

In-crop management – pests

Key points

- Start to monitor at early growth stages and continue to monitor for pests through the growing season
- Use integrated approaches to pest, disease and weed management
- Where possible use only selective insecticides to preserve beneficial insect populations

MORE INFORMATION

A PowerPoint presentation on the IPM toolbox is at http://ipmguidelinesforgrains.com.au/wp-content/uploads/July2013ppt_IPM.pdf

Watch *GroundCover*™ TV for details on integrated pest management <https://www.youtube.com/watch?v=OiKuPLCLs9g&list=PL5BC991F931DFFD9C>

To help identify insects, visit the Insect identification Insectopedia – <http://ipmguidelinesforgrains.com.au/insectopedia/index.htm>

A pest and beneficial insect gallery is at <http://www.cesaraustralia.com/sustainable-agriculture/identify-an-insect/insect-gallery/>

Pestnotes by **cesar** is at <http://www.cesaraustralia.com/sustainable-agriculture/pestnotes>

Compared to most other pulse crops, vetch can be a relatively low-maintenance, low-input crop. This is especially true if sown as a manure crop for the control of in-crop weeds in that phase of the rotation. Control measures for pests, diseases and weeds are determined by incidence, seasonal and regional conditions, variety and end use.

6.1.1 Pest management

As with other legumes, insects and mites can cause severe damage if left unchecked. The most damage from these pests is likely to occur during seedling establishment, especially if conditions are cold and wet in autumn. Early sowing into warm soils reduces the risk of mite damage.



Photo 1: Severe damage primarily caused by lucerne flea and redlegged earth mite in a crop of vetch that did not receive insecticide treatment.

Photo: Emma Leonard, AgriKnowHow

As vetch is usually sown after a cereal, mite numbers will be reduced, but if sown after a pasture phase the risk of mite damage is high. The Timerite® decision-support tool can be used to target mites the previous spring if they are a problem.

As crops grow they are less affected by mites, lucerne flea, slugs and snails unless growth is slowed by dry or cool, wet conditions ([Table 1](#)). Controlling pests that cause damage at podding and grain filling is only relevant for crops that will be harvested for grain. Later control may also be required if infestation is severe and could impact on neighbouring crops.

Aphids can be devastating to vetch at any time during the life cycle.

Chemical pest control treatments should be part of a program of integrated pest management (IPM) based on:

- accurate pest identification
- density of pests and likely damage
- value of the end product.

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FEEDBACK

Table 1: Insect pests and their potential for damage at different growth stages.

Group	Species	Growth stage			
		Emergence/ seedling	Early growth	Flowering	Podding/ grain fill
Aphids	Bluegreen aphid (<i>Acyrtosiphon kondoi</i>)	✓	✓✓	✓✓	X
	Cowpea aphid (<i>Aphis craccivora</i>)	✓	✓	✓✓	X
Mites and springtails	Balaustium mite (<i>Balaustium medicagoense</i>)	✓✓	✓✓	✓	X
	Blue oat mite (<i>Penthaleus</i> spp.)	✓✓	✓✓	✓	X
	Clover/Bryobia mite (<i>Bryobia</i> spp.)	✓✓	✓✓	✓	X
	Redlegged earth mite (RLEM) (<i>Halotydeus destructor</i>)	✓✓	✓✓	✓	X
	Lucerne flea (<i>Sminthurus viridis</i>)	✓✓	✓✓	✓	X
	Onion, plague and western flower thrips (<i>Thrips tabaci</i> , <i>T. imaginis</i> and <i>Frankliniella occidentalis</i>)	✓	✓	✓	X
	Moths and caterpillars	Native budworm and corn earworm/cotton bollworm (<i>Helicoverpa punctigera</i> and <i>H. armigera</i>)	✓	✓	✓
	Cutworms (<i>Agrotis</i> sp.)	✓	✓	✓	X
	Brown pasture looper (<i>Ciampa arietaria</i>)	✓	✓	✓	X
	Looper caterpillar (<i>Chrysodeixis</i> sp.)	✓	✓	✓	X
Snails and slugs	Snails (<i>Theba pisana</i> , <i>Cernuella virgata</i> , <i>Cochlicella acuta</i> , <i>Cochlicella barbara</i>)	✓	✓	✓	✓ contaminant
	Slugs (<i>Deroceras reticulatum</i> , <i>Milax gagates</i>)	X	✓	✓	X

Note: X not damaging at this growth stage ✓ potential for some damage ✓✓ potential for considerable damage.

