Pulse Crops

Aphanomyces Root Rot of Pea

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Identification and Life Cycle

Aphanomyces root rot is caused by the fungus-like organism *Aphanomyces euteiches*, and is one of the most widespread and destructive diseases of pea. The pathogen can attack and infect pea at any growth stage, but infection generally occurs soon after emergence in heavily infested fields during wet weather. Soilborne dormant resting structures (oospores) or swimming spores (zoospores) germinate on the surface of pea roots, infect, and grow throughout the roots. One to two weeks after infection, oospores are produced in the infected tissue and serve as inoculum for following years. A low level of infection in one year can produce enough inoculum to cause economic damage to following pea crops for up to 8 years. Infection can occur at most temperatures at which pea grows, but symptoms tend to develop most rapidly between 72 to 82°F. Poorly drained soils favor infection, but the pathogen can also attack plants in well-drained soils kept wet by frequent irrigation. A complex of pathogens are often involved in Aphanomyces root rot, including fungi such as Fusarium and *Pythium* spp, but *A. euteiches* alone can damage pea. The pathogen can be disseminated between fields in infested soil and plant parts on equipment, and perhaps irrigation water. *A. euteiches* survives between pea crops as a pathogen on some weeds, but it primarily survives as dormant oospores that can persist for 10 years or longer.

Plant Response and Damage

Aphanomyces root rot symptoms first appear on primary and lateral roots as honey brown discolorations, but infected tissues quickly become soft and darker in color as the disease progresses. Severely infected plants are easily pulled out of the ground, leaving the outer cortical tissue in the soil. Top portions of infected plants are stunted and, in severe cases, wilt, yellow from the bottom of the plant upward, and die prematurely. The
disease reduces the number and size of pods, as well as seed size. Yield losses of 10 to 100% have been reported.

Management Approaches

Biological Control

Oat planted as a winter cover crop can reduce compaction, improve drainage, and reduce Aphanomyces root rot severity.

Cultural Control

Avoid planting pea in fields known to have inoculum levels. Avoid planting into compacted, poorly drained soils. Where Aphanomyces root rot is present, peas should not be planted into the field again for at least eight years or longer. Resistant varieties are being developed, but are not yet available commercially.

Chemical Control

No fungicides are currently registered for Aphanomyces root rot control. Using Treflan as an herbicide can give some control.

Categories: Pulse Crops, Disease, Aphanomyces Root Rot, Pea

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