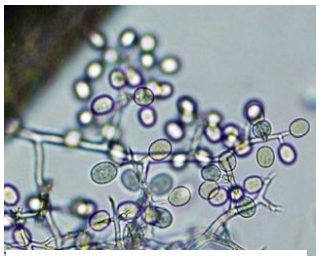
The Impatiens Dilemma



Impatiens Downy Mildew Sporangia and Zoospores

Impatiens are easy to grow, provide beautiful colors to our shady areas, have a long season of bloom, and have had few insect or disease problems. They are the top selling annual bedding plants…**BUT THAT MIGHT CHANGE VERY SOON.**

Impatiens downy mildew has arrived. The cause is a fungus-like organism, technically called a water mold, with the Latin name of *Plasmopara obducens*. Water molds cause some very nasty and aggressive plant diseases. One water mold causes late potato blight, the same disease that wiped out the potato crop during the Irish famine. Another water mold is causing Sudden Oak Death in Oregon and California.

In 2003, a new and aggressive form of Impatiens downy mildew was discovered in the United Kingdom. The disease was also noted in California in 2003 and scattered regional outbreaks occurred over the next few years. By 2011, the disease was discovered in the Saint Paul/ Minneapolis region. By 2012, the disease had spread to over 30 states.

In your garden, the first symptoms of the disease are very subtle. Younger plants and younger tissues are more susceptible. A light greenish-yellow color change, or a very fine stippling of immature leaves is seen on the stems. This color change may mimic a fertilizer deficiency or an infestation of spider mites. As the infection worsens, leaves begin to curl downward, resembling the drooping of leaves from drought stress. Growth may become stunted. If the weather is humid, the undersides of leaves will develop a white, fuzzy growth. Usually, the undersides of impatiens leaves are smooth and not hairy. Under the microscope, sac-like structures called sporangia are present. The sporangia produce vast numbers of disease-causing spores called zoospores. The zoospores are the infective spores, are short-lived, and do not survive the winter in Minnesota.

As the disease progresses, the flowers begin to drop off, followed in a few weeks by the complete loss of leaves. Eventually the entire plant will die. The disease is aggressive and can spread rapidly throughout your entire impatiens planting. Once a plant is infected, there is no cure.

The zoospores produced on the undersides of the leaves are easily dislodged. These infective spores are splashed onto other leaves by rain or water to cause new disease. Zoospores have tails (flagella) that enable them to swim in water films on the leaf surfaces, and will thus infect more plant cells. Four hours of wetness is enough to start a new infection. The disease thrives in cool and moist conditions (59-73 degrees). There are some reports that the disease can even occur at warmer temperatures. Wind will carry the zoospores to new plants and cause new infections over vast distances. If the leaf surface is wet (rain or irrigation), the zoospores will invade the leaf tissue and start a brand new infection.

A second type of spore is also produced. Oospores are thick walled and long-lived. They form within the stems of the dying plants, and reside in dead plant debris. These spores survive the winter and can start a new infection in impatiens next spring. It is not known how long Impatiens downy mildew oospores will survive, but oospores of other water mold species have survived in soil for 8 to 10 years. There is no chemical drench or control for these soil-borne spores.

All varieties of the common garden impatiens (*Impatiens walleriana*) and its hybrids can come down with the disease. The New Guinea impatiens (*Impatiens hawker*), on the other hand, is highly resistant. Plant diseases are usually very host specific; no other garden plants can be infected by the Impatiens downy mildew organism. Your roses, peonies, daylilies, and all other plants are safe from this specific disease. The downy mildews of sunflowers, lilacs, peonies, phlox, roses, grapes, coleus, and basil are caused by completely different species of microorganisms. Humans and animals cannot be infected by impatiens downy mildew. No resistant strains of garden impatiens have been found. Scientists are working to develop disease resistant strains of the common impatiens, but that development appears to be many years in the future.

If you have Impatiens Downy Mildew in your garden, there are three possible sources of infection:

(1) From the commercial or wholesale greenhouse that grew the plants.

(2) From zoospores that blew into your garden from your neighbor's garden, or from wind carried zoospores. These spores can come from hundreds of miles away on air currents.

(3) From oospores that overwintered on impatiens debris in your garden.

Control with fungicides does not seem very practical for the home gardener. Spraying must be done before infection sets in. Fungicides are of no use once the plant is infected; the infected plants will die. Home gardeners have a limited choice of chemicals to use, the chemicals should be alternated so that disease resistance does not build up, the coverage of the plant must be thorough, and the substances must be reapplied every 1-2 weeks. Protection is short lived, at best. Commercial greenhouses and landscape professionals have access to many more varieties of fungicides, some of which are very toxic, than does the home owner. If you are still concerned and want to spray for the disease, a licensed pesticide applicator may be hired.

Prevention is the best strategy when dealing with Impatiens Downy Mildew. Do not plant impatiens if your garden was diseased last year, as oospores can survive the winter to re-infect your plants during the next season. Examine plants carefully for signs of disease before purchasing from the nursery. Before planting, quarantine all new plants for at least 5 to 19 days, the time period for symptoms of infection to become apparent. Space your plants widely to allow plenty of air circulation, allowing the plants to dry quickly. Avoid overhead watering. Irrigate with drip irrigation or soaker hoses. Avoid getting the leaves wet. Water early in the day so that leaves can dry. Grow a diversity of plants to slow the spread of species-specific diseases, and to prevent a total loss if one or two plant species are lost.

Examine your impatiens frequently to catch the first signs of disease. If disease is present but you are not sure, placing a suspect leaf into a sealed plastic bag with a wet paper towel for 24-48 hours, will usually stimulate the growth of the whitish sporangia on the underside of the leaf. If disease appears, immediately remove the entire plant (roots and all). Bag and seal the infected plant and dispose of it into the trash. Do not compost. Home compost piles seldom reach temperatures high enough to kill the spores. You do not want to risk re-infecting next year's impatiens plants from spores that overwintered in your compost pile. Nearby impatiens are probably infected. Therefore, it is recommended to remove all impatiens plants within a 3 foot radius of the infected plant, in an attempt to control the spread of the infection.

Impatiens may become harder to find on nursery center shelves. Some growers are already reducing or eliminating production of impatiens due to this disease. Oceans of impatiens in our gardens may become just a memory. Consider other shade loving annual plants to grow instead. This may be an opportunity to try something entirely new for your shade garden.

New Guinea impatiens (*Impatiens hawker*) and its hybrids, such as Sun Patiens, are resistant. Most are propagated by vegetative cuttings and may be more expensive than other seed-grown annuals. The New Guinea plants are larger and you may not need as many to cover the same area. A new seed-grown strain of New Guinea impatiens, the Divine F1 series, may lower the cost of production. So far, I see that Burpee offers this variety as an exclusive and only as seedlings. Red, pink, lavender, purple, orange, and white colors are available. New Guinea impatiens will do well in shade conditions. Size: 14-16 x 12-14 inches.

Other annuals to try include wax begonias, fibrous begonias, fuchsia, hypoestes, plectranthus, coleus, lobelia, torenia, alyssum, and caladium. Perennials for color in the shade include heuchera, heucherella, hosta, Japanese painted ferns, dicentra, ajuga, and lamium. Check the publication from Cornell University, Alternatives to Garden Impatiens, https://extension.umass.edu/floriculture/sites/floriculture/files/pdf-doc-ppt/Alternatives-to-Garden-ImpatiensCornell.pdf, for more information.

The best of luck with your shade garden this year. Happy gardening, Joe Baltrukonis