also reduce their population. Resistance to several chemical groups has been identified. Check the resistance status before applying a chemical.



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A Growers Guide to Unwanted Pests & Diseases

A collection based on a survey of Fruit & Vegetable Growers around the Mornington Peninsula, Casey & Cardinia areas



African Black Beetle

Heteronychus arator (naturalised)

Hosts: Poaceae (grasses). Can cause problems in pastures and turf.

Description

Adults have a shiny black carapace and are active nocturnal fliers. They are 12 to 14mm long. Eggs are laid in the soil in spring, and hatch in 2-5 weeks. Larvae have c-shaped, white bodies, 6 legs, a yellow-brown head, and black jaws. Larvae will grow to 25-30mm before pupating in summer. They emerge from pupae cases as adults in summer.

Damage

ABB adults are attracted to grassy areas to lay eggs. Both adults and larvae feed on plants. Adults can damage stems, which can cause “ring barking” and larvae feed on plant roots. Under a high ABB load, pasture can die back, leaving bare patches, pasture growth rate is slowed, and pasture can be easily pulled up or rolled back due to a weakened root system.

Management

Heterorhabditis zealandica is a commercially available nematode for turf and other high value crops but is not cost effective in broad-acre crops. Delaying autumn sowing, sowing non-host crops (legumes, peas, and lucerne), as well as increased seeding in susceptible paddocks can reduce ABB damage. Liming can reduce larvae in acidic soils. Chop kikuyu grasses just before seeding to limit their food source.



Cherry Slug

Caliroa cerasi (naturalised)

Hosts: Tree fruit, such as pears, cherries, plum, quince, and apple.

Description

The cherry slug is the larva of a sawfly species. The larvae have a slimy, olive green, slug-like appearance. Immature larvae resemble tadpoles, with big heads and a tapering posterior section. After overwintering as a pupa under the soil, the adult sawflies emerge in the spring. Sawfly oviposition on the leaf results in blisters on the margins of leaves.

Damage

The larvae of pear slugs graze on the upper surfaces of the leaves, avoiding thick veins. Feeding by larvae results in skeletonised leaves. Fruits can be stunted, and leaves darken and fall off (defoliation), which weakens the tree.

Management

Their wet body makes them susceptible to anything dry and dusty (ex. wood ash or sulphur). You can easily hose them off leaves with water. To prevent them from climbing back up, use horticultural adhesive. Encourage natural predators like insect-eating birds (chooks), shield bugs, paper wasps, hoverflies, lacewings, spiders, and carabids (beetles that eat pupae).



Fall Armyworm

Spodoptera frugiperda (exotic)

Hosts: Mainly poaceae (grasses). Can cause problems in maize, rice, sorghum, sugarcane, wheat, and cotton

Description

The moth has brown front wings, white translucent hind wings, and white fringed forewings. This is a warm climate noctuid moth species and will migrate south during summer. It has been predicted that over winter survival of FAW in Victoria will be poor.

Eggs are laid in tight clusters of 100-300 underneath leaves and stems and are coated in scales. Larvae are varied in colour and have an inverted Y marking on the head capsule and collar, raised spots on abdominal segments form a reoccurring trapeze shape. Larvae grow to 35mm in length. They are found year-round in northern Australia, and are expected to be a seasonal pest in parts of Victoria

Damage

Larvae can feed on leaves and fruit. Young larvae feed on one side of the leaf tissue's surface at first (causing windowing damage). On leaves, larger larvae leave a distinctive row of perforations and ragged edges, as well as lines of frass.

Management

Key parasitoids are Archytas marmoratus and Cotesia marginiventris, Chelonus texanus, Land beetles, spined soldier bugs, flower bugs, birds, and mice are some of its predators.



Verticillium Wilt

Verticillium dahliae

Hosts: Affects over 400 plant species. A major concern for artichoke, aubergine, cotton, cauliflower, lettuce, mints, oilseed rape, olive, potato, tomato, strawberry and stone fruits.

Description

The disease comes from plant-borne fungi, including V. Dahliae, which may live in the soil or on crop debris. Once exposed, the fungi spread quickly and prevents the flow of water and nutrients, causing the aerial parts to wilt and rot (leaves and stems). The fungus colonizes dying tissue later in the disease and can live for several years in one place.

Damage

Yellowing starts on the edges of older plants and the woody tissues develop irregular circular stains, black streaks on the stems that stretch upwards from the base. Slow development, early leaf senescence, stunting, and death of whole branches are the most common symptoms in trees.

Management

It is difficult to eliminate once infected but can be controlled through the use of disease-resistant cultivars. Biofungicides containing Streptomyces lydicus break the life cycle of the fungus.



White Leaf Rust

Albugo candida

Hosts: Wheat, barley, rye

Description

To complete its life cycle (7-8 days), it needs living hosts. Spores can travel great distances through the wind. Germination can occur within 30 minutes of contact if there is high moisture or leaf wetness, and temperature is 10° to 30°C. Nitrogen fertilisation at high concentrations aids the spread.

Damage

White leaf infection can cause up to 20% yield loss. Reddish orange, brown or black pustules appear on the plant surface. Secondary pimples and a pale green or yellow halo may develop. Infected plants have damaged plant tissue, reduced water retention, and lower productivity.

Management

Once the fungus has spread, control is difficult. Fungicide for downy mildew can also treat white rust in more leafy crops, but prevention is more commonly practiced through genetically resilient cultivars.



White Rot

Phanerochaete chrysosporium

Hosts: Affects over 400 plant species. A major concern for garlic, onion, shallots and other Allium spp.

Description

The disease comes from soil-borne fungus that can live in the soil for up to 20 years. Allium root extracts promote the fungus's life cycle and growth. The disease thrives in cool (10-24°C) and damp soil.

Damage

Yellowing starts on the tip of the stem and leads to wilting or dieback. The pathogen first infects the roots, bulb, stems, and leaf sheaths then above-ground symptoms appear. The plant can deteriorate in as quick as 7 days, and you may not see the symptoms until it's too late. White fungal growth with small black and roundish specks indicates decaying roots.

Management

It is difficult to eliminate once infected, hence, the best control is prevention. Methods include crop-rotation, sourcing seeds/transplants from a clean supplier, dipping seed in hot water (between 46-49°C.)

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