Source: modified from PIRSA/GRDC (2010) Vetch: the Ute Guide. PIRSA/GRDC – <https://grdc.com.au/vetch-the-ute-guide>



6.1.2 Beneficial and natural enemies

All pests have natural enemies, so a key component of any IPM program is to maximise the number of beneficial invertebrates (see below). Where possible use only selective insecticides. If broad-spectrum insecticides are to be used, use judiciously, for example as border, spot or barrier sprays. Preserve native vegetation which provides refuges for beneficial pests.

Table 2: Best-bet IPM strategy establishment to maturity for key insect pests of vetch.

	Growth stage		Beneficial invertebrates/ biocontrols
	Establishment–vegetative	Flowering–maturity	
Aphids	<p>Assess risk of aphid outbreak. High risk:</p> <ul style="list-style-type: none"> • warm, mild conditions • abundant weed hosts • nearby food sources, e.g. clover/medic. 	<p>Conserve and monitor beneficial insects that suppress aphids.</p> <p>If control is required, use selective 'soft' pesticides if registered. Use of broad-spectrum pesticides may cause an increase in aphid numbers through control of beneficial insects. Check post-application for signs of flaring.</p>	<p>Aphid wasp parasites, ladybird beetles, hoverflies and lacewings. Aphid diseases.</p>
Mites and springtails	<p>Monitor susceptible crops through to establishment using direct visual searches.</p> <p>Be aware of edge effects; mites move in from weeds around paddock edges.</p> <p>If spraying:</p> <ul style="list-style-type: none"> • ensure accurate identification of species before deciding on chemical. Lucerne fleas leave distinct windows in leaves. RLEM leave silver patches and seedlings become stunted or dead. • consider border sprays (mites) and 'spot' sprays (lucerne fleas) • spray prior to winter egg production to suppress populations and reduce risk in the following season <p>Use Timerite® to determine the best spray timing.</p>	<p>As the crop grows, it becomes less susceptible unless growth is slowed by dry or cool, wet conditions.</p>	<p>At least 19 predators and one pathogen are known to attack RLEM in eastern Australia. Some also impact upon other species.</p> <p>The French anystis mite is the most effective predator but is limited in its distribution. Snout mites will also prey upon RLEM and lucerne fleas and help keep populations in check.</p>

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FEEDBACK

Moths, caterpillars and cutworms

Monitor for cutworm larvae which live and pupate in the soil but emerge to feed at night. Look for seedlings with stem cut through. Most damaging late winter to early spring.

Monitor for moths:
H. punctigera: from mid-to-late winter, using pheromone traps or at night.

High risk:

- wet winter in inland breeding areas
- large moth flights detected
- wet conditions in spring extend the period of crop susceptibility

H. armigera: from spring (October to November), using pheromone traps.

If high risk:

- Timely monitoring of susceptible crops is critical. Continue until crop is dry and unattractive, or harvested. Ensure post-treatment checks are made.
- Use thresholds to guide spray decisions (none for vetch but use other pulses, e.g. chickpea, as a guide).
- Use soft options first, particularly if aphids are present. Consider biological insecticides (*Bt* or NPV) to control small larvae less than 7 mm.

On larvae – glossy shield bug, spined predatory shield bug, damsel bug, assassin bug, tachinid flies, orange caterpillar parasite, two-toned caterpillar parasite, orchid dupe, *Bt*, NPV, caterpillar fungal diseases, lacewings and spiders.

On eggs – damsel bug, caterpillar egg parasites, ladybird beetles, lacewings and spiders.

Source: IPM Guidelines for Grains (2013), Queensland Government and GRDC, <http://ipmguidelinesforgrains.com.au/workshops/resources/> and (Biocontrol) Vetch: the Ute Guide (2010) PIRSA/GRDC – <https://grdc.com.au/vetch-the-ute-guide>