



LATE BLIGHT OF TOMATO

Late blight, caused by the oomycete *Phytophthora infestans*, is a destructive disease of tomato. This is a disease of historic importance, first described on potato in 1845 and on tomato in 1847. The disease appeared in both North America and Europe in the 1930s and is thought to have originated in Central America.

SYMPTOMS

P. infestans attacks all aboveground parts of the tomato plant. Leaf lesions first appear as indefinite, water-soaked spots, which may enlarge rapidly into pale green to brown lesions and cover large areas of the leaf (Figure 1). The undersides of the leaves often show a downy white growth in moist weather (Figure 2). Infected foliage becomes brown, shrivels,



Figure 1. Late blight on tomato leaves. (Photo courtesy S. Johnson, University of Main)



Figure 2. Fuzzy growth of *Phytophthora infestans* on under a leaf surface of tomato. (Photo courtesy M. McGrath, Cornell University)

and soon dies. Petioles and stems are affected in a similar manner (Figure 3), so that the whole plant may die. Infection of green or ripe fruit produces large, irregularly shaped brown blotches (Figure 4). A thin web of white fungal mycelium may cover the fruit lesions during moist weather. Infected fruits rapidly deteriorate into foul-smelling masses.

DISEASE CYCLES

The pathogen survives from season to season in volunteer and potato cull piles. Inoculum produced on infected plant material that remains from previous crops is carried by wind onto the plants. The pathogen is most active during cool, moist weather. Sporangia of the pathogen are

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formed at relative humidity of 91-100% and temperatures of 37-79°F (3-26°C) [optimum: 64-72°F (18-22°C)]. The optimum temperature for zoospore formation in sporangia is 54°F (12°C). Zoospores germinate most rapidly at 54-59°F (12-15°C). Temperature above 86°F (30°C) are unfavorable for late blight development, although the pathogen can survive elevated temperatures. When the weather is favorable, infection moves so rapidly that affected plants appear as though they have been damaged by frost.

DISEASE MANAGEMENT

Late blight of tomato can be managed by avoiding potato cull pile; destroying volunteer tomato and potato plants; keeping tomato field as far as possible from potato fields; keeping plants as dry as possible; removing and destroying infected plants; cleaning up the production site after harvest; and spraying plants with effective fungicides. The application of fungicides plays a key role in the control of late blight. Fungicides should be applied when the weather favors disease development. For current recommendations on fungicide control of the disease, refer to the current edition of publication number C1373, "Midwest Vegetable Production Guide for Commercial Growers" (www.btny.purdue.edu/pubs/id/id-56/). This publication is available from ITCS, University of Illinois, 1917 S. Wright St., Champaign, IL 61820; or call 1-800-345-6087.



Figure 3. Late blight symptoms on tomato stems. (Photo courtesy M. McGrath, Cornell University)

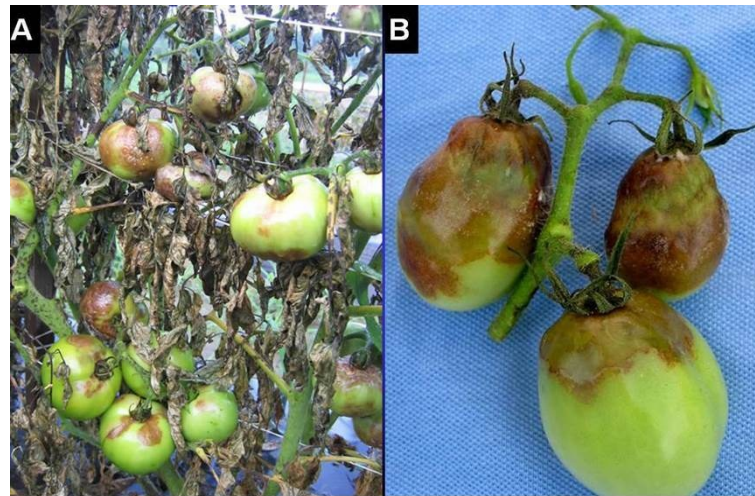


Figure 4. Late blight symptoms on tomato plants. A, foliage blight; B, fruit infection. (Photo courtesy S. Johnson, University of Main)