

PC20



Large black slug on lettuce leaf

Slugs and snails

There are many species of slugs and snails in the UK, not all of which are harmful to garden plants. Slugs and snails are usually, but not exclusively herbivores and eat many types of plants as well as dead and decaying plant material, algae, fungi and lichens. There is even a carnivorous slug, the leopard slug *Limax maximus*, that includes other slugs in its diet!

Typical symptoms

Leaves eaten from the margin or holes in larger leaves. Young shoots and seedlings are often eaten down to the stem or disappear entirely. Root crops can be hollowed out, especially maincrop potatoes where entry may be gained through damage caused by wireworm and other pests. There are usually tell-tale slime trails present after an attack on plants, covering soil and other surfaces where the pests have travelled. Some ornamental plants such as delphiniums and hostas are so attractive to these pests that they are virtually impossible to grow where slugs and snails are numerous.

Description of pest

Slugs and snails are soft bodied, gastropod molluscs that move along on a single muscular foot and secrete slime. They have two sets of retractable tentacles, one pair for smell and taste and one pair for eyes. They scrape their food up with a spiky, rasping tongue. Snails tend to hibernate in the winter and are unable to move through the soil whereas slugs can be active all year round both above and below ground in all but very hot, dry or frosty weather. Snails are able to climb higher when feeding as they retreat into their shells to prevent drying out. Both slugs and snails mostly feed by night.

The main pest species are:



Field slugs



Large red slugs

- **Field slug** □ *Derocerus reticulatum*
Light grey/fawn colour above, pale with a darker central zone below. Up to 4cm long. Feeds mainly above ground, but can feed at several centimetres down in the soil.
- **Garden slug** □ *Arion hortensis*
Dark grey to black above, yellow orange below. Up to 3cm long. Feeds mainly around ground level, both above and below the surface.
- **Keeled slug** □ *Milax spp.* (*Milax gagetes*, *Tandonia budapestensis*, *Tandonia sowerby*)
Grey, dark brown or black with distinct keel or ridge down the back. Pale yellowish white with a darker central zone below. Up to 6cm long. Lives and feeds mainly below ground □ especially on potatoes and other fleshy roots and tubers.
- **Large black slug** □ *Arion ater*
One of the most visible slugs as it is large, reaching up to 15cm long. Mostly black to dark brown in colour and similar in appearance to the **Large red slug** (*Arion rufus*) that has a distinctive orange frill around the foot. Although it can be a danger to seedlings in the spring, generally it is much less damaging than the other pest species.
- **Garden snail** □ *Helix aspersa*
The garden snail is the large, common kind with a grey-brown shell.
- **Banded snail** □ *Cephaea nemoralis*
Less destructive than the other two, shells have distinctive yellow/ brown bands.

- **Strawberry snail** □ *Trichea striolata*
The strawberry snail is small, about 13mm, grey to brown with a flattened shell.

Life cycle

Slugs and snails are hermaphrodite, each individual is both male and female, and is able to lay spherical translucent white eggs about 2-3mm across. Eggs are laid in batches of 10 - 50 and can often be found in the soil, in compost heaps and other dark, damp places. Up to about 500 eggs per slug may be laid in a season. They hatch into tiny versions of the adults in 3 weeks to 5 months depending on the time of year. Slugs and snails can live for up to four years but the lifespan is usually less.

Prevention and control

Organic methods are aimed at controlling numbers, and limiting the damage caused, rather than at eradicating all slugs and snails. Protection of vulnerable plants is the key for organic gardeners. There are many ways to reduce the numbers of these resilient and destructive pests. Try and clear an area before planting, or at least provide other things for the slugs to eat too.

Key factors in successful control are not to rely on only one method and to accept that some damage is inevitable. The canny gardener should always be prepared to re-sow or keep back some extra module grown plants to replace losses and to learn which plants and under what circumstances losses occur, taking action to avoid a repeat. Slugs and snails particularly feed on seedlings and young soft growth, plants under stress, and leaves that are high in nitrogen especially when 'overfed' (always follow organic guidelines on feeding and soil management □ for more information Garden organic members can see our [factsheet on Managing your soil](#)).

