

VEGETABLE CROPS

DISEASE OF POTATO
Potato Late Blight

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COOPERATIVE EXTENSION NEW YORK STATE. CORNELL UNIVERSITY

potato late blight

Phytophthora infestans (Mont.)

INTRODUCTION

Late blight is an extremely destructive fungal disease of potatoes. The fungus attacks both tubers and foliage at any stage of development and is capable of rapid development and spread. Soft rot of tubers often occurs in storage following tuber infections. Consequently, the tolerance for late blight is usually very low.

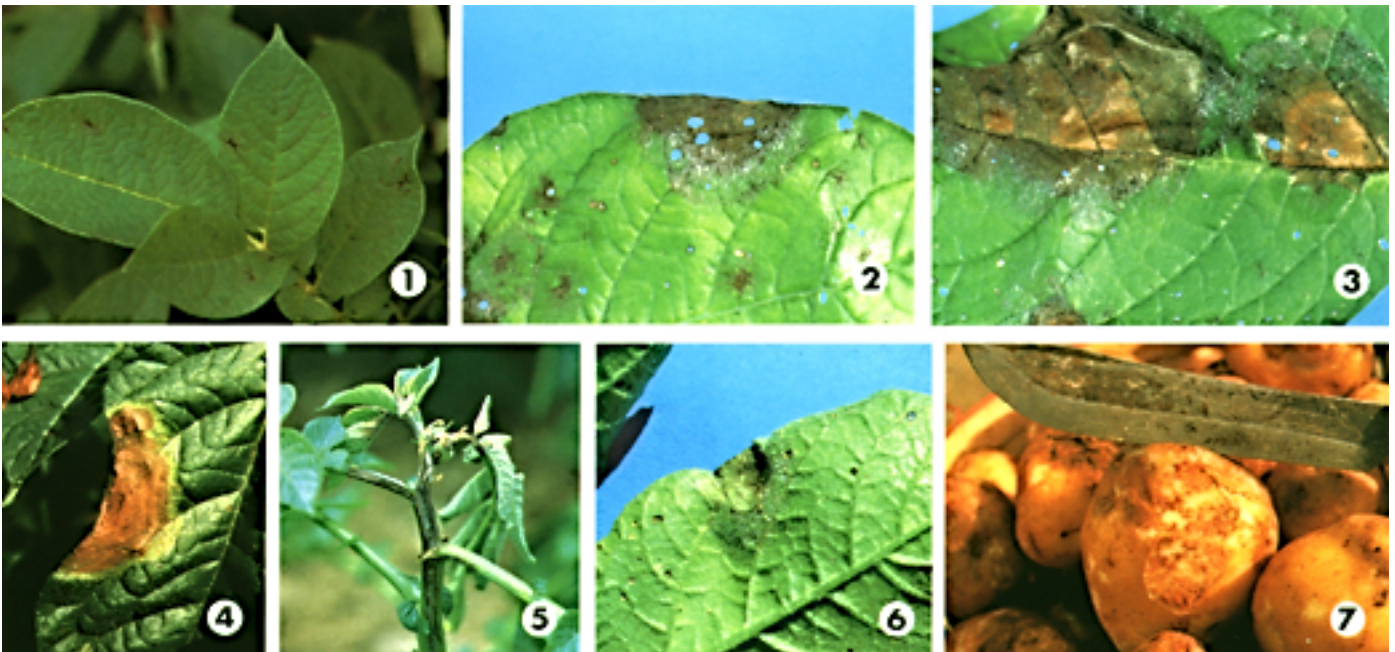
DISEASE CYCLE

The fungus survives the winter in infected, stored potatoes, or in infected tubers missed during harvest and remaining unfrozen overwinter. The fungus can be transmitted from infected tubers to potato foliage. Thus, the sources of initial inoculum can be piles of infected cull potatoes, infected seed tubers, or infected volunteers. The spores of *Phytophthora infestans* are carried by wind, splashed rain, and animals from diseased plants in one field to healthy plants in neighboring fields,

Development of late blight is favored by high moisture (rain, dew, sprinkler irrigation, high relative humidity) and moderate temperatures (60 F-60 F) for periods of at least 8-10 hours. The spores require water to germinate and penetrate the potato tissue. Lesions on leaves and stems become visible as small flecks within 3 to 5 days after infection (Fig. 1). These expand to produce large lesions (Fig. 2). Initially, infected tissue is water-soaked (gray-green) (Fig. 3), but becomes necrotic (brown or black) in a few days (Fig. 4). Lesions are often surrounded by a halo of lighter green tissue. Stems are also susceptible to attack (Fig. 5).

