

Tomato diseases

GWF345

Updated February 2009

Several diseases affect tomato plants. Fortunately, they can usually be avoided, or successfully cured if caught early enough.

Q How can I recognise tomato diseases?

A Watch for the early signs and work out which one is causing the problems in your plants.

Virus diseases can cause stunted yellow plants (cucumber mosaic virus), bushy, stunted plants with shoots in the leaf axils, (aspermy virus) and mottled leaves (tomato mosaic virus). Deal with virus problems by controlling aphids and removing affected plants. Handle diseased plants last to avoid passing the virus to healthy plants.

Didymella stem rot (*Didymella lycopersici*). The first sign is dark-brown, sunken, soft, canker-like spots near the bottom of the stem. These gradually appear higher and higher up the stem. Plants wilt as a result of the rotting spots going right round the stem. In fact, you often don't notice the disease until plants suddenly collapse. Fruit tends to suffer from didymella stem rot late in the summer. It blackens the area beneath the flower, and the disease spreads through the fruit, making it rotten and unusable.

Alternaria fruit spot (*Alternaria alternata*) or early blight. Look out for 3mm wide, dark spots on the leaves of outdoor tomatoes. If the fungus gets into any cracks on the fruit, larger spots may develop. It may spread to the stems, producing concentric rings or sunken areas, and the fruits may have brown, sunken spots.

Tomato pith necrosis (*Pseudomonas corrugata*). In wet and cool conditions, this bacterial disease can be very serious. The first sign is yellowing and wilting of the upper leaves. The cause of the problem is lower down, 30cm from the soil, typically in the form of elongated, black, canker-like areas.

Bacterial canker (*Corynebacterium michiganense*) is really only a problem outdoors. As with other diseases, you may suspect nothing until the plants wilt and collapse, often as the fruits begin to ripen. Stem damage lower down is the cause. Look for withering leaves, often on one side of the stem only, yellow or brown spots in the leaf stalk when it is cut off at the stem, and similar marks in cut stems and fruits.

Grey mould (*Botrytis cinerea*) can also produce stem rots, which circle the stem, killing the plants. Look out for the characteristic fluffy grey mould that may contain some black resting bodies or sclerotia. These stem rots typically turn up when leaves are cut off at the end of the season in wet conditions. Where the plants are dry and well-ventilated, this should not be a problem. Control outdoors can be more difficult.

The worst effect of the fungus is 'ghost spotting' or 'water spots' on the fruit. These are tiny raised spots with a margin of normal colour and an outer zone of pale skin. They cause most damage when the fruit is young or newly formed -

once the shiny surface develops on the fruit, grey mould cannot get in. The spores need a film of moisture on the fruits for successful invasion. Once in the moisture film, the fungus spore germinates and causes the pale, circular spots. If it gets into the fruit, they rot.

Leaf mould (*Fulvia fulva*) turns up under glass, especially where the temperature and humidity of the greenhouse is too high in summer. Outdoors it is seldom a serious problem. Early-warning signs are yellow spots above and corresponding grey mould beneath the leaves.

Late blight (*Phytophthora infestans*) is very similar to the disease that attacks potatoes. So keep tomatoes well away from potato crops. Look out for it in warm, moist weather in mid- to late summer. At this time, wind-carried spores spread the disease very quickly. On the stems, the first signs are large, dark-brown spots, which can spread and kill the plant. Similar spots form on the leaves, although they may be lighter or grey in colour. It takes very little time for the leaves to be covered, after which they wither and die. The fruits turn a red/brown marbled colour and become inedible.

Powdery mildew (*Leveillula taurica*) is becoming an increasing problem on greenhouse tomatoes. You'll notice yellow spots on the upper leaves, corresponding with a pale, powdery dusting beneath,

which may turn brown with age. It is easily confused with leaf mould. Unlike most fungal diseases, powdery mildew thrives when the atmosphere and foliage are dry. It needs a moderate temperature and tends not to develop in really hot or very cool conditions.

Q Any other diseases I should know about?

A Also look out for the following problems: **Sclerotinia** - Firm, white fungal mould and black resting bodies inside the mould or in the stem. **Blossom end rot** - A physiological disorder associated with irregular watering, leading to a lack of calcium in the fruit - look for blackened areas that form on the flower end of the tomato.

Greenback - Where the stalk end of the fruit fails to ripen, remaining green or yellow. This seems to be caused by heat damage from strong sunlight, and is possibly augmented by lack of potash. Even resistant varieties can be affected in very hot weather.

Q When should I expect tomato diseases?

A Cool, wet, rainy weather favours didymella, blight and grey mould. The spores drift on the breeze or travel in rain splash and readily infect new plants.

Q What can I do about them?

A Choose outdoor sites that are sheltered from winds. But avoid areas that are so sheltered that air flow is inhibited, leading to damp, still conditions which promote fungus diseases. Avoid growing where potatoes were raised last year - they might be carrying blight.

Take care to avoid damage at planting - scars at this time let diseases into the plant when it is at its most vulnerable. Stake plants well, but don't tie the plants too tightly as the strings may wound the stems. Compost all trimmings

and side-shoots. Don't leave them near the growing plants. If the compost heap is near the tomatoes, cover it with a polythene sheet to stop spores travelling to the plants and infecting them.

Keep the air in greenhouses as dry as you can in humid weather, by ventilating well and avoiding wetting paths, soil and foliage when you water. Ventilation in the morning, when outdoor air is cool and dry, is especially helpful, as long as you don't suddenly chill the plants. If you don't have a greenhouse, try erecting a cover to try to keep the foliage dry at all times. Prevent overheating through adequate ventilation and shading.

Q Can diseases be carried on my hands, secateurs or knife?

A Yes. Wiping tools and dipping them into a solution of disinfectant will help reduce the risks.

Q Will any sprays help?

A In some circumstances sprays may be of use. The problem is that, after spraying, you cannot harvest the fruit for some time. Ideally you should manipulate the environment to discourage the diseases. This is easier in a greenhouse. Also, indoor fungicide sprays could interfere with biological controls.

Blight means sprays of Dithane are likely to be necessary.

Powdery mildew may respond to Vitax Green/Yellow Sulphur or Vitax Organic 2 in 1, but damping the foliage and picking off affected leaves may be a better way of limiting its spread.

Q Should I cut off the lower leaves?

A Tatty old leaves can be removed to help ripen lower fruits. This also improves airflow around the stems and lower trusses where grey mould, stem pith necrosis and other diseases can be very troublesome. Don't get carried away and strip healthy leaves above ripening fruit

as you will reduce the yield. Only de-leaf above the fruits if you need to deal with severe disease attacks on your plants.

Q Are there any resistant tomato varieties?

A 'Brandywine', 'Cumulus' and 'Shirley' are all resistant to leaf mould and mosaic virus. The beefsteak tomato 'Dombito' is also resistant to tomato mosaic virus.

Early bush varieties, such as 'Red Alert', have some blight resistance, or try 'Ferline' or 'Legend', which did well in our last blight trial.

Q What should I do with infected plants?

A Indoors, carefully pull up infected plants and put them into a plastic sack on the spot, along with all the fallen fruit and foliage found nearby. Either burn, bury deeply or consign the remnants to the bin. Canes, seed trays, posts, netting and even strings will harbour spores. Use them for different crops next year, or clean them by washing in a solution of garden disinfectant.

Q Can I save the fruit at the end of the season?

A Yes, gather the fruits before the cool, wet autumn weather sets in. Lay them out in trays in a warm room. Check the fruit often, and remove any diseased specimens.