

Black Spot Disease

The fungus *Diplocarpon rosae* causes Black Spot in roses.



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Pathogen Description

Diplocarpon rosae is a hemi-biotrophic fungus meaning it requires living plant tissue for the majority of its life-cycle but can survive on fallen leaves through the winter. It is the most widespread and damaging of those diseases that affect rose plants (*Rosa* spp.) around the world.

Mode of Infection

One or 2-celled conidia (fungal spores) shown above germinate producing a single germ tube. These swell at the tip, before forming an infection peg to penetrate the plant cuticle. A combination of mechanical force and enzyme action penetrates the leaf surface. The fungus then grows between the plant cells and forms feeding structures (haustoria) in the plant cells stealing nutrients. This all happens during the first 24 hours after infection.

Symptoms

Purplish or black spots appears on the upper leaf surface, these expand rapidly into patches. Within these spots diffuse and radiating strands of fungal hyphae are sometimes visible. The leaf tissue may turn yellow around the spots and the leaf often drops early, even though other parts, are as yet, unaffected. Heavy infections reduce plant vigour.

Disease Spread

Fungal spores produced in the black leaf spots spread via water splash to cause new infections. Wet conditions are required for the disease to build up, but most summers in the UK are sufficiently wet. The fungus spends the winter in resting structures on fallen leaves and also in dormant infections on young stems and buds, producing spores in the spring to infect

young foliage.

Control

Rose varieties with partial resistance to Black Spot have been developed by plant breeders. These are less susceptible to the disease. The use of chemical sprays and cultural methods can all delay the onset of symptoms in susceptible varieties. Chemical sprays need to be applied as directed on the label, often throughout the growing season to remain effective and good growing practices (for example clearing and burning fallen leaves) also help. With the fungus reliant on water-splash for dispersal, avoiding watering-from-above, and splashing leaves helps to keep disease levels down. The fungus evolves rapidly and develops resistance to chemical treatments.

Detection

The disease is found in all rose-growing areas of the world, with symptoms being easy to spot.

Interesting Facts

Prior to the 1956 Clean Air Act rose black spot was almost unknown. However, as air quality improved and sulphur dioxide levels dropped, rose black spot suddenly became a big problem for rose growers. The rose industry, on a world wide scale, has an economic impact in the 10s of billions of dollars

Further Reading

<https://www.rhs.org.uk/advice/profile?PID=270>