



Understanding the Fungus Pathogen Identification and Potato Late Blight Infection Management

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DESCRIPTION

Late blight is common in Hoshiarpur, Jalandhar, Nawan Shehar, Kapurthala, Ropar and Amritsar districts. Hoshiarpur is often considered a hotspot for the disease. The disease is usually first observed in certain areas of Hoshiarpur district such as Sham Chaurasi, Mehtiana, Phuglana and areas around Tanda, and then spreads to neighboring areas during favorable weather conditions. In districts such as Ludhiana, Patiala, Fatehgarh Sahib, Moga and Sangrur, the disease is recorded with moderate incidence and does not occur every year or develop late in the season. South western districts such as Bathinda, Faridkot and Ferozepur remained largely disease-free or had very rare outbreaks during the long epidemic years.

Based on the prevalence of the disease in different regions recorded over the past few years, a late blight disease map for Punjab has been prepared. Typically, crops are sown early, planted in early September and harvested in mid-November for table, escaping disease attacks due to the high temperatures prevailing at this time or may be slightly affected in late months without causing serious damage.

Potato late blight is identified by black/brown lesions on leaves and stems, which may initially be small, soggy or have yellow edges but quickly spread and the entire leaf becomes necrotic. Under moist conditions, *P. infestans* produces spores and spores on the surface of infected tissues, and white spores can be seen at the edges of lesions on the abaxial (lower) surface of leaves. *P. infestans*, the cause of downy mildew, is a heterophilic fungal pathogen, meaning that two mating types are required for sexual reproduction and are called A1 and A2. The pathogen requires viable plant tissue or tubers to survive in the field in the absence

of oospores. However, in some areas of the world where both types of sexual pathogens are present, sexual spores capable of surviving in the soil are produced. Although survival in soil is not well known in the United States, anecdotal evidence indicates that sex admixture does occur, suggesting that survival in soil is possible. Infected potato tubers are the main source of infection for *P. infestans*. This includes stored potatoes, infected tubers missed during harvest that were not frozen over winter (volunteer), infected seed tubers and discard piles, as well as *P. infestans* on other host plants. The pathogen can be transmitted from infected tubers to emerging potato plants, where it produces airborne spores that can move to neighboring plants.

A model that predicts disease severity based on air temperature and relative humidity is available on the Plant Insect and Disease Forecasting Network (VDIFN) website. In the Diseases tab, select the “Downy mildew” sample. This model uses Disease Severity Values (DSVs) calculated from the previous week of NOAA gridded weather data to calculate the risk of *Phytophthora infestans* development, shown as a map overlay colors. The starting point should be adjusted according to crop emergence or the last fungicide application, whichever is later.

CONCLUSION

The model takes into account the total DSV accumulated during a season as well as the amount accumulated since the start date. Click on any grid point in VDIFN to get more detailed weather and disease information for that location. Culture tests can be used to determine the presence of downy mildew pathogens on plants. If downy mildew forms on the leaves, it can be detected immediately. To make the mushrooms sporulate, place the leaves in a zip-top bag with a damp paper towel.

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