Late Blight of Potato and Tomato

Phytophthora infestans (Mont.) de Bary (Oomycetes)



Solanum species, primarily tomato and potato, but also pepper and eggplant.



Late blight on potato leaves (from OSU Plant Disease Handbook, http://plant-disease.ippc.orst.edu/,)



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In cool, wet conditions sporangia form swimming zoospores which quickly colonize a plant, forming the brown lesions. New sporangia form at the edge of the lesions and emerge through stomata, continuing the life cycle which can be completed in 4 days. Infected stems may harbor the sporangia in hot, dry weather, sporulation continuing during the return of wet weather. The cycle

Symptoms

Green, brown or black water-soaked spots are seen on leaves and stems. Under humid conditions, white mold may appear on the underside of the leaf around the edge of the lesion. These symptoms spread rapidly. In tomato lesions can girdle infected stems. On green fruit, gray-green water-soaked spots form, enlarge, coalesce, and darken, resulting in large, firm, brown, leathery-appearing lesions. In moist conditions, abundant white mold will develop on the lesions, and secondary soft-rot bacteria may result in a slimy wet rot of the entire fruit. On ripe fruit, lesions have cream-colored concentric zones which eventually coalesce and affect the entire fruit. Infected potato tubers have discolored brown to

purple skin together with a brownish dry or wet rot. Infections in tubers may appear in storage.

Life cycle

This microorganism survives in infected tubers left in harvested fields, in seed potatoes, tomato transplants, and disperses as spores (sporangia) in rainwater and irrigation. Sporangia germinate on a wet leaf or stem, and penetrate the cuticle or stomata.



Late blight on tomato stems and fruit (from OSU Plant Disease Handbook, http://plant-disease.ippc.orst.edu/.)

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may continue in potato tubers in storage along with secondary infection by soft-rot bacteria which may spread rot to other tubers.

Current geographic distribution

Worldwide in potato growing areas. Most locations in Asia, South-East Asia and Australia, Africa, the Americas and Europe can have late blight, especially if seed tubers are imported from an area where late blight is persistent.

Impact in Oregon

Principally found in the Willamette Valley of Oregon, the Columbia Basin of Oregon and Washington and in northwestern Washington. Sporadically occurs in central Oregon. Recent outbreaks have been reported in Idaho.

A second mating type was discovered in the Pacific Northwest which may enable soil overwintering.



Potato field with late blight © 2005 Oregon State University Extension Plant Pathology Image Collection



Tomato leaf with white fungal growth around lesion (from OSU Plant Disease Handbook, http://plant-disease.ippc.orst.edu/,)



Potato tuber with late blight © 2005 Oregon State University Extension Plant Pathology Image Collection