With so many options for limiting damage caused by these gastropods, the RHS is researching which combination of controls could be most effective.

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The gastropod fauna of the UK (land-based rather than aquatic) consists of more than 40 species of slug and 100 species or more of snail. They have wide-ranging diets that include live and dead plant material, lichen, fungi and some are even carnivorous. It is the gastropods that like to eat cultivated plants, however, that cause problems, both in agriculture – slugs have been devastating crops for centuries – and for home gardeners. Slugs and snails have taken first place on the annual RHS list of top 10 pest enquiries from members in seven of the last 10 years.

**Limiting damage**

There is a huge array of control methods available, including barriers such as gravel and copper, traps filled with beer or bait, biological control by nematodes, and pesticides in the form of slug pellets. Many of these controls attempt to answer the need for alternatives to slug pellets, especially those based on metaldehyde, as gardeners become more aware of the threat of gluttons pose to pets and wildlife. Despite all of these controls, slugs and snails are still a problem for gardeners, and some products and methods recommended have not actually undergone much scientific work to prove their usefulness.

In response to this situation, the RHS has launched ongoing research into slug and snail control. This will assess the effectiveness of different methods and work on ways to further improve and successfully combine tools into strategies, known as an ‘Integrated Pest Management’ approach. The key principle is to adopt a holistic, preventative approach to pest control that minimises the use of pesticides. A first step is to make your garden a less welcoming environment for gastropods by encouraging wildlife such as birds, frogs, hedgehogs, moles, slowworms and ground beetles, which are known to eat slugs and snails. It is unlikely there will ever be a ‘silver bullet’ against these pests, and home gardeners will need to tailor control strategies to their own gardens to get the best results.

### Why slugs and snails are such a problem

These slimy pests love our gardens because we want to grow what they love to eat.

Land gastropods tend to eat broad-leaved plants that are fast-growing, especially younger plants or those with lower levels of the toxins often produced to deter grazers. So it is no wonder that slugs and snails can be the scrounger of a vegetable patch, as humans also like to eat sweet tasting plants that we can grow and harvest quickly. Gastropod preferences can likewise be seen among our ornamental plants, such as hostas and dahlias, with sother. Flesher-leaved plants being favoured over those with tough or spiny leaves.

The wet and mild climate of the UK, along with our varied landscape, is ideal for gastropods. Damage tends to peak in spring and again in autumn, with a quieter period during summer when it is drier. Slugs are dormant over winter, but slugs are active throughout the year (although much less so in winter).

Slugs and snails are also very reproductive. As hermaphrodites, they have both male and female reproductive organs, while many species can also self-fertilise so only one individual is needed to start a new population. Some slug species can lay hundreds of eggs at once, and can reproduce multiple times each year.

### Typical damage seen on vulnerable crops

Slugs and snails feed by rasping with their radula (a tongue-like organ covered with tiny teeth). The gastropod pushes out its radula, drawing it over and pulling food towards its mouth. On leaves the damage takes the form of slightly rough-edged holes – or sometimes a surface of the leaf is grazed away. Seedlings can be eaten in their entirety and disappear overnight. Slugs and snails will also eat stems, leaving grazed-down patches that can cause the plants to stem to bend. Slugs can also turn into tubers such as potatoes, allowing entry of other invertebrates and secondary rots.

**Gastropods often found in the garden:**

- **black slug** (Arion ater, below) and **common garden snail** (Cornu aspersum, below).

**Snails**

Although there are many species of snail in the UK, most of them are not large or numerous enough to cause noticeable damage, but banded snails and garden snail (see p130) are frequently found in gardens. Snails travel underground to form their shells, so most species are restricted to calcareous areas, snails can become much more of a problem on limestone and chalky soils than in other areas. These gastropods tend to hide in cracks and crevices during the day, and have been known to ‘roost’ in shrubs and trees.

**Snails generally eat at night and find cover under which to hide during the day.**

**Salt**

Half a grapefruit filled with beer and left in the garden overnight will soon indicate the size of the problem.

**Plants most at risk**

- **Daffodils and tulips**
- ** Dahlias**
- **Delphiniums**
- **Hostas**
- **Lettuces**
- **Lobelia cardinals**
- **Peas and beans**
- **Potatoes and other tubers**
- **Sweet peas**

**Typical damage seen on vulnerable crops**

**Damage can vary here, the leaves of red lettuces have been eaten, while green lettuce remain intact.**

**Slugs that damage potatoes often stay below ground so are best treated with nematodes.**

**When slugs or snails eat the outer layers (here on Lobelia cardinals), weakened stems often bend over.**

**Moisture-loving Ligularia dentata is vulnerable to damage when new leaves emerge in spring.**

**Though not normally attacked by slugs, a Chelthom grown against a wall is more accessible to slugs.**
Controlling slugs and snails

There are a number of simple techniques and products that can be used as barriers or repellents against gastropods, such as cultivating the soil regularly to expose slugs and their eggs to predators or encircling seedlings and young plants with grit.

Traps or shelters
Beer traps can be made by sinking a jar part-way into the ground (not all the way as beetles can fall in) and partially filling with beer; slugs will be attracted to the beer and drown. Alternatively, make shelter traps from cabbage leaves or hollowed-out oranges and empty every morning.

Removing by hand
Slugs and snails do most of their feeding at night, so a reliable way to catch high numbers is to pick them off plants under torchlight. They can be disposed of with landfill waste or killed in the freezer.

Mulch barriers
Surrounding plants with a mulch of sharp grit, bark or moisture-absorbent material (such as wool, left) can discourage snails and those slugs on the soil surface – although there is little evidence on which of these mulches is effective.

Copper
Laboratory trials show that slugs and snails do not like to cross copper, but few show that products such as copper tape, collars and copper-impregnated matting work in reality. Copper barriers on pots may work best.

Nematodes
Biological control can be carried out with Phasmarhabditis hermaphrodita nematodes; these microscopic worms are specific parasites of gastropods. Nematodes are watered into the soil, where they seek out slugs to infect. They are less likely to control snails, that spend most of their time above ground. Nematodes should be used from spring to autumn when the soil temperature is above 5°C (41°F) and the soil must be kept well watered (for more see The Garden, July 2016 pp77–79).

Pellets
There are two pesticides available to control slugs and snails; metaldehyde and ferric phosphate slug pellets. They are normally coloured bright blue to deter birds, and contain cereal as a bulking agent to attract slugs and snails. Metaldehyde is an effective form of control if applied as directed on the label, as exceeding the dose can put pets at risk, harm wildlife and potentially contaminate water supplies. Ferric phosphate pellets are certified as organic and are less toxic to wildlife, but should still be kept away from pets and children. Applying sparingly, typically at 5g per sq m. Both types of pellets need reapplying after rainfall.

www.rhs.org.uk For more, search the RHS website:
- ‘Slugs’ or ‘Snails’: for a profile and methods of control, and a list of plants less likely to be eaten by slugs or snails.
- ‘Gastropod trial’: RHS and BASF research so far on combined methods of control.

MORE INFORMATION
- The field experiment plots can be viewed at RHS Garden Wisley, Surrey: on the lower end of the Trials Field.
- RHS Garden Harlow Carr, N. Yorkshire: vegetable garden and South Field.