



agrovista
amenity



Integrated pest management

*growing through
innovation*



agrovista
amenity

Integrated pest management

Leatherjackets and Chafers

Problem Overview



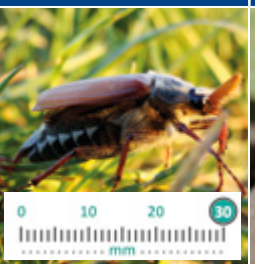



Chafer grubs and leatherjackets are the soil-dwelling larvae of chafer beetles and crane flies. The larvae of these species feed on turf roots weakening and, when high numbers are present, killing the plant. Secondary damage occurs as areas of turf are ripped up by predator species; such as crows, badgers and foxes; in search of the larvae.

A suitable integrated pest management plan for these soil-dwelling pests will involve: identification of the pest, establishment of action thresholds and treatment priorities, monitoring and appropriate action. Undertaking these steps will help to reduce the threat of damage caused by chafer grubs and leatherjackets.



Identify pest

Use the guide below to help identify the leatherjacket (crane fly larvae) and three of the most common UK chafers. There are six chafer species in total in the UK with the garden chafer being the most likely to cause damage to turf. Nematode species which can control both leatherjackets and chafer grubs alongside appropriate treatment times are also stated. Nematodes give some level of control of all chafer species but are most effective against the garden chafer.

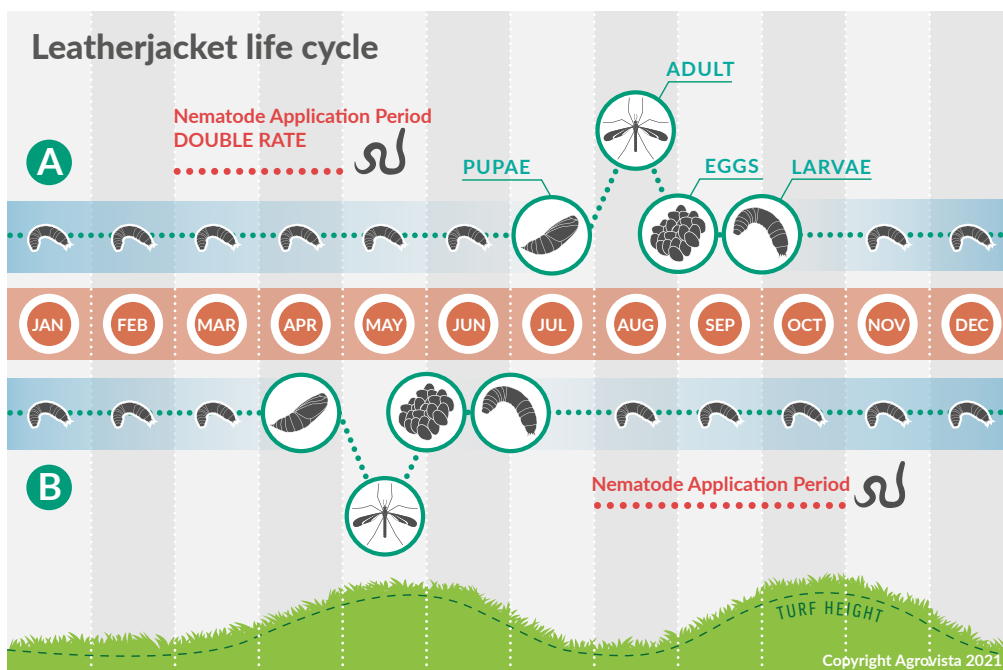
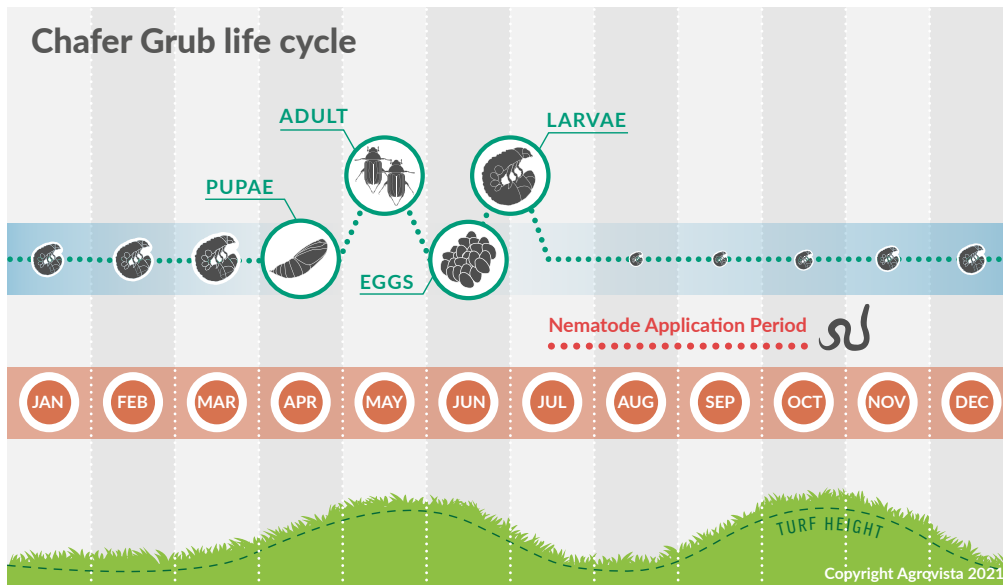
	Leatherjacket <i>Tipula</i> spp.	Garden Chafer <i>Phyllopertha horticola</i>	Cockchafer <i>Melolontha melolontha</i>	Welsh Chafer <i>Amphimallon solstitialis</i>
Adult	 0 10 20 25 30 mm	 0 10 20 30 mm	 0 10 20 30 mm	 0 10 15 20 30 mm
	Active: May–June and August–September	Active: May–June	Active: April–July	Active: June–August
Larvae			It is difficult to differentiate chafer grubs. Identification is best undertaken when the adults are active.	
Main treatment	<i>Steinernema carpocapsae</i> August–October	<i>Heterorhabditis bacteriophora</i> July–October	<i>Heterorhabditis bacteriophora</i> August–October	<i>Heterorhabditis bacteriophora</i> August–October
Secondary treatment	<i>Steinernema feltiae</i> March–April	Treatment of chafer grubs is only possible in the late summer/early autumn.		



