

Plant Disease Notes

Pythium Root Rot of Garden Beans

Pythium root rot is caused by the soil-borne fungus *Pythium* spp. and results in seed rot and pre- and post-emergence seedling damping-off. Species of *Pythium* are found in all soils. Like other root rotting diseases, Pythium root rot can cause poor plant stands, stunting, and discoloration of foliage as leaves are deprived of nutrients and water.

Symptoms. *Pythium* primarily attacks seeds and roots. Diseased seeds become soft and discolored. Diseased roots are characterized by colorless to dark brown water-soaked lesions. Infected tissue can easily be separated from the central cylinder of the stem by pulling the root between the thumb and the index finger. Sometimes the stem is girdled. Occasionally when beans are grown under irrigation or cool, wet conditions, pods touching the soil are infected. They become water-soaked and covered with a fluffy white fungal growth. Symptoms of Pythium root rot may resemble Rhizoctonia root rot in some situations. Laboratory examination may be necessary.

Persistence and Transmission. Many different species of *Pythium* can cause root rot. Each is adapted to slightly different environments, so it is difficult to identify temperature conditions that favor disease development.

The disease can occur over a broad range of temperatures (60° to 90°F). Generally, Pythium root rot is most severe in wet soils because the causal fungi produce masses of microscopic, motile zoospores that can swim short distances to attack other roots, rootlets, and stems. The fungus forms protective thick-walled oospores that can survive adverse environmental conditions in the soil or in crop debris. Many species are capable of colonizing and surviving on dead plant material, so removal of host plants will not necessarily eliminate the problem. Oospores and infected plant material can be moved around the field by wind, rain, irrigation water, farm implements, and any other agent or process capable of moving soil. Once soil becomes infested, it will remain infested. Though Pythium root rot is most severe in young plants, the fungus can attack small roots, rootlets, and root hairs on older plants and reduce productivity.

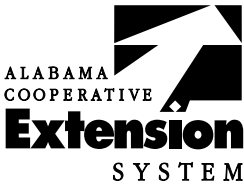
Control. Pythium root rot is best controlled by using the following strategies:

- Plant in a warm, well-prepared, well-drained, and well-fertilized seedbed capable of supporting rapid bean growth to reduce losses to *Pythium*. The faster the seedling develops from seed, the less time there is for *Pythium* to attack. Good drainage is particu-

larly important because it decreases the movement of the swimming zoospores produced by these pathogens.

- Soil solarization can be effective in sterilizing the soil when environmental conditions are favorable.

- Use seed treatment or soil drench applications of fungicides containing the active ingredient metalaxyl to control the disease. On fungicide labels the active ingredient is usually listed below the brand name.



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ANR-1005

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Use chemicals only according to the directions on the label. Follow all directions, precautions, and restrictions that are listed.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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Web Only, Revised May 2004, ANR-1005