

# Pest Alert

**Florida Department of Agriculture and Consumer Services, Division of Plant Industry**  
**Adam H. Putnam, Commissioner of Agriculture**

## **Downy Mildew of *Impatiens walleriana* caused by *Plasmopara obducens***

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**INTRODUCTION:** In late 2011, the downy mildew disease of garden impatiens (*Impatiens walleriana*) caused by *Plasmopara obducens* made its first appearance in Florida in the Palm Beach County area. The pathogen, known for many years in other parts of the US and the world, has become an exceptionally damaging pest in Europe and the northeast US in recent seasons. The disease has the potential for widespread and rapid destruction of this very popular bedding and pot plant. This pest alert is to inform both the horticulture industry and their customers about this disease and what can be done about it.

**BIOLOGY:** This “water-mold” Oomycete pathogen is specific to the genus *Impatiens* with a special affinity for *I. walleriana*. Cool, moist conditions favor this disease; the onset of warmer weather may bring relief. Sporangia produced on infected tissues are easily dispersed by wind and water-splash. Younger tissue is more susceptible than older. Infected tissues will eventually contain a very resistant spore type that will probably infest the area for at least the next growing season and perhaps longer unless all infected material is physically removed. Summer survival of these resistant oospores under Florida conditions is unknown. It is logical to conclude that the disease arrived in Florida on infected plant material, perhaps small plugs or on privately transported house plants, but proof of such an event is elusive. Long-term persistence of the pathogen on other species of *Impatiens* that tolerate the disease better than *I. walleriana* is possible.

**SYMPTOMS:** Like any typical downy mildew, *P. obducens* can be very subtle in its early stages of pathogenesis, making it all the more likely to be transported into new areas on apparently healthy plants. The incubation period from infection to symptom expression can take 5-14 days (Warfield 2011). Early symptoms are faint chlorosis or stippling of leaves that eventually become completely chlorotic. As the disease progresses, infected leaves fall off, leaving bare stems. The undersides of yellow and even green leaves may appear downy white to light gray with masses of sporangia and sporangiophores. Eventually, the infection leads to complete collapse of the plant. By the time the more obvious stages of the disease are noticed, considerable spread undoubtedly has already occurred.

**CULTURAL MANAGEMENT:** Start with clean plants. Consider infected plants beyond rescue. If you do encounter infection, carefully and promptly remove all infected material and associated debris by placing everything in a bag and sealing it on the spot for disposal in the trash (Wells, 2011). Do not compost infected material, as it will contain abundant long-lived spores (oospores) that will inevitably cause problems on the next impatiens crop. If you have already experienced impatiens downy mildew in the landscape, seriously consider rotating to another crop (Anonymous, 2011). Carefully clean up greenhouse outbreaks and sanitize the affected area before placing another *Impatiens* crop in that location. This downy mildew is not known to be seed-transmitted, so seed propagated plants are a safer option than asexually propagated plants. Avoid rooted cuttings for now.

**FUNGICIDAL MANAGEMENT:** Consider fungicides as mainly protective. They perform best when applied before infection, and can be applied as a spray or a drench. University of Florida - IFAS has issued a nicely illustrated Fact Sheet on this disease that includes fungicide recommendations (Sangorski and Schall, 2012). Ball Horticultural Company and Cornell University's Long Island Horticultural Research and Education Center have been investigating fungicide options for this disease, and have found the following products to be effective (Zurko, 2011):



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| Product name        | Active ingredient | Comments                                                                                                     |
|---------------------|-------------------|--------------------------------------------------------------------------------------------------------------|
| Adorn™ or Presidio™ | fluopicolide      | Use resistance management guidelines, risk unknown, max 2 applications/season. FRAC Code 43                  |
| Fenstop™            | fenamidone        | High risk of resistance. FRAC Code 11                                                                        |
| Stature™            | dimethomorph      | Lower risk of resistance, but beware. FRAC Code 40                                                           |
| Subdue Maxx™        | mefenoxam         | Worked well in some locations, failed in others; some resistance already in pathogen population. FRAC Code 4 |
| Heritage™           | azoxystrobin      | High risk of resistance. FRAC Code 11                                                                        |

The use of a siloxane-based adjuvant with the fungicide for foliar application has been beneficial. Rotate products with different modes of action (FRAC code #) to avoid the development of resistant strains of the pathogen. Always follow label directions to the letter.

**SUMMARY:** It is possible that this pathogen is slightly different genetically from the original isolates of *P. obducens* first described in 1877 by J. Schroeter (Saccardo, 1888). Work is underway to understand the genetics of the recent pathogens. The previously known geographic range of impatiens downy mildew in the Western Hemisphere up until 2007 included Ontario (1998), Manitoba (1967), Quebec (1967) in Canada, and these states in the US (with date of first report): CA (2004), DE (1907), IN (1960), MI (1917), MN (1955), MS (1927), MO (1901), MT (1973), TN (2002), WV (1906), and WI (1942). There have been reports of the disease in Costa Rica (2002) and Guatemala (2006) in Central America. A map of world distribution is cited in the references (Commonwealth Agricultural Bureau International, 2007).

#### REFERENCES:

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Figure 1. An *Impatiens* bed in the landscape with downy mildew. Leaves fall off and plants die in later stages. Early stages are subtle. Photograph: M. Moyer



Terminal leaves of an *Impatiens* plant infected with *Plasmopara obducens*. Note slightly chlorotic and curled appearance with white fuzz on the underside. Photograph: T. Schubert



Fig. 3. Closer view of the white fuzz made up of sporangia and sporangiophores of *P. obducens*, the downy mildew pathogen.  
Photograph: T. Schubert