The following list of methods will all help to either reduce the pest population in your garden or protect vulnerable plants. Aim to use several and follow a strategy that tackles the problems in your garden:

- Choose resistant vegetable varieties: Some varieties of potato tuber are particularly resistant to soil dwelling slugs. Examples are: Ambo, Cara, Desiree, Romano, Sante and Valor.
- Choose trouble free ornamental plants: Rather than forever waging war against slugs and snails in order to protect vulnerable plants such as delphiniums, bedding plants and hostas, perhaps a better strategy would be to choose plants that are not so high on the mollusc menu. The plants listed below are reasonably tough, though not all are completely resistant as slugs and snails may still attack young foliage, experience will tell you what survives in your garden. Use protection at the early planting stage with a bottle cloche or other barrier method until plants are established and growing strongly.

Acanthus mollis, *Achillea filipendula*, *Agapanthus*, *Alchemilla mollis*, *Anemone hephehensis*, and *A. hybrida*, *Antirrhinum majus*, *Aquilegia spp.*, *Armeria spp*, *Astrantia major*, *Bergenia*, *Corydalis lutea*, *Cynara*

cardunculus, Dicentra spectabilis , Digitalis purpurea, Eryngium spp, Euphorbia, Foeniculum vulgare, Fuchsia, Gallardia aristata, Hardy Geranium spp. Geum, Hemerocallis, Lysimachia punctata, Myosotis spp., Nasturtium, Nepeta x faassenii, Papaver orientale, Pelargonium, Polygonum spp., Potentilla, Pulmonaria spp, Rudbeckia fulgida, Sedum spectabile, Sempervivum spp., Siserinchium spp, Thalictrum and Verbascum spp.

- Soil structure and drainage: Slugs thrive in rough lumpy ground which is poorly drained, so improving drainage and soil structure is important where these conditions occur.
- Cultivation: Digging, rotavating and raking to create a fine tilth before sowing will help to disturb slugs and their eggs within the soil as well as helping soil to dry out on the surface, making slug movement more difficult. A well-prepared seedbed will enable seeds to grow away more quickly and be better able to withstand some slug or snail damage.
- Encourage natural controls: There are many creatures that feed on slugs and snails such as: ground beetles, frogs, toads, hedgehogs and many species of birds including: thrushes, redwings, blackbirds, fieldfares, robins, starlings, gulls, and ducks. Make your garden a friendly place for these beneficial creatures by avoiding harmful sprays and providing a variety of wildlife habitats and nesting boxes, for example: log piles, fruiting shrubs, a pond and mulches. Remember that these natural pest controllers actually need a supply of slugs and snails to survive, leave some where they are not a particular problem.
- Hand picking: Inspect vulnerable plants regularly and remove any pests that are seen. Wearing rubber gloves can make this job a little less unpleasant. As slugs and snails feed after dark, the midnight slug hunt is the best time to don your miner's hat, take a pair of scissors and search and destroy! Or for the more squeamish, collect in a bucket and move them to a suitable natural habitat away from any cultivated land.
- Garden hygiene: this is a slightly tricky one to get right □ a too tidy garden is not the ideal situation to provide habitat and encourage the biodiversity that is desirable in an organic garden. It is sensible though to tidy up or remove any piles of rubble or stones close to cultivated areas, as well as stacks of flowerpots, and piles of plant debris. If you find large populations of snails tucked in a corner of a veg bed or up an adjacent wall, crush them or pick them off and move them to a suitable natural habitat away from any cultivated land.



- [Portable slug and snail traps available from the Organic gardening Catalogue](#)

Traps: Various designs are available for all areas of the garden, either purchased or home made, free-standing or that can be buried in soil. All will

require some form of bait ☐ beer or a supplied attractant. Choose a shallow container, leaving a rim 2cm above soil level to discourage beetles and other creatures from falling into home-made buried traps.

