



AVRDC - The World Vegetable Center

Fact Sheet

Pepper Diseases

Stem Rot

Sclerotium rolfsii

Found worldwide in warm to tropical climates



Symptoms

The disease occurs as a sudden wilting of individual plants scattered about the field. Initially there is no foliar discoloration, but later the leaves may turn yellow.

The fungus infects the pepper stem near the ground. On seedlings, tissue invasion is rapid and the plant dies quickly. On older plants, symptoms progress more slowly and first appear as a dark brown lesion near the soil surface, followed by wilting and then white mats of fungal growth growing on the stem and nearby in the soil on organic debris. Wilting in infected plants may be more rapid and more evident when soils begin to dry out or the temperature rises.

After a few days, brownish, mustard seed-sized (0.5 mm in diameter) structures known as *sclerotia* appear on the white fungal growth on the stem and surrounding soil.

Stem lesions cause girdling. Fruit or branches may become infected at the point of soil contact.

Conditions for Disease Development

The fungus infects directly or through wounds caused by nematodes or insects. Any fruits, leaves or branches

How to Identify Stem Rot



Sudden wilting of individual plants



White fungal mat develops on stem at soil surface



Brownish, mustard seed-sized sclerotia on stem

that touch infested soil also may be infected by growth from the germinating sclerotia of the fungus. The fungus is spread in running water, with infested soil, on cultivating tools, with infected seedlings and transplants, and as sclerotia mixed with seeds. High temperatures (above 30°C), high soil moisture, and acidic soils favor disease development while low soil moisture levels favor survival of the sclerotia. The disease is less favored in plants growing in calcareous soils with pH above 7.

The fungus has an extremely broad host range and it can persist on crop residues and as dormant sclerotia. Disease incidence and severity are dependent on the number of sclerotia in the soil. The germination of sclerotia is most abundant at the soil surface and drops off with depth in the soil. Survival of sclerotia is one year or less when they are buried whereas those at the surface remain viable for a longer period of time. Sclerotia can survive temperatures to -10°C.

Control

Avoid planting in infested fields or during warm, wet periods if possible. Do not introduce diseased transplants into the field. Eliminate diseased plants and weeds from the field. Do not injure pepper stems during cultivation. Space plants properly to avoid dense plant

canopies, which may lead to extended periods of warm, wet conditions within. The use of black plastic mulch can reduce the exposure of plants to infested soil.

Crop rotation has a strong influence on survival of the fungus. Rotate to non-host crops such as maize, sorghum, small grains, or cotton (rice is susceptible) for at least two years to reduce populations of *S. rolfsii*.

Allow ample time for breakdown of green manure or plant debris before planting the pepper crop. Plow deeply (24 cm or more) to bury sclerotia and plant debris.

Choose fields that are well drained, rich in humus and not too acidic. Disease levels have been reduced, specifically, by application of ammonium nitrate either before planting or as sidedressings while the crop is growing.

Soil fungicides and preplant chemicals offer some protection. Consult with your local extension agent to determine the fungicides that may be available in your region.

For more information on the production of pepper and other vegetables, go to <www.avrdc.org>.