Moist conditions for at least 7-10 hours are required for spore production. Thus, spores or lesions are most commonly apparent after wet nights and after periods of rainfall. They are seen as a white, velvety growth at the edge of the lesion, primarily on the underside of the leaf (Fig. 6). It is this white growth that distinguishes late blight from several other foliar diseases of potatoes. The spores are carried by wind or rain to healthy plants where the cycle begins again. Many reproductive cycles are possible within a season. This accounts for the rapid increase in disease once it becomes established in a field.

Tubers are infected by spores washed from lesions to the soil. Tuber infections are characterized by patches of brown to purple discoloration on the potato skin. Cutting just below the skin reveals a dark, reddish-brown, dry, corky rot (Fig. 7).



CONTROL

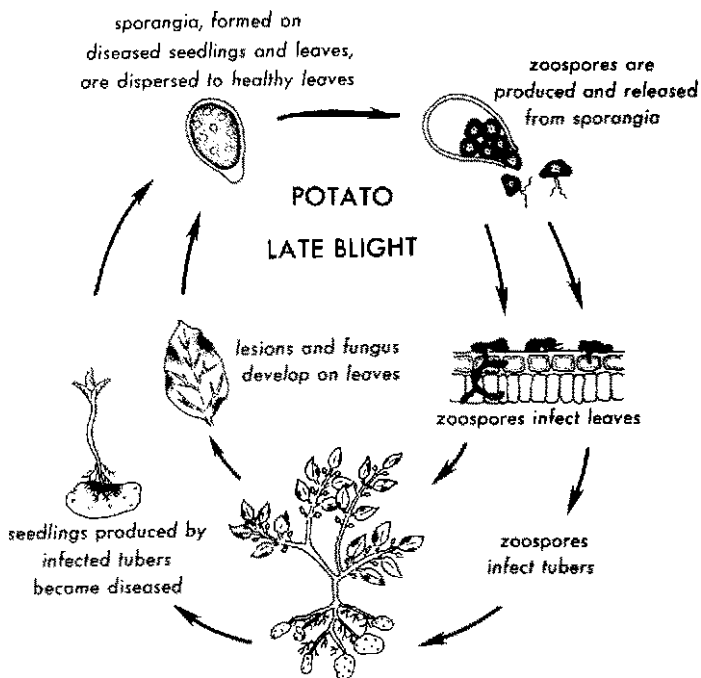
A combination of several management practices is necessary to achieve consistently good control of late blight. The first practice is to avoid introducing late blight into a field. Thus, disease-free seed tubers should be planted, and cull and volunteer potatoes should be destroyed. Second, resistant varieties should be planted. No cultivar is immune to late blight, but several are moderately resistant and could be planted if blight was expected to be a problem (Table 1). The third practice is to apply fungicides as needed

Table 1.—Resistance of potato cultivars to the late blight fungus.

Susceptible	Slightly Resistant	Moderately Resistant
Abnaki	Atlantic	Kennebec
Belchip	Bake-King	Rosa
BelRus	Frito Lay 657	Sebago
Chieftain	Green Mountain	
Chippewa	Katahdin	
Hudson	Russett Burbank	
Monona		
Norchip		
Russet Rural		
Superior		
Wauseon		

throughout the growing season. Several forecast techniques have been developed that predict when a spray will be necessary based on environmental conditions favorable to the development of the fungus. Fourth, hilling and vine killing reduce the incidence of tuber infection. Infected tubers should be removed before potatoes are stored.

Consult your local extension office to acquire information on disease forecasting and other disease management practices.



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