

## SCLEROTINIA STEM BLIGHT OF POTATOES

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Sclerotinia occurs on many plants, affecting some 360 species in 64 families. The disease is called Sclerotinia blight, white cottony blight, or white mold. Sclerotinia was first reported on potatoes in Ireland in 1902, and since then from many parts of the world. Despite its severity on other plants it was not considered a major problem on potatoes until recent years.

The disease is caused by the fungus Sclerotinia sclerotiorum, which has recently been named Whetzelinia sclerotiorum. The fungus produces hard black resting structures (sclerotia) that vary in size but average about 1/4 by 1/2 inch. Upon germination these sclerotia produce small (1/2 inch diameter) dish-shaped fruiting bodies on the soil surface. The spores are forcefully discharged into the air and spread by wind to plant surfaces. High moisture is necessary for spore production, spore germination and infection.

Infection of healthy tissue is restricted and the fungus usually must colonize senescent tissue, such as old flowers or fallen leaves, before invading healthy stems. There is little evidence that the fungus can infect plants directly by mycelium from germinating sclerotia.

Moisture is the limiting factor and a high relative humidity, 95-100%, is required for infection. Fungus development and plant infection can occur at temperatures ranging from 10 to 25 C.

The first symptom is a water-soaked lesion on the stem followed by the development of a mass of white cottony mycelium, especially if abundant moisture is present. The outer tissue of the stem dies and turns brown as the lesions become 2 to 6 inches long. The interior of the stem becomes packed with mycelium and sclerotia. As the water conducting tissue is destroyed, the plant wilts and finally collapses and dies. Dead potato stems have a parchment-like appearance. The tubers are usually not affected.

The fungus carries over in the soil as sclerotia, which may survive for several years. They can remain alive in a dry situation for as long as 7 years but in moist soil they survive about 2 years. Apparently there is some biological degradation of sclerotia in the soil and fumigation with certain chemicals can increase the survival of the fungus. Thus the disease can be more severe following fumigation with these chemicals.

Control of Sclerotinia is mainly one of modified cultural practices. Since moisture is the chief factor influencing the disease, regulation of irrigation is important. Where possible, the vines should be allowed to dry off between irrigation cycles.

Heavy vine growth reduces light penetration and air movement, thereby lowering soil temperatures and increasing soil moisture, all of which favors infection by Sclerotinia. While overfertilization should be avoided it is important that balanced fertilization is practiced. Potassium deficiency has been observed to result in increased infection by Sclerotinia, possibly by hastening senescence of the plant.

Fungicides are used to control Sclerotinia on some crops but the cost of these treatments probably cannot be justified on potatoes.