

Damping off

GWF238
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When seedlings collapse and die, the most common seed-raising problem - damping off - is usually to blame. There is no cure, so prevention is the key to avoiding disappointment.

Q What is damping off?

A It's caused by a range of fungal diseases attacking the delicate, vulnerable tissues of tiny seedlings. There are four fungi that commonly cause damping off: *Rhizoctonia solani*; *Pythium* species; *Phytophthora* species; and *Alternaria* species. Fungi such as *Botrytis* and *Fusarium*, well-known for causing other diseases, can also be the source.

Q What plants does it attack?

A Bedding plants, alpines, perennials and other precious plants seem especially vulnerable, but vegetables and woody plants are also attacked.

Q How do I recognise damping off?

A Attacks may begin with the seeds rotting before the seedlings emerge. Later, stem-rot, at the point where the stem leaves the soil or compost, is the most visible sign of attack, causing seedlings to topple over. Another symptom is the shrivelling and blackening of the lower stem; stunted plants remain standing and alive for a while. This is known as wirestem, as the blackened section is often twisted like a piece of wire. Brassica seedlings are especially prone to wirestem. Later, the same fungi attack roots, causing root rots that can stunt or even

kill plants.

Q Can you tell me more about these fungi?

A *Rhizoctonia solani*: this goes for the stems at soil level, usually leading to damping off and toppling seedlings. It produces wirestem-like symptoms in late attacks, or when conditions stop the disease before the seedling stem is completely destroyed. In damp conditions it spreads over the soil or compost surface as a white covering. Even quite large seedlings can be attacked. Rain splash can carry the disease into the foliage, where rots and cankers form as the plants grow larger.

Pythium: seedlings attacked by these species fall over and die in patches across seed trays. When you prick out the seedlings the disease is often carried with them, leading to gaps and uneven growth where they have died at a later stage. This is probably the commonest damping-off problem, but seedlings soon grow out of the vulnerable stage.

Pythium fungus is a major cause of seeds rotting off before they emerge. It is found in water and soil, feeding on dead organic matter. It seems only able to feed on weak plant material such as seedlings.

Phytophthora species: these cause the same problems as *Pythium* but are more likely to

damage older seedlings. They are especially associated with root rots where the soil is wet.

Alternaria: these species causes leaf-spot disease on the leaves of bedding plants such as lobelias, nemesias and zinnias.

Q Could I mistake damping off for anything else?

A Over-dry compost, excessive heat or too much fertiliser in the sowing medium can all produce similar effects in seedlings. Don't let the compost dry out, shade the greenhouse in summer and don't add fertiliser for the first six weeks after germination. Also, avoid using composts rich in nutrients, such as growing-bags, for raising seeds.

Q What can I do about damping off?

A Once you've got a damping-off problem, the plants cannot be cured. Curative chemicals are available to commercial growers, but none exist for amateur gardeners. If an attack is serious, you'll have to discard the plants and start again.

Where only a small patch of a pot or seed tray is affected, try to rescue the remaining seedlings by removing the diseased area. Use the preventative methods (see overpage) to try and stop it spreading to the unaffected parts.

Q Can damping off be prevented?

A It is much less likely to affect seedlings if you provide them with good growing conditions. Avoid waterlogged soil or compost, poor air movement, a humid atmosphere, low light and closely sown seedlings, or otherwise the fungi may thrive.

Watering with a copper-based fungicide helps prevent damping off. Bio Cheshunt Compound is our current Best Buy, though in the absence of the disease, it can have an adverse effect on the emergence and vigour of seedlings, so use with care.

Q How do I exclude the disease from my seedlings?

A Good hygiene is the key to thwarting the disease. Using a disease-free sowing medium is the first step.

Soil-based media should be sterilised. This includes any home-made composts made from garden compost and soil. Sterilise the soil by placing it in an oven heated to 120°C for 15 minutes. Ready-made soil-based composts come pre-sterilised. Soil-free composts are usually free of disease organisms, but compost kept where it is in contact with the soil can harbour damping-off fungi.

It's best to use fresh mains water to water seedlings as fungi (especially *Pythium*) have been known to thrive in water butts. Use new or cleaned pots and seedtrays. Wash used ones in hot water and detergent, and ideally, soak them for a day or two in a garden disinfectant. Rinse well in clean water before use.

If you've had problems with damping off in the past, use cell trays, modules and pots rather

than seedtrays for sowing, so any outbreak will be contained.

Scrub down greenhouse staging, preferably with some garden disinfectant in hot water.

Q How do I discourage the disease from developing?

A Aim to get the plants to germinate and grow quickly by providing warmth and light. Delay sowing until conditions are right. This is especially important for windowsill sowings. Bedding plants are particularly vulnerable, as they grow slowly at cool temperatures, staying vulnerable to infection for long periods.

Try to use a free-draining compost. If it stays wet and soggy for long periods, you can improve the drainage by adding up to 50 per cent grit or perlite. The surface area is especially important. Instead of covering the seeds with compost or soil, use a free-draining covering of grit or horticultural vermiculite.

Sow seed thinly, as overcrowded plants are very vulnerable to attack. Well-spaced seedlings are also safer if you can provide good ventilation in your greenhouse or on your sill.

Avoiding overwatering; aim to keep the compost just moist. This can be tricky. Watering from below by standing the container in a pan of water is probably the best method, though this can be time-consuming. Otherwise try light watering using a sprayer to avoid drenching the seedlings.

Q How do I prevent attacks outdoors?

A Wait until the soil is warming up. Seeds sown into wet, cold soil are especially vulnerable to damping off. On heavy, slow-draining soils it may be best to go for greenhouse-raised transplants.

Alternatively, well-ventilated cloches can be used to keep the rain off. These will also dry out and warm the soil for early sowings. Instead of covering the seeds with soil, using seed compost as a covering can speed up emergence and keep the base of the seedlings well drained.

Q What do I do with diseased plants?

A Diseased seedlings and compost are full of spores ready to infect next year's seedlings. Get rid of them by burning, burying deeply in spare ground or consigning them to the dustbin.

Q What should I do if damping off seems to be incurable?

A There are good ranges of seedlings in pots, tot plants and plugs available by mail order and at garden centres. For a small extra cost, you can buy in plants for your garden that are past the vulnerable stage.

Also, it's worth considering using cuttings. Many bedding plants are actually perennials. Cuttings taken from these in late summer can be overwintered in a greenhouse, in small pots on windowsills or in other frost-free places. This way you cut out the vulnerable seed phase altogether.

Chemical information

Brand names of garden products change frequently, whereas the *active chemical ingredient* in them usually doesn't. Because of this, we list the *active chemical ingredient* recommended for a given problem, rather than the brand name of the product. The only exception is when we have tested a brand and chosen it as a **Best Buy**. If you need any more information on chemicals, please ask for our factsheet GWF281.