

Late Blight of Potato and Tomato

INTRODUCTION

Late blight is a potentially serious fungal disease of potato and tomato. This same fungus, *Phytophthora infestans*, was responsible for the infamous Irish potato famine of the 1840's. In 1861, Anton deBary proved conclusively that *Phytophthora infestans* actually caused the disease. This scientific breakthrough gave rise to the discipline of plant pathology.

The common strain of the fungus (A1 mating type) found in the US has been successfully controlled through effective crop sanitation practices and fungicides. However, immigrant strains of the fungus, (A1 and A2 mating types) have recently (1990's) appeared throughout most of the U.S. These strains probably originated in Mexico and are resistant to metalaxyl (Ridomil), previously the most effective fungicide used by commercial potato growers. In 1994, a new strain was found in Western Maryland potato fields and on tomatoes in other parts of the State. The principal concerns are: 1) that the immigrant strains are more virulent and 2) that sexual reproduction of the two mating types could lead to new strains and the ability of the fungus to overwinter in soil.



Late Blight on Tomatoes

SYMPTOMS

Late blight can occur anytime in the growing season and is especially damaging during cool, wet weather. This fungus can affect all plant parts. Young lesions are small and appear as dark, water-soaked spots. These leaf spots will quickly enlarge under cool, wet conditions and a white mold will appear at the

margins. Stems are similarly affected and complete defoliation (browning and shriveling of leaves and stems) can occur within 14 days from the first symptoms. Infected tomato fruits develop shiny, dark or olive-colored lesions which may cover large areas and invite soft rots.



Late Blight on Stems



Late Blight on Leaves

Infected potato tubers have a dry, corky rot that may be brown or reddish. Tubers are symptomless at the initial stages of infection but often develop symptoms in storage. The fungus produces a foul odor in both crops where infection is severe.

DISEASE CYCLE

Fungal spores may be blown in from neighboring growing areas or enter the garden on infected tomato transplants or seed potatoes. The fungus may survive in un-harvested or cull tubers left in the garden over the winter but is not likely to overwinter on plant debris.

Fungal spores are spread between plants and gardens by rain and wind. Infection of potato foliage begins when plants emerge

from diseased seed potatoes. Spores on infected potato leaves are washed down into the soil where they may infect tubers.

A combination of daytime temperatures in the upper 70°s F and the low 80°s F with high humidity (cloudy, rainy weather and morning dews) is ideal for infection. If suitable conditions continue the disease will spread rapidly. The spread of disease is slowed by hot, dry weather (temperatures over 95° F). However, a return to wetter weather will renew the spread of the disease.

PREVENTION AND CONTROL

The following guidelines should be followed to minimize late blight problems:

- keep foliage dry: Locate your garden where it will receive morning sun. Allow a little extra room between potato and tomato plants. Avoid overhead watering, especially late in the day.
- do not plant store-bought potatoes or tubers harvested from blighted plants the previous season. Purchase Acertified, disease-free@seed potatoes.
- grow your own tomato transplants.
- there are no late blight resistant tomato cultivars. The potato varieties Kennebec, Butte, Onaway, Erik, Ontario and Sebago have some tolerance or resistance.
- destroy volunteer tomato and potato plants and nightshade family weeds which may harbor the fungus.
- do not compost rotten, store-bought potatoes.
- where potato foliage infection occurs, eat tubers right away; do not attempt to store them.
- pull out diseased plants, allow them to completely dry-out and either discard or hot compost the remains.

- protect developing tubers from infection by keeping them covered with soil.
- protectant fungicides, including chlorothalonil (Daconil 2787) and fixed copper (Kocide) are effective if applied prior to infection. However, they are of no value once infection occurs.

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