

Powdery Mildew — a Gardener's Dust Storm

What's that white powdery-looking stuff on your plants' leaves? Read on.

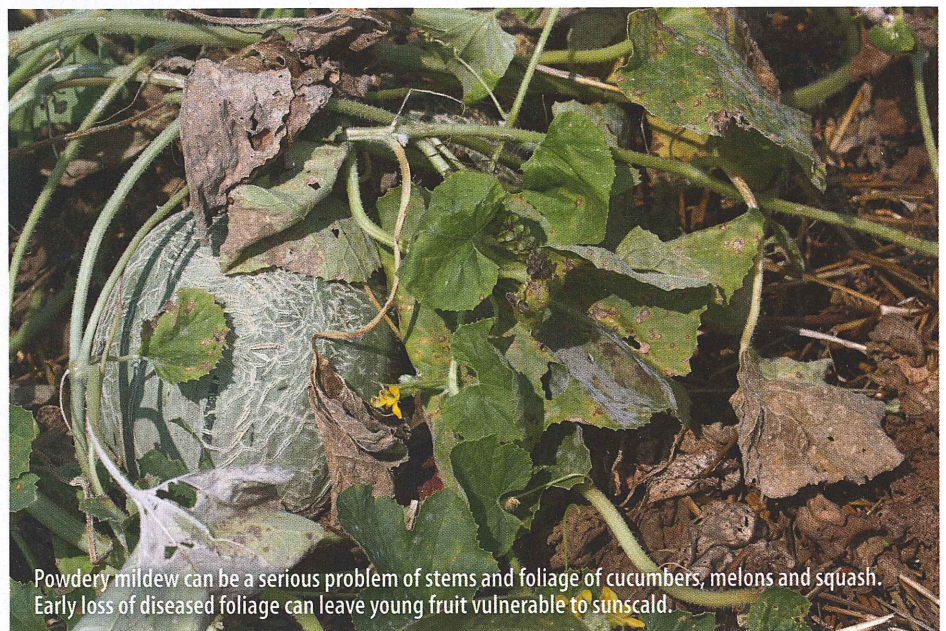
BY DOUGLAS A. SPILKER

Powdery mildew is probably one of the most common diseases in the urban landscape, in home lawns, and on many common fruits and vegetables. The most recognizable symptom of powdery mildew is the presence of white, fuzzy patches that form especially on new plant growth. As a result, new leaves may be smaller and the new stems may be twisted. Yellow or pale spots or blotches often develop on the opposite side of the leaf. Powdery mildew can quickly spread because the "powder" contains millions of new spores. The fungus grows primarily on the plants' surfaces, seldom invading the underlying tissues. The fungus gets its nutrition from the host plant by producing specialized absorbing structures (called haustoria) that grow into the photosynthetic upper leaf cells.

What's the damage?

Under severe infections, when enough of the leaf surface becomes covered with powdery mildew, photosynthesis can be impaired. Infected leaves may curl up, causing the leaves to fall prematurely. This can be a particular problem on vegetables such as cucumbers and squash, since insufficient photosynthesis can diminish fruit production, and loss of foliage can leave young fruit vulnerable to sunscald. If buds become infected, like on roses, they may not open at all. However, in most cases, powdery mildew is just unattractive, and is rarely fatal.

The other good news is that, although powdery mildew can be found on all



Powdery mildew can be a serious problem of stems and foliage of cucumbers, melons and squash. Early loss of diseased foliage can leave young fruit vulnerable to sunscald.

types of plants, it is host or plant family specific, meaning that just because you find it on one plant species, does not make it a threat to all other types of plants in your landscape. There are many different species of powdery mildew, but the symptoms all look about the same. The powdery mildew on your lilacs will not spread to your grapes or your roses. However, all powdery mildews favor the same conditions.

How does it happen?

Conditions that favor powdery mildew include dry foliage, high humidity, low light and moderate temperatures. As the air cools in the evening, the humidity ris-

es, the spores absorb moisture, germinate and infect. Free water on leaf surfaces actually deters powdery mildew infections. The powdery mildew fungus survives from season to season on infected tissues such as leaves and stems. Fallen infected leaves should be removed and destroyed (not composted) during the fall or winter since they are important sources for reinfections in the spring. Spores of the powdery mildew fungi are spread among your plants by wind, insects and splashing rain.

In general, powdery mildew is not considered to be a serious disease on home lawns, but the dust clouds kicked up during mowing may get some attention.



