



## Landscaper Frequently Asked Questions

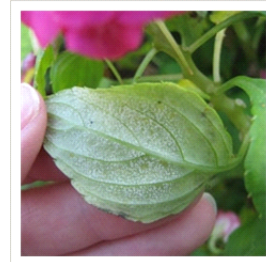
### Impatiens Downy Mildew

#### **Q. How can I recognize the symptoms of impatiens downy mildew?**

A range of symptoms is possible. *Impatiens walleriana* that become infected at an early stage of development are more likely to appear stunted in both height and leaf size, and produce fewer flowers.

Early Symptoms Include:

- Leaves that appear chlorotic or stippled. Some varieties will have subtle gray markings on the top of the leaf. Affected leaves become yellow as the disease progresses.
- Infected leaves may also turn downward from the leaf margins.
- A white, downy-like growth containing spores may be present on the underside of affected leaves (see photo). This downy-like growth can sometimes also be found on the underside of leaves that appear normal and green



Advanced Symptoms Include:

- Premature leaf and flower drop resulting in bare, leafless stems that resemble green sticks.
- Eventually these stems may become soft and the plant will collapse (somewhat similar to frost damage).

#### **Q. Where has this disease been seen in the United States?**

Impatiens downy mildew was confirmed in commercial landscape beds in coastal southern California; northeast Illinois; northern Indiana; Cape Cod, Massachusetts; and Long Island and upstate New York in 2011. In late 2011 and early 2012, the disease was observed in landscape beds in south Florida. In April 2012, infected plants were observed in landscape plantings in the Dallas, Texas area. By June 2012, regional outbreaks were being seen in the southeast and along the mid and north Atlantic states. As of October 2012 the disease had been confirmed in 32 states, but only two of those states (Oregon and Washington) are located in the western part of the country.

#### **Q. What environmental conditions favor Downy Mildew?**

Development and expression of impatiens downy mildew is highly influenced by the weather.

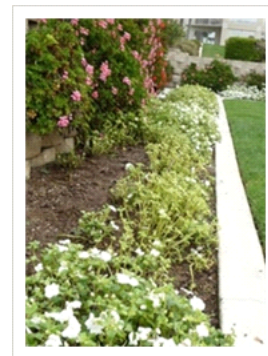
- Wet foliage, cool (~60°F) temperatures (especially at night), and moist air are ideal conditions for disease development.
- Symptoms often show up after a period of heavy rainfall or prolonged wetness.

#### **Q. Is the disease more of a problem in beds that are in full shade?**

Downy mildew is a water mold. As the name implies, it likes and requires moisture to sporulate and cause new infections. Plants in heavily shaded locations where the leaves stay wet for extended periods of time will generally have a higher incidence and severity of disease because moisture promotes infection and disease expression.

Disease tends to be worse in:

- Locations where leaves stay wet for extended periods of time.
- Very dense beds.
- Beds receiving overhead sprinkler irrigation, because the foliage does not dry quickly.



Plants in more open or sunnier areas with better air movement will generally have less disease because the length of time moisture remains on the leaves is reduced.

#### **Q. If beds are cleaned up thoroughly, can Impatiens be safely planted there next year?**

*Impatiens walleriana* replanted into beds with a history of impatiens downy mildew may be at a higher risk of infection than *Impatiens walleriana* planted into beds with no history of the disease.

Two types of spores are produced that can initiate infection:

- Short-lived (dispersal) spores produced in the downy-like growth on the undersides of infected leaves. These spores will not overwinter.

- Resting (survival) spores produced inside infected stems and leaf petioles. These resting spores, called oospores, have the potential to be released into the soil from infected plant debris where they can survive and potentially initiate new infections on *Impatiens walleriana* planted into the same beds next season.

This is important to know because:

- Prompt removal of infected plants reduces the risk of oospore development in plant tissue, and thereby reduces potential soil contamination.
- Impatiens downy mildew can potentially occur in beds with no history of Impatiens downy mildew if wind-dispersed spores blow in from other locations where infected plants are growing.

#### Q. What should I do with the infected plants that I remove?

- Avoid placing infected plants into compost piles where the overwintering (oospores) may survive.
- Bag and discard in a landfill if local regulations allow.
- Plants can also be buried to a depth below your till line.

#### Q. If the pathogen survives the winter in plant debris in the soil, is it safe to plant other flowering or foliage plants in affected beds next season?

The downy mildew infecting impatiens attacks only *Impatiens walleriana* and a few species of wild impatiens. Alternative shade-loving plants including New Guinea impatiens can be safely planted in beds with a history of impatiens downy mildew. (For a list of alternative plant recommendations, [click here](#).) Coleus is susceptible to a downy mildew disease, but the downy mildew species that infects *Impatiens walleriana* cannot infect coleus.

#### Q. What is your recommendation for fungicides/timing of application for impatiens beds?

End of season management in the fall should focus on:

- Scouting *Impatiens walleriana* beds for this disease.
- Promptly remove infected plants
- Note which beds harbored diseased plants.
- End of season fungicide applications are not recommended.

Next season:

- Preventative applications of fungicides can provide protection of *Impatiens walleriana* planted into the landscape next season, but applications would need to continue throughout the season if environmental conditions are conducive for disease development.
- Drench applications of Adorn and Subdue MAXX exhibited the longest residual efficacy in greenhouse fungicide trials, but drench applications are not always practical in landscape settings. Limited trial data from Florida suggests that soil incorporation of Subdue G into landscape beds prior to planting may provide longer efficacy than foliar fungicide applications. Extreme caution must be taken in rotating fungicides among different chemical classes to avoid the development of fungicide-resistant populations.

#### Q. Should our grower apply a fungicide next year as a preventative?

- Growers are being advised on best management practices, which include preventative fungicide applications, in order to continue providing the industry with a supply of healthy impatiens.
- Fungicides applied by the grower will offer short-term protection, but may not provide a full season of control after plants are moved into the landscape.
- Healthy plants can become infected by both wind-dispersed or soilborne spores once planted into the landscape.

#### Q. Does this disease attack both vegetative- and seed-produced *Impatiens walleriana*?

All cultivars of vegetative- and seed-produced *Impatiens walleriana* are susceptible to downy mildew, but there is no evidence that this pathogen can be transmitted by seed.