

Cabbage-root fly

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Cabbage-root fly is a common pest of all cabbage-family plants. Their maggots eat fibrous roots or bore into crops with tap-roots such as radish, swede and turnip.

Q What is cabbage-root fly?

A Cabbage-root fly (*Delia radicum*) is a common cabbage-family pest. Its cream-coloured larvae feed on cabbage roots and can destroy plants very quickly. It's especially bad where many cabbage-family plants are grown – on allotments or near fields of oilseed rape, for example. But it can occur anywhere in Britain.

Q Which plants does it attack?

A All the cabbage-family plants are vulnerable. Cauliflower and calabrese in particular, but cabbage, Brussels sprouts, turnip, swede and kohlrabi can all be affected. Chinese cabbage and oriental cabbage-family crops are also prone. Stocks and alyssum are often attacked too, as are both summer and winter radishes.

Q How do I recognise cabbage-root fly?

A The adult is an inconspicuous fly, a bit like the housefly. It often goes unnoticed and identifying it is a job for experts. The first sign of attack is when the foliage turns a blue/red colour and appears stunted. Plants also wilt in hot weather. When you pull a plant, it comes up easily: most of its roots will have been eaten, and they will often be covered in maggot-like larvae. Typically, the fibrous

roots will have been destroyed, and sometimes the plant will produce more fibrous roots from the base of the stem. Roots of radish, swede and turnip will have mines or shallow tunnels which should be cut out before you eat them. Mature plants attacked in late summer can be heavily infested without showing much damage, although the crop may be reduced, with smaller cauliflowers, for example.

Q Could I mistake cabbage-root fly for anything else?

A Plants affected with clubroot also wilt and are stunted. But the swollen roots of clubroot-affected plants are distinctive. Maggots of the turnip-root fly (*Delia floralis*) occasionally attack the roots of swedes and turnips. Cabbage-leaf miner (*Phytomyza rufipes*) is a tiny fly, 4mm long, whose larvae attack the foliage of cabbage-family plants. However, it does little damage and its tiny maggots are easy to tell apart from the larger cabbage-root fly larvae.

Q When should I expect it?

A The first generation is in the spring, when cow parsley is in flower. This is usually around the end of April in the South and mid-May in the North. The adult flies get the energy to fly in search of host plants by feeding on the nectar of these flowers. This is

often the most severe attack of the year. Later ones are usually less damaging. This seems to be because the best conditions for egg-laying are in spring.

The eggs are laid in cracks and gaps in the soil around the base of the stem of host plants, and sometimes in foliage too. Swedes affected in this way sometimes have the growing point killed, resulting in several 'necks'.

Eggs are very small, about 1mm across, and hard to see. After about a week the eggs hatch and the larvae or maggots feed on the roots. It takes three weeks for the larvae to reach their full size of 8mm, after which they move away from the plant to pupate. Second generations of flies hatch from these in late June and July, followed by a third in mid-August. These later generations often overlap where large numbers of cabbage family plants are grown, so you can expect attacks at any time in late summer and early autumn. Later attacks often infest Brussels sprouts, where the maggots bore into and ruin the buttons on the stem. Finally, later generations pupate to overwinter in the soil and to hatch the following spring.

Q Can affected plants be saved?

A The maggots are usually too deep in the soil or inside plants

for the insecticide to get at them. Earthing up affected older plants will sometimes let them root above the damaged areas, and may save the plants. Giving affected plants plenty of water with some liquid fertiliser may also help overcome the damage.

Q Are there any resistant varieties?

A Not at the moment.

Q Will insecticides help?

A There are no insecticides available to gardeners to control this pest.

Q Can cabbage-root fly be prevented?

A Closely sown crops in seedbeds, or sown where they are to crop (eg swedes, turnips and radish), can be protected by covering them with horticultural fleece or insect-proof mesh. This should be done before the first hatch of the pests in April. Fleece traps so much warmth that it is likely to 'cook' the crop after the end of May. Insect-proof mesh, being more ventilated, is a better option to protect plants after this. Although mesh can be laid straight over the plants, it is best supported on hoops. Make sure it is buried at least 5cm deep all round, as the flies can get in through any gaps. These covers will get young plants safely through the spring attacks, which are often the worst.

Transplanted plants can be protected by discs of tarred paper, or, better still, squares of carpet underlay, fitted closely round the base of the stem. These stop the adults laying eggs close to the stem, and protect the plant. Their disadvantage is that putting them on can take a long time, and they will not work

if they get blown away by strong winds, moved by the swelling stem of the growing plant or covered in soil when weeding. To make your own barriers, cut squares of rubber carpet underlay, about 15cm square, and cut a slit from the edge to the centre. At the centre make a small hole. The hole should fit snugly round the plant's stem. These barriers not only exclude the pest, but act as mulches to keep roots cool and moist, keep down weeds and even shelter the predatory beetles that feed on the cabbage-root fly.

Alternatively, use plastic drinking cups with the bottoms cut off and fit them over the plant at planting-out time. Push them into the soil so the plastic will stop the insects getting close to the plants.

Q Can cabbage-root fly be avoided?

A It is very common, and with up to three generations per summer it is difficult to avoid. Your best chance of success is to sow outdoors, very early, in March, before the pest is active, or after the first generation and before the second generation. Late May in the south and early June in the north are likely to be the ideal times. Plants sown at these times may become well enough established to withstand attacks.

Digging in autumn may help to destroy many overwintering pupa or expose them to birds.

Starting plants off in pots, trays and cells will help as you will be planting out a bigger, stronger plant free of the pest. Getting a plant off to a good start improves its chances of standing up to later attacks.

Q Will crop rotation help?

A It is always a good idea to

rotate brassica crops to reduce the likelihood of soil-borne infections and pests, unless you have clubroot present. In this case, keep the brassicas on the same site so the disease is not spread round the garden.

If you plant where there was a previous cabbage-root-fly attack, you will certainly get a repeat visit. But cabbage-root fly can fly sufficiently to find host plants anywhere in a garden. Rotation may reduce the problem, but cabbage-root fly usually find host plants, whatever you do.

Q Are there any biological controls?

A Some controls claim to kill some soil pests, but we have been unable to see if they work on cabbage-root fly. There are however many natural enemies of cabbage-root fly, the predatory rove beetles being the main one. But they don't seem to be able to keep attacks down in the garden.

Q What should I do with affected plants?

A Dig up and compost affected plants. The maggots are likely to be killed by the composting process. Woody stems should be binned, burned or shredded and composted.