

## Lucerne flea (*Sminthurus viridis*) in winter seedling crops (southern Australia)

	Pre-plant	Seedling - Vegetative
<b>Signs</b>	<ul style="list-style-type: none"> <li>In spring, assess the weediness, and Lucerne flea (LF) abundance, in fallow or pasture into which a crop will be sown in autumn.</li> <li>LF survive summer as diapausing eggs which hatch in autumn when cool, moist conditions prevail.</li> <li>Seasons with dry or cool, wet conditions that slows plant growth have a higher risk of lucerne flea</li> </ul>	<p><b>Damage:</b></p> <ul style="list-style-type: none"> <li>Broadleaf seedlings are most susceptible               <ul style="list-style-type: none"> <li>canola, lupins, faba beans, field peas, clovers, lucerne</li> </ul> </li> <li>Grass species (wheat, oats, barley, pasture grasses) are less preferred hosts, but will damage seedlings.</li> <li>Young nymphs feed on the soft tissue on the underside of leaves leaving transparent 'windows'</li> <li>Adults and older nymphs chew irregular holes in leaves and can completely defoliate plants</li> </ul> <p><b>Look at</b></p> <ul style="list-style-type: none"> <li>Underside of foliage for lucerne flea</li> <li>Check for 'windows' of transparent leaf membranes</li> </ul> <p>Lucerne fleas jump when disturbed</p>
<b>Monitoring</b>	<p><a href="#">Monitor</a> from emergence</p> <ul style="list-style-type: none"> <li>Check damage levels and number of insects at least once weekly in crops, every 2 weeks in pasture, for the first 3–5 weeks after emergence.</li> <li>Check a number of sites in a paddock, more than you might for other species, as LF distribution can be very patchy. For example, check plants in 50cm row at 5–10 sites across paddock – examine foliage for damage and soil surface where insects may shelter</li> <li>Monitor for other pest species at the same time (e.g. <a href="#">earth mites</a>). Control decisions will need to take into account these species as well.</li> </ul>	
<b>Beneficials</b>	<p>Three species of predatory mites feed on lucerne flea. They include:</p> <ul style="list-style-type: none"> <li>pasture snout mite (<i>Bdellodes lapidaria</i>),</li> <li>spiny snout mite (<i>Neomulgus capillatus</i>)</li> <li>French anystis mite <i>Anystis wallacei</i> can provide effective suppression of lucerne flea.</li> </ul> <p>Some field experiments indicate a 70–90% control of lucerne fleas by predatory mites. Other reports suggest that predatory mite activity is rarely effective to reduce LF impact on seedling crops. Predatory mites are slow to spread and can only do so by crawling. Redistribution of predatory mites is possible using suction machines to collect and transfer mites from established to new sites.</p> <p>Other beneficials include: ground beetles and spiders .</p>	
<b>Cultural control</b>	<p><a href="#">Control alternative hosts</a> to manage the overall LF population:</p> <ul style="list-style-type: none"> <li>Lucerne flea feeds on a range of broad-leafed weeds particularly capeweed</li> <li>Minimise weediness of fallows and pastures</li> <li>Control weeds around crop edges</li> <li>Crops are more likely to suffer damage where they follow a weedy crop or pasture where lucerne flea has not been controlled</li> </ul> <p><a href="#">Grazing management</a> can reduce populations. Shorter pastures lower relative humidity and increase insect mortality and limits food resources – however heavy grazing impacts more highly on predatory mites than lucerne fleas. Lightly grazed areas can act as a source of predatory mites.</p> <ul style="list-style-type: none"> <li>Cultivation may reduce LF populations. There is a link between increasing LF abundance in cropping areas and the growing use of minimum and zero tillage practices</li> <li>Field selection – there is a low risk of Lucerne flea occurring on sandy soils</li> <li>If in high risk area – consider using a higher sowing rate to compensate for seedling loss</li> </ul> <p><a href="#">Strip intercropping</a>: Lucerne flea prefers lucerne and clover. Strip cropping with lucerne/clover may lower the risk of lucerne flea in other crops.</p>	
<b>Thresholds</b>	<p>Speculative <a href="#">thresholds</a>: the key is early control because of the impact of seedling vigour on crop performance</p> <ul style="list-style-type: none"> <li>Canola: 10 holes per leaf (Vic)</li> <li>Establishing pasture: 15 per 100 cm<sup>2</sup> (sampling method not established, but could use that proposed by <a href="#">Taverner et al. 1996</a>)</li> </ul>	

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	<ul style="list-style-type: none"> <li>• A suggested threshold for other crops — treat if 50% of leaf area is likely to be damaged</li> </ul>	
<b>Pesticides</b>	<ul style="list-style-type: none"> <li>• If earth mites are present, ensure species are identified. Not all insecticides registered for RLEM control are effective against LF.</li> <li>• In pasture, consider the impact of insecticides on predatory mite species (if present)</li> <li>• Timing spray to control the first generation in a crop or pasture (nymphs) will reduce the subsequent population growth in that paddock</li> <li>• A border spray may be sufficient to control invasion from adjacent fields</li> <li>• Extremely patchy infestations can be controlled with spot spraying, preventing population build-up and spread through the field</li> <li>• TIMERITE® is not effective for the control of LF.</li> <li>• Late season spraying can reduce number of insects in following autumn</li> </ul>	
<b>Considerations</b>	It is critical to manage LF in conjunction with other establishment pests, particularly the earth mite species. The use of broad spectrum insecticides for LF control may flare other pests e.g. aphids. A comparison of organophosphates and synthetic pyrethroids showed that only organophosphates were effective against lucerne flea – the application of SPs against mites can flare lucerne flea and also kills predatory mites	
<b>Communicationa</b>	<p>Agronomists and growers can discuss:</p> <ul style="list-style-type: none"> <li>• The risk of LF to establishing crops (especially canola, lupins, field peas) and pasture (clovers and lucerne) – e.g. previous occurrence and severity of LF in the paddock or on the farm.</li> <li>• The implementation of options to minimise LF numbers in susceptible crops and pasture <ul style="list-style-type: none"> <li>○ grazing management in pasture, weed management in fallows and broadleaf management in crop</li> </ul> </li> <li>• Review records on LF abundance when making paddock selections for susceptible crops.</li> <li>• Discuss options for getting canola seedlings out of the ground as quickly as possible e.g. big seed, good soil-seed contact, planting as early as possible to avoid cold, wet conditions during emergence.</li> <li>• Discuss management strategy for coming season including use of bare-earth treatments, seed dressings and the relative risk and monitoring requirements.</li> <li>• Consider how LF management may impact on earth mite abundance. Review and resistance management strategy recommendations for RLEM in relation to LF control options.</li> </ul> <p><a href="#">Industry publications</a> provide up to date regional information about pest activity in crops</p>	