



DISEASE MANAGEMENT: Late Blight



Phytophthora infestans

SIGNS & SYMPTOMS:

- On leaves, symptoms are large lesions that are irregular in shape. Initially, the lesions are dark green with water-soaked areas.
- The lesions will enlarge and turn brown and papery (**Figure 2**).
- The lesion on the underside of the leaf may have white, sporulating fungal growth early in the morning or during wet periods (**Figure 1**).
- On the fruit, the lesions are dark and olive colored with a greasy appearance (**Figure 3**).

DISEASE CYCLE & EPIDEMIOLOGY:

- The pathogen overseasons on cull piles, plant debris and volunteer tomatoes
- Sporangia are carried long distances by wind and rain.
- Late blight development is favored by cool nights in the 50's, mild days in the 70's and high humidity.
- Disease progresses rapidly and can completely destroy a mature tomato field within days.

FIELD SIGNATURE:

- Large, blighted areas on leaves.
- White sporulation around lesion margins (**Figure 1**).
- Fruit symptoms.

PHOTOS:

Figure 1. Underside of tomato leaf exhibiting blighted area and white sporulation of *P. infestans*. Photograph by: Pam Roberts.

Figure 2. Tomato leaves in field showing blighted leaves. Photograph by: Pam Roberts.

Figure 3. Tomato fruit with symptoms of late blight. Photograph by: Pam Roberts.

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CULTURAL CONTROLS:

- Scout fields particularly in wetter parts of fields or where spray applications might miss.
- Use only disease-free transplants.
- Avoid adjacent plantings with older, infected crops.
- Eliminate cull piles and volunteers.
- Control solanaceous weeds such as nightshade.



Figure 4. Tomato seedling stunted. Photograph by: Pam Roberts.

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CHEMICAL CONTROL:

- Maintain a preventative spray program with good coverage.
- There are many fungicides labeled for this disease.
- Chemistries include dimethomorph (Group 15), chlorothalonil (Group M4), copper (Group M1), strobilurins (Group 11), cymoxanil (Group 27), zoxamide + mancozeb (Groups 22 & M2), mancozeb and maneb (Group M2), Fenamidone (Group 11), propamocarb hydrochloride (Group U) mefenoxam (Group 4), *Bacillus subtilis* bacteria, famoxadone + cymoxanil (Groups 11 & 27).

RESISTANCE MANAGEMENT:

- Follow fungicide labels.
- Some fungicides must be tank mixed with another fungicide.
- Resistance management strategies such as tank mixing with another fungicide, rotation of applications of fungicides in different groups, and maximum rate use per application and per season as stated on fungicide labels must be followed.

RESISTANT CULTIVARS:

- Resistance to late blight in tomatoes is not currently available in commercial cultivars.

References:

Stevenson, W.R. 1991. Late Blight, pp. 17-18. *In* J.B. Jones, J.P. Jones, R.E. Stall and T.A. Zitter (eds.), *Compendium of tomato diseases*. American Phytopathological Society Press, St. Paul, MN.