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FACT SHEET

DOWNY MILDEW OF IMPATIENS

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Downy mildew is a highly destructive disease of garden impatiens (*Impatiens walleriana*). It causes severe early defoliation, flower drop, and plant collapse in landscapes. Cloudy, wet, cool weather is favorable for disease spread and development. A widespread outbreak of impatiens downy mildew occurred in 2012 that resulted in considerable economic losses in North America.

SYMPTOMS AND DIAGNOSTICS

Early symptoms of the disease include mottled yellowing of leaves with slight leaf curling downward (Figure 1). These subtle symptoms can often be mistaken for nutritional deficiencies or other abiotic disorders. The diagnostic sign of the disease is white "mildew" visible on the lower surface of infected leaves when the relative humidity is high (Figure 2). As the disease develops, infected plants become stunted and drop their leaves and flowers, which may result in bare, leafless stems (Figure 3).

DISEASE DEVELOPMENT

The pathogen of impatiens downy mildew, *Plasmopara obducens*, is a fungal-like organism, also called water mold, which releases zoospores from sporangia in the growing season and forms oospores (resting spores) in the late season. Like other *Plasmopara* species, oospores of *P. obducens* may survive in the soil for several years. In a season, sporangia formed on the lower surface of leaves can be dispersed by splashing water and air currents. Disease development is highly influenced by host resistance and environmental conditions. The pathogen is very host-specific and can

Figure 1. Yellowing and curling of affected leaves.

Figure 2. White mildew on the lower surface of the leaf.

Figure 3. Heavily infected garden impatiens with severe defoliation and bare stems.

infect garden impatiens (*I. walleriana*) and garden balsam (*I. balsamina*). All varieties of *I. walleriana* and any hybrids with *I. walleriana* in their background are susceptible to downy mildew. However, New Guinea impatiens (*I. hawkerii*) is highly resistant/or tolerant to the disease. Downy mildew thrives under moist, cool conditions. Spore germination and infection need lower temperatures (55-65°F) and high relative humidity during the night, which is favorable for dew and formation of water films on plant surfaces. Cloudy, rainy, and cool weather conditions are ideal for the development of downy mildew. Overhead irrigation, crowded plant spacing, or any conditions that result in long periods of leaf wetness will increase the risk of disease epidemics.

MANAGEMENT

Resistant and non-host species: In high risk areas with a history of impatiens downy mildew, avoid planting garden impatiens; consider using resistant impatiens species, New Guinea, and alternative shade-loving annuals, such as coleus, begonia, fuchsia, nicotiana, lobelia, salvia, and torenia.

Cultural practices: Before planting impatiens in a garden, inspect plants carefully to prevent introducing the disease through plant materials. Scout for downy mildew during the growing season and immediately remove and dispose infected plants. Avoid overhead irrigation and night-time watering. Space plants in the landscape to improve air circulation between plants to allow water on the leaf surface evaporate quickly. At the end of the season, completely remove all plant material to prevent overwintering of the pathogen. Do not compost the diseased plants because they may contain resting spores.

Fungicide application: Although some fungicides are labeled for use in the landscape, they need to be applied before plants are infected. Since fungicides only offer short-term protection, the applications need to be repeated throughout the season especially when weather conditions are wet and cool during the night. Once plants are infected, they will not recover. Therefore, fungicide application is not recommended when impatiens downy mildew is found in the landscape.

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