Secondary damage occurs as areas of turf are ripped up by predator species; such as crows, badgers and foxes...

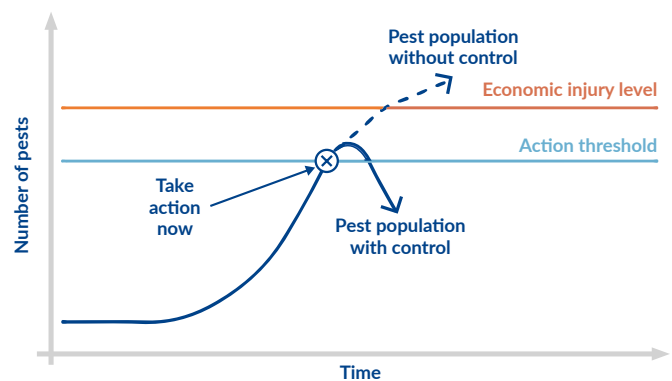
Life stages

These infographics are designed to inform the user about the life stage of the organism throughout the year. Application periods coincide with the larvae being at a young and susceptible life stage and soil temperatures above 12°C to ensure nematodes will be active.



Action thresholds

The Economic injury level indicates the number of pests that an environment can sustain before economic or aesthetic damage will be caused. Alongside this value, the Action threshold indicates the point at which action should be taken to prevent the pest population reaching the Economic injury level.



Planning



Example pest levels for action			
Priority level	Description	Number of pests per m ²	
		Leatherjackets	Chafer Grubs
①	Area of high importance. Damage is not acceptable.	50	30
②	Small amount of damage acceptable.	100	50
③	Treatment not necessary unless severe damage is likely.	200	90



Monitoring

Adults

Monitoring and recording when adults of each pest species are active will help to show the severity and distribution of the pests and when to begin monitoring for the larvae.

Chafer beetles can be monitored using a chafer pheromone trap.

Use a sweep net or visual monitoring to estimate numbers and establish distribution of crane fly (adult leatherjackets).

In subsequent years the amount of adult activity could be used as a reference for likely larval levels.



Pheromone trap

Larvae

Monitoring of larval numbers and distribution can be used to determine when action thresholds have been reached and economic or aesthetic damage is likely if appropriate action is not taken.