Powdery mildew on cool-season lawns tends to occur in shaded areas, especially on Kentucky bluegrass.

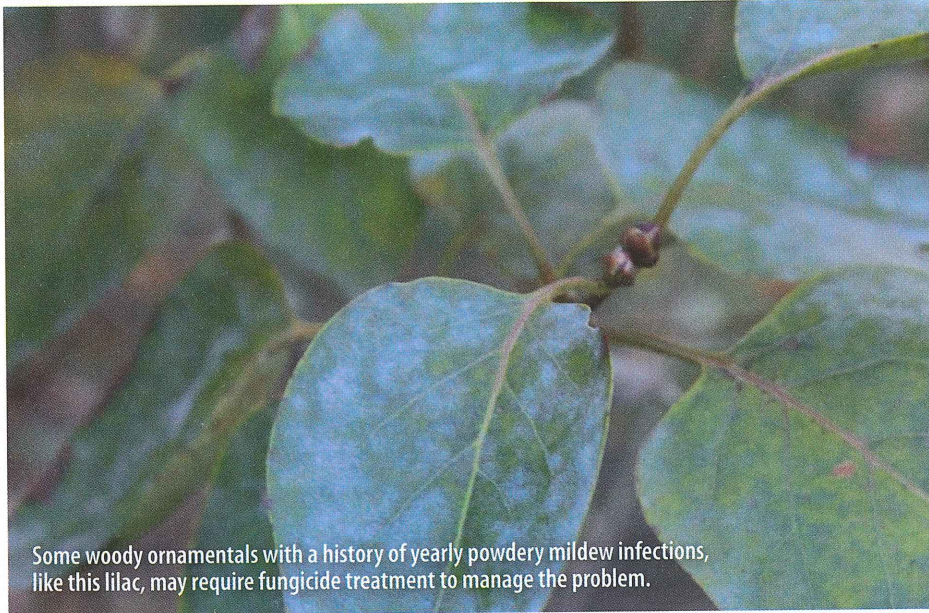
Powdery mildew occurs on a wide variety of turfgrass species, but in the Midwest it occurs primarily on Kentucky bluegrass. It may also occur on various fescues. Severe outbreaks tend to occur on turf growing in shaded areas during spring to fall when moderate temperatures and high relative humidity occur. Turf infestations rarely ever warrant any treatment.

Prevention is the key

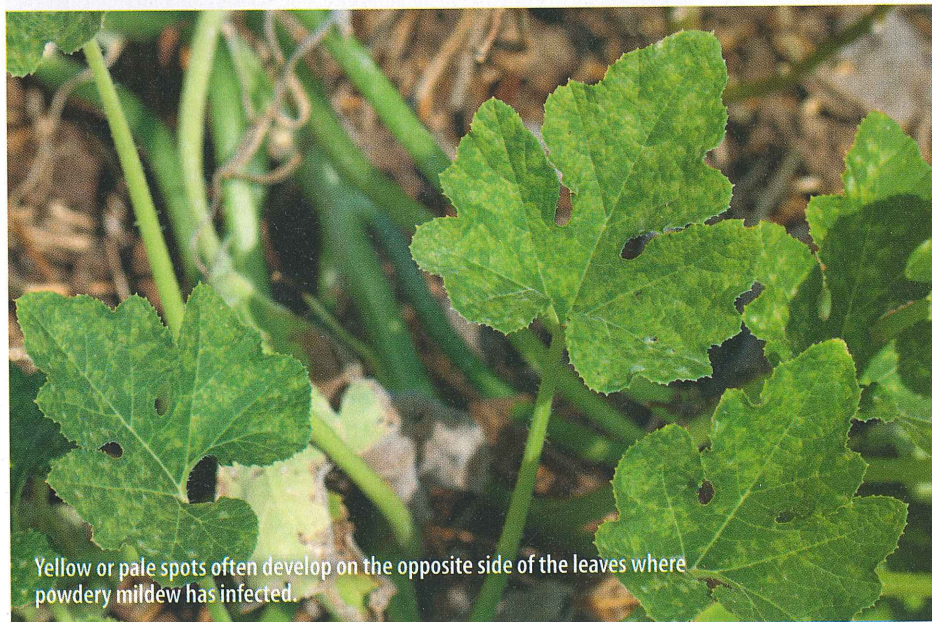
Since dry, shady areