

Factsheet



Slugs

BACKGROUND – Slugs pose a significant problem to all growers in the British Isles due to our warm, wet climate.

LIFE CYCLE – The life cycle of a slug is made up of three stages: egg laying, immaturity and adult. Although slugs can reproduce by themselves it is relatively uncommon. Slugs can over-winter at any stage in their life cycle. A slug can lay up to 500 eggs a year in batches of 10-50. The gelatinous eggs, which are 3-4mm across, are usually laid in crevices in the soil during the spring and autumn. In ideal conditions the eggs will hatch within 10 days, although hatching may be delayed by as much as 100 days in poor conditions, such as cold weather.

There are 30 different types of slug in the British Isles. However, the four which cause the most damage are the grey field slug, the garden slug, the keel slug, which can tunnel up to one metre into the soil and causes root damage, and the black slug, which is the largest but tends to cause the least damage.

In dry conditions, slug numbers fall where the eggs have become desiccated. Although slugs remain inactive in unfavourable conditions, they soon become active again in mild, damp weather.

CONDITIONS THAT FAVOUR THE PEST OR DISEASE

- **Trash and debris** - The amount of trash in the seedbed will affect slug activity. Trash aids movement and provides slugs with cover from predators.
- **Seedbed quality** - A coarse, rough seedbed aids slug movement and provides security from predators, whereas a finer seedbed will impede movement.
- **Previous crop** - For example, crops that immediately follow a brassica are particularly at risk from slug attack due to the increased trash.
- **Weather** - Warmer spells above 5°C will promote slug activity, while dry conditions and colder spells will reduce slug proliferation.

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KEY PREVENTATIVE MEASURES TO CONTROL PEST OR DISEASE

- **Drainage** – Moist conditions are ideal for slugs. Improving soil structure through the appropriate use of cultivations and compost will help soil drainage. Incorporating sand into areas which are identified as slug breeding sites can also be effective.
- **Cultivation** – Secondary cultivations before planting or drilling will help to produce a finer seedbed, which slugs and snails find difficult to cross.
- **Seedbeds** – Firm seedbeds reduce air spaces which slugs use as shelter, and also help crops to establish quickly and grow away from damage.
- **Predatory insects** – Providing the right habitat for natural enemies, especially ground beetles (Carabids), will help control slugs. Beetles feed voraciously on slug eggs, as well as the slugs themselves. Field margins and beetle banks provide ideal habitats (see Organic Farming issue 70, pages 26-29). Spring cultivations reduce beetle populations, whilst autumn cultivations have little effect on their numbers.
- **Encourage birds** – Many birds, particularly blackbirds and song thrushes, will eat considerable numbers of slugs. Gulls and crows will also consume slugs when following the plough. Providing bird boxes, winter feeding areas, trees and hedgerows, and uncultivated areas will all help to maintain and improve farmland biodiversity. Chickens and ducks are also effective at 'cleaning up' an area, both pre- and post- harvest.
- **Other predators** – Hedgehogs and frogs also keep slug populations down, providing suitable habitats will encourage them.
- **Crop variety selection and position** – Choosing resistant varieties can be quite effective at minimising damage from slugs, especially in potatoes. Consider where to grow susceptible plants in the rotation carefully, such as lettuce.
- **Diversionsary tactics** – Providing decoy or sacrificial crops, dead or alive, can aid control. Carrots, lettuce and comfrey are all attractive to slugs and snails and can be grown or placed near to main crops. This allows pests to be collected at regular intervals. In addition, bran, sliced carrot or comfrey can be laid as an attractant, allowing the collection of slugs as they feed.
- **Timing of irrigation** – Early morning irrigation is better than evening as there is less likely to be a damp film for slugs and snails to crawl over at night. Leave a cultivated strip next to a polytunnel: slugs and snails seen crossing this can easily be collected for disposal.
- **Mulches** – Living or dead mulches, such as grass clippings or undersown green manure, can be of use. Whilst these areas can provide cover for slugs, they also provide a habitat for their predators.
- **Ferric phosphate** - permission from your certification body is required prior to use. Slug control products with ferric phosphate contain an active ingredient and an attractant and work by disrupting the slugs gut system with the slug dying within 3 to 6 days.

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CONTROL IN ARABLE PRODUCTION AND FIELD SCALE HORTICULTURE

- **Reduce surface trash** – Try to minimise surface trash as this aids the slug's movement and provides cover from predators.
- **Drainage** – As mentioned above, effective drainage and ensuring that seedbeds are rolled after drilling will impede slug movement.
- **Cultivations** – Cultivations will reduce slug numbers through physically destroying them, removing their habitat, impeding their movement and also reducing soil moisture, which will aid in drying out the eggs. Many slugs will also be eaten by birds once the soil has been exposed through cultivation.
- **Monitoring** – It is worthwhile leaving out a roof tile and checking to see whether the slugs are using it as shelter in the daytime. Where there are significant numbers, further cultivations maybe carried out or drilling delayed, where possible, to minimise possible slug damage.
- **Pest-predator habitat** – Field margins and beetle banks should be encouraged to create habitats for the ground beetles and other carabids, which eat slugs, such as the devils coach horse. Although large numbers of leather jackets can be a potential pest in their own right, they can consume many slugs when they appear on the surface in September in grassland.

SLUG CONTROL FOR SMALLER SCALE HORTICULTURAL PRODUCTION:

- **Biological control** - The nematode *Phasmorhabditis hermaphrodita* is a biological control agent that can be very effective in reducing established slug populations. However, conditions must be correct for use and the cost may mean this option is only viable on a small scale. Couch grass can be made in to a liquid plant tonic that is said to have a side effect as a slug and snail repellent.
- **Copper barrier** - Copper barrier tape is available that has an electrical charge. This can be laid around a crop to repel slugs, although the cost may mean this is only viable on a small scale.
- **Traps** - On a small scale liquid traps can be very effective. Traps should be sunk in the soil with a protruding lip to avoid drowning other invertebrates. Beer, milk or grape juice are good for attracting slugs and snails. A range of commercial traps are available; alternatively, home-made traps are easily made.
- **Clear up debris** - Leaving debris in the field post-harvest may attract slugs. Minimise debris by either removing the material or bury it by ploughing/cultivation.
- **Night patrol** - The occasional night patrol to collect up slugs and snails can be extremely effective at reducing numbers. Cutting grass at night will also cut up slugs.

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USEFUL WEBSITES OR PUBLICATIONS

USEFUL WEBSITES

A European Union funded research project (FAIR CT 5-PL97-3355) looked at novel technologies for integrated control of slug damage in key horticultural crops. Organic methods were considered. The report "Slug damage and control of slugs in horticultural crops" can be downloaded here:

<http://orgprints.org/515/1/Slugcontrol.pdf>

Although it is a non-organic site - www.nomoreslugs.com provides some useful information.