



Extension FactSheet

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Rhizoctonia Stem and Stolon Canker of Potato

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Rhizoctonia stem and stolon canker, also called black scurf, is an extremely common problem on potatoes that can result in delayed emergence, reduced stands and poor tuber quality.

Symptoms

Rhizoctonia canker often goes unnoticed until harvest when tubers are found to be covered with small brownish-black fungal bodies (sclerotia) that look somewhat like bits of black soil that

will not wash off. These may vary in size from a pinhead to as large as a pea. When introduced into soil, these structures can survive and germinate the following spring to attack young shoots, roots, stolons, and tubers of the new crop. In many cases, weak, spindly-looking or late-emerging plants may be the result of an attack by this fungus. The first sprouts are often killed before they reach the surface, resulting in the emergence of a weaker secondary sprout. Dry, sunken, brownish lesions developing on the base of the stem below the soil line are evidence of

the stem canker phase of this disease. The lesions may girdle the stem or large cankers may interfere with movement of nutrients from the leaves to the tubers. In such cases, vines become yellow to reddish purple; the leaves begin to curl upward; the stalks swell, particularly at the nodes; and often small purplish tubers form where leaves branch from stems. During midseason under a dense canopy of foliage, the fungus may develop a white, powdery mold growth on stems, extending just above the soil line. Cankers that form on stolons may prune off young developing tubers. This disease may lead to russetting or surface cracking of mature tubers and sometimes shallow, brown lesions will form around lenticles. Low soil temperatures in the fall favor formation of sclerotia on tubers.

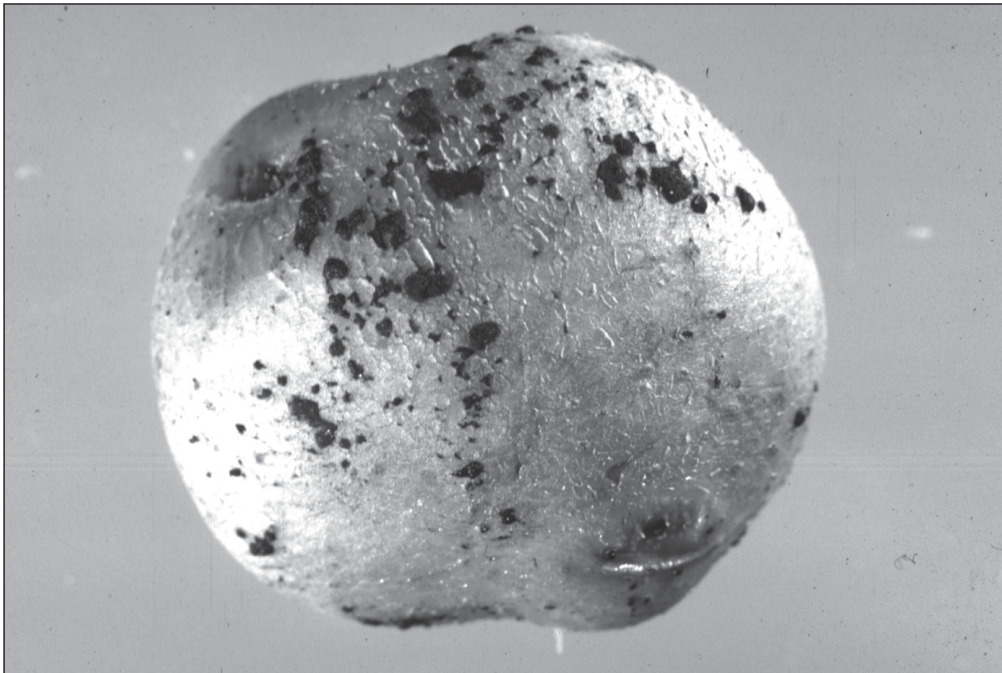


Figure 1. Potato tuber covered with small brownish-black fungal bodies (sclerotia) of the *Rhizoctonia* fungus—"the dirt that won't wash off."



Figure 2. Brown, sunken *Rhizoctonia* stem cankers on newly sprouted seed tuber (black line represents the soil surface). Note that one sprout was killed before it could emerge.

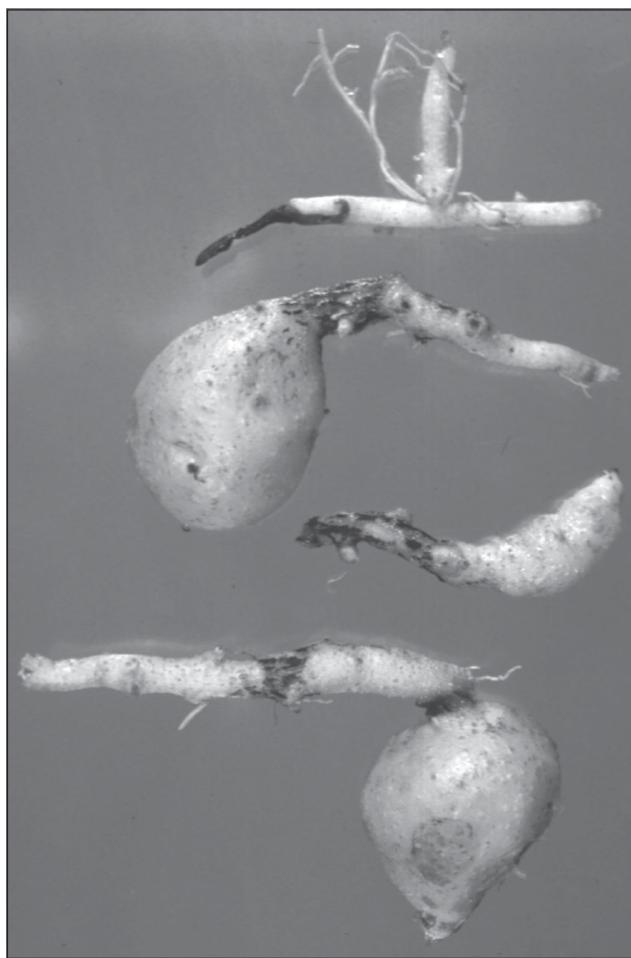


Figure 3. *Rhizoctonia* cankers on stolons pruning off young, developing tubers.

Causal Organism

This disease is caused by the fungus *Rhizoctonia solani* which can survive in the soil for many years, even under relatively dry conditions. *Rhizoctonia* causes disease in a wide variety of crops, but the strains found in association with potato generally do not attack and reproduce on other plant species. The fungus survives in soil associated with decomposing plant residues. In addition, the sclerotia can survive on infected tubers and can persist free in soil for extended periods. Emerging sprouts are usually attacked by fungus present on the seed tubers. Once green leaves develop on sprouts, stem tissues are much less susceptible to infection. Stem cankers, stolon infections, and sclerotia on tubers usually develop when these tissues grow in proximity to sources of the *Rhizoctonia* fungus in soil. Cool (55–60°F), moist soils are optimal for infection. Sclerotia form on the surfaces of mature

tubers under cool, moist conditions, generally after the vines have begun to die.

Management

1. Use a crop rotation with corn, grasses, and cereal grains. If this disease has been severe, 3–5 years should elapse between potato crops.
2. Plant certified seed tubers that are free of *Rhizoctonia* on the skin.
3. Use planting practices that promote rapid emergence: Avoid planting in heavy, poorly-drained soils. Plant seed potatoes when soil is warm (above 60°F). Cover seed tubers with no more than 2 inches of soil.
4. Harvest tubers promptly after vines are dead to avoid the development of sclerotia on the surfaces of tubers while still in the soil.

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