- **Temporary shelter:** Use roof tiles or half grapefruit skins. Place on the soil near vulnerable plants to provide a shelter for the slugs and snails in the day. Inspect frequently and remove any pests found in residence. This method can be used to clear an area before planting by providing lettuce leaves as bait under the traps.
- **Comfrey ring:** A ring of comfrey leaves placed around vulnerable seedlings or young plants will lure slugs to feed on the wilting leaves. Check daily for slugs and dispatch by your preferred method.
- **Barriers:** These consist of either a physical barrier or sensory repellent to deter slugs and snails crossing the barrier. There are many types, either home-made or bought products are available:



Bottle cloche

- **Bottle cloches** - cut the bottom off a clear plastic bottle and firm it into the soil around a vulnerable seedling/plant.
- **Slug collars** - plastic rings with a lip to make crossing it difficult, placed around individual plants such as lettuce.
- **Grit or Granules** ☐ natural mineral products that either form a sharp, gritty repellent barrier or that suck the moisture from the slime that slugs and snails exude as they move.
- **Spray repellent** - made from yucca plant extract, spray on to surfaces and around vulnerable plants. Especially useful in hard-to-protect-places like greenhouse window frames. Needs renewing after heavy rain.
- **Copper tape/rings and impregnated mats** ☐ copper gives a natural electric charge that repels the pest. Tape is useful around pots and legs of greenhouse staging, mats may be used around plants or planted through.
- **Bran** ☐ slugs like to eat the bran, it swells inside them, reducing their appetite for your precious plants.

[Slug repellent products](#) available from The Organic Gardening Catalogue



[Biological slug control is available from the Organic gardening Catalogue](#)

Biological control: The biological control agent available for controlling slugs (not effective for snails) is a microscopic nematode *Phasmarhabditis hermaphrodita*. It is a native species and can be found naturally in the soil throughout the UK. Slugs are already killed by this creature, but not in large enough numbers to prevent garden problems. Modern technology makes it possible to breed the nematodes so they can be applied to the soil in large enough quantities to reduce slug populations significantly. The nematodes come in a pack of moist clay. This is mixed with water and applied to the soil with a watering can. Slugs will be controlled for up to 6 weeks, after which re-application may be necessary.

Important points for success with nematode controls:

- The soil should be moist for 2 to 3 weeks after application. During dry spells watering may be necessary.
- The soil temperature should be above 5°C. Use between March and October outside. In a greenhouse, use whenever slugs are active.
- Once opened, the contents must be used immediately. Unopened, the sachet may be stored in a fridge for 4 weeks or in a cool dark area for 2 days.

Packs of nematodes may be considered to be expensive by some gardeners, but used properly and in conjunction with other methods does give good control to reduce high slug populations. Applications of nematodes are particularly effective at key times such as in a new garden or allotment plot, in spring before planting out, or 4 weeks before potato harvesting. Research has shown that nematodes are most effective against small and soil dwelling slugs that are difficult to control by other methods.

Related books about Garden Pests



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- Ferric phosphate based pellets: Ferramol is another name for Ferric Phosphate or Iron III phosphate, the active ingredient of these pellets. Iron III phosphate affects the calcium metabolism in the gut system of snails and slugs causing them to stop feeding and die within three to six days. Only these species are targeted, causing no ill effects to other creatures. Any uneaten pellets will eventually break down into phosphate and iron which will then be taken up as nutrients by surrounding plants. Ferramol does not have any 'side effects'. If the pellets (or the slugs which have eaten them) are eaten by birds, mammals etc, they will suffer no adverse effects. Although this type of pellet is approved by the Soil Association, certificate holders must seek approval before using them and organic gardeners should follow [Garden Organic guidelines](#) and manufacturers instructions when deciding to use any pesticide products.

- Other slug pellets: those based on metaldehyde or methiocarb are NOT recommended for use in an organic garden.

For further reading

- **Collins Guide to Pests, Diseases and Disorders of Garden Plants** *Stefan Buczacki and Keith Harris* ISBN 0-00-220063-5
- **Pests - How to Control them on Fruit and Vegetables** *Pauline Pears and Bob Sherman* (Search Press/HDRA) 1990, revised 1992, ISBN 0 855327413
- **Banish slugs, Green Essentials Guide**, Impact Publishing, ISBN; 1 904601 00 6

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