



Onion disorder: Fusarium basal rot

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This disease, caused by the common soil fungus *Fusarium oxysporum* f. sp. *cepae*, can be found wherever onions have been grown long enough to build up sufficient inoculum to initiate disease. Chives and shallots are also affected. *Fusarium* basal rot can cause crop failure and economic losses.

Symptoms and effects

The first signs of *Fusarium* basal rot appear on the leaf tips, which turn yellow and begin to die back as the plant nears maturity. Below ground, the roots rot off and are replaced by a mass of white moldy growth. The bulbs turn soft, producing a semi-watery decay beginning at the basal

plate and spreading upward. Since leaves die back at maturity, about the time when aboveground symptoms appear, this disease is often missed until after harvest when the moldy roots and bulb are exposed.

Cause

Several species of the soil-borne fungus *Fusarium* are responsible for this disease. They invade the onions through wounds or root scars at the base of the bulb. Root maggot feeding injuries may serve as major entry sites for the fungus. Infection occurs at soil temperatures of 58–90°F, with an optimum at 82–90°F. Because infection and disease development is favored by high soil temperatures,

basal rot usually appears in mid- to late summer as the crop approaches maturity. In storage, decay progresses rapidly at higher temperatures. Lower storage temperatures (at or below 46°F) slow decay.



Rotting of the basal plate and deterioration of the roots.



Leaf dieback and rotting bulbs.



White mold on basal plate and soft watery decay on bulb.

Life cycle

The fungus that causes Fusarium basal rot can survive in the soil for long periods of time as chlamydo-spores. The pathogen moves to new sites in contaminated sets or garlic cloves. The fungus may enter bulbs directly through healthy tissue or through wounds caused by cultivation or onion maggot feeding. Infection is greatest under high temperatures.

Control

Do not plant onions in the same area each year. Rotate them on a 4-year schedule, especially if the problem has been observed.

Plant onions in well-drained, sandy soil. A raised bed may help improve drainage.

Home gardeners should select high quality disease-free onion sets for planting. Varieties with some resistance or tolerance include Cortland, Daytona, Endurance, Frontier, Fortress, Fusario24, Hickory, Infinity, Mars, Millennium, Nugget, Nutmeg, Quantum, and Spectrum.

Do not plant shriveled or discolored sets with symptoms of basal rot.



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