Using a hole cutter, remove soil samples from several locations within each area that is being monitored. Alternatively, use plastic sheeting overnight to encourage the larvae to the surface. To ensure that a representative view of the area is obtained, use a standardised methodology such as walking a W-shaped transect or use a grid system to sample at regular distances.



Hole cutter

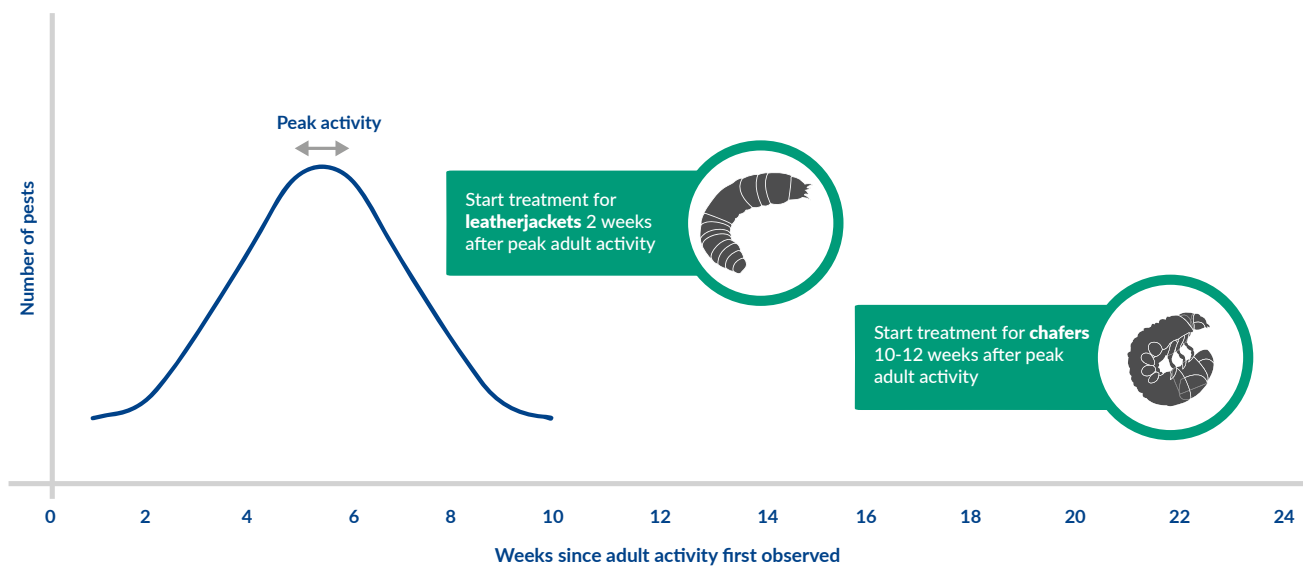


W-shaped transect



Grid sampling

Treatment



Apply the relevant entomopathogenic nematode for the pest problem 2 weeks after peak adult activity for leatherjackets or 10-12 weeks after peak adult activity for chafers. Ensure that:

- The number of larvae in the soil has reached the action threshold
- The soil temperature is within the tolerance limits for the nematode
- The soil is moist and has been aerated
- Further rain is forecast or you can apply irrigation
- It is early in the morning, in the evening, or it is a cloudy day as the nematodes will be killed by UV light

Immediately after application irrigate well using at least 2-5 litres per m² to wash the nematodes into the soil.

Continue to keep the area well-watered for at least two weeks.

My IPM plan for leatherjackets and chafers...

- ✓ Categorise areas of site according to priority.
- ✓ Identify which pests are present.
- ✓ Set action thresholds and monitor pests.
- ✓ Apply relevant treatment if required and when it will be effective.

Review

Repeat the monitoring process to ensure the nematodes have been effective.

If the pest levels have not fallen below action threshold levels reapply 21-28 days after the first application if conditions are still appropriate. This may occur if:

- Conditions were not appropriate for nematode activity.
- The infestation was particularly large.



Review the monitoring method, action thresholds and treatment method.



Agrovista UK Limited

Rutherford House
Nottingham Science
and Technology Park
University Boulevard
Nottingham
NG7 2PZ

T: 0115 939 0202

E: enquiries@agrovista.co.uk

Follow us on social media:

[@AgrovistaAMNTY](https://twitter.com/AgrovistaAMNTY) 

[@AgrovistaUK](https://www.linkedin.com/company/agrovista-uk/)   

www.agrovista.co.uk/amenity

