Pacific Northwest
Vegetable Extension Group

Identification & Management of Emerging Vegetable Problems in the Pacific Northwest

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Root Lesion Nematodes on Pea

Affected plant species: Pea (*Pisum sativum*) and many vegetables/other plant species.

Common name of the causal organism: Root lesion nematodes

Latin binomial: *Pratylenchus penetrans* (Fig. 1)

Fig. 1. Root lesion nematode from an infected pea root.

Fig. 2. Nematodes can cause circular patches of stunted pea plants. However, the patches are more commonly caused by *Rhizoctonia*.

Symptoms & key characteristics for identification:
Large, circular patches of stunted plants are often associated with nematode-infested areas in pea fields (Fig. 2). However, large areas of a field can also be infested (Fig. 3). Pea roots infested with nematodes usually have a single primary root with no secondary roots. Several soilborne root rotting pathogens are usually associated with diseased roots as a result of wounds caused by the feeding nematodes enabling fungi/bacteria to colonize roots (Fig. 4). Infected plants may develop chlorotic leaves that discolor from the base towards the top of the plant.

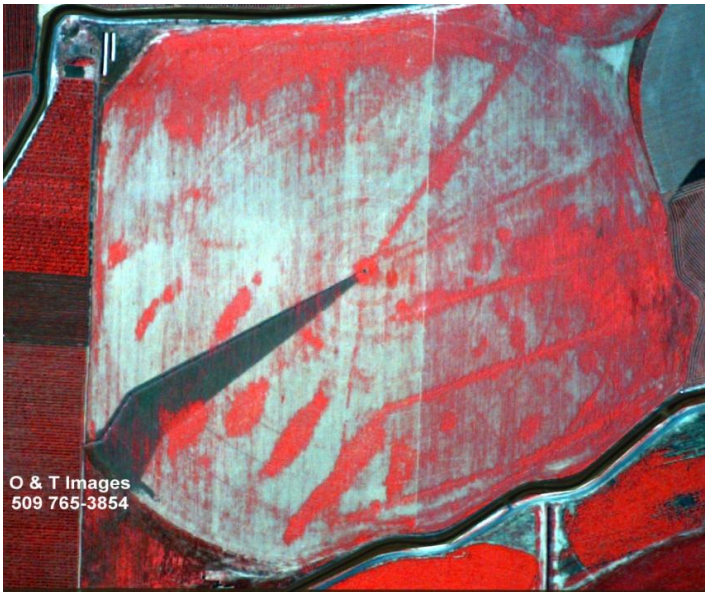

Fig. 3. Infrared photo of a pea field infested with root lesion nematodes. Red areas indicate healthy plants. Lght-colored areas indicate plants infested with nematodes.


Fig. 4. Pea roots infested with root lesion nematodes. Plants have few secondary roots. With development of adventitious roots above the seed piece, plants may survive.

Biology/epidemiology: Root lesion nematodes have a wide host range, including many crops grown in rotation with pea in the Pacific Northwest. Roots of infested plants are usually dark from secondary infection by root-rotting fungi and oxidation of phenolic compounds. Nematodes generally reside within the top 2 feet of soil, and can be moved by farm equipment and water. Root debris moved around the field can also disseminate nematodes.

Management: Crop rotation is not highly effective for managing root lesion nematodes due to the wide host range of the nematode, although some crops are less susceptible than others. Incorporation of white mustard, rapeseed, perennial ryegrass, and other green manure crops into the soil has been used to manage root lesion nematodes. Soil fumigation (e.g. methyl bromide, methyl isothiocynate, and chloropicrin) can be effective for managing nematodes; however, this practice is not economically feasible for pea crops. Conducting a soil test for nematode levels prior to planting can aid in decisions. A study showed that 150 nematodes/100 cm^3 soil can cause ~50% yield reduction in beans. There are no known economic thresholds for this nematode on pea.

Selected references:

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PNW VEG website at http://mtvernon.wsu.edu/path_team/vegpath_team.htm and Photo Gallery at http://mtvernon.wsu.edu/path_team/diseasegallery.htm