



AVRDC - The World Vegetable Center

Fact Sheet

Tomato Diseases

Powdery Mildew

Oidiopsis taurica (*Leveillula taurica*), *Oidium neolycopersici*

Found worldwide



Symptoms

Leaf symptoms of *Oidiopsis taurica* consist of yellow blotches or spots on the upper leaf surface. A white powdery growth occurs on the underside of the leaves. This fungus penetrates within the leaf tissue.

For *Oidium neolycopersici*, symptoms first appear as small, powdery white colonies on the upper surface of the leaves. The fungal growth does not penetrate deeply into the leaf. The lower surface of the foliage may also be affected during later stages when the disease is severe.

With both pathogens, the older colonies of the fungus may turn a dirty white color with age. The severely affected leaves turn yellow, then brown, and later become shriveled. Generally, the lower leaves are affected first and the disease gradually moves up the plant. Vines may become defoliated under severe infections, leading to lower yields and possible sunburn damage to the fruit.

No symptoms appear on the fruit or roots.

How to Identify Powdery Mildew



Symptoms of *Oidiopsis taurica* consist of chlorotic spots on the upper leaf surface and profuse fungal sporulation on the lower surface (left photo). For *Oidium neolycopersici*, powdery white colonies appear on the upper surface (top and right photo). In both pathogens, severely affected leaves will turn yellow, then brown, and later become dry.

Conditions for Disease Development

O. taurica is a major pathogen of pepper, and also affects tomato, eggplant and cucumber crops. Tomato is the principal host of *O. neolycopersici*, but this pathogen affects numerous plants, especially solanaceous crops (pepper, eggplant, potato and tobacco) and weeds (nightshade).

Both fungi are prolific producers of spores that are readily dispersed by wind and rain. Many cycles of disease development occur during the plant's growing period. The fungus is also spread by insect pests (thrips, aphids and whiteflies) and field workers, but to a lesser extent. The fungus is not seed borne.

Spore germination and infection are favored by wide fluctuations of temperature and humidity during the day and night, which create periods of leaf wetness. *O. taurica* is favored by high relative humidity (greater than 85%) at night followed by warm (25° C), less humid conditions during the day. For *O. neolycopersici*, optimum disease development occurs at 22 °C particularly after 16 or 24 hours of leaf wetness; symptoms can appear within 7 days from the time that the spore lands on the leaf surface.

Other factors such as close plant spacing and luxuriant plant growth arising from high nitrogen levels are likely to foster disease development.

Control

Avoid high rates of nitrogen, which make plants more susceptible to infection. Avoid crowding and shading,

which lead to the development of leaf wetness and conditions that promote infection. Avoid overhead irrigation for the same reason.

Avoid planting young tomato plants while diseased plants remain nearby. Control weeds around the planting site since both fungi have a wide host range and could persist on these plants during the growing season or during the off-season.

Early detection of the disease is important since early control measures will reduce the amount of subsequent disease development and the number of foliar fungicide sprays that are required. Sulfur and other protectant fungicides are available for control of this disease. Ensure good spray coverage, particularly on the undersurface of the foliage (especially for control of *O. taurica*). Avoid applications during very warm, sunny weather to prevent occurrence of possible phytotoxicity. Application in the early evening using high volumes of water will prevent this. Rotate sulfur and other materials to prevent the pathogen from developing resistance to the chemicals. Consult your local extension agent for availability of other chemical control measures.

Genetic resistance has been identified among wild tomato lines and is being incorporated into cultivated varieties. Consult your local extension agent for availability of resistant varieties, if any, in your area.

For more information on the production of tomato and other vegetables, go to <www.avrdc.org>.