

RHIZOCTONIA ROOT ROT OF BEANS

Rhizoctonia root rot of beans, caused by the fungus *Rhizoctonia solani*, occurs worldwide. The fungus infects roots and hypocotyl of beans. Crop losses of more than 10% have been reported in the United States. Rhizoctonia root rot is also an important disease on a large number of other crops.

Symptoms

Small, elongate, sunken, reddish brown lesions on hypocotyls and roots (Figure 1) are typical symptoms of early disease development. As these lesions increase in size and become more sunken, they become cankerous, and the red color may predominate until the cankers are old. Hypocotyls are often girdled by the coalescence of several cankers, resulting in preemergence or postemergence damping-off. Severe infections cause plant stunting and premature death.



Figure 1. Sunken reddish brown cankers on bean hypocotyls, caused by *Rhizoctonia solani*. (Courtesy APS, J. Springer).

Small brown-black sclerotia may form on the surface (or just beneath the surface) of older cankers. Occasionally, the fungus enters and destroys the pith (Figure 2).

Disease Cycle

Rhizoctonia solani survives between crops seasons as sclerotia or mycelium in soil or on infected plant debris or on perennial plants. Sclerotia may be on or within bean seeds. It is usually disseminated in infested soil or plant debris by wind, rain, irrigation water, and farm implements. When soils become infested, they remain so indefinitely.

The pathogen can infect the host either directly through epidermis or through natural openings and wounds. Once infection has taken place, the fungus ramifies rapidly through adjacent cells and tissues.

For further information contact **Mohammad Babadoost**, Extension Specialist in Fruit and Vegetable Pathology, Department of Crop Sciences, University of Illinois, at Urbana-Champaign. (Phone: 217-333-1523; email: babadoos@illinois.edu).

University of Illinois provides equal opportunities in programs and employment

The disease is most severe at 60-65°F (15-18°C). At 70F (21°C), numbers of cankers are substantially reduced, perhaps because plants emerge rapidly and escape infection. Plant age plays an important role in the epidemiology of *Rhizoctonia* root rot of bean. Seedlings and young plants are highly susceptible to infection, whereas the disease is rarely a problem on older plants.

Disease Management

Plant pathogen-free seeds. When available, plant resistant/tolerant cultivars. Rotate with non-host crops for 3 years or longer. Consider seed spacing of 1-1.5 inches. Deeply incorporating old crop residue early enough to promote decomposition and reduce sources of inoculum. Planting seeds when soil temperature is above 60°F (16°C) allows rapid germination and emergence.

Treat seed with a fungicide prior to planting. For the update on chemical control of *Rhizoctonia* root rot of vegetables, refer to the “Midwest Vegetable Production Guide for Commercial Growers.”



Figure 2. Reddish brown rotting of pith of bean stem, caused by Rhizoctonia solani. (Courtesy APS, H. F. Schwartz, from files of S. E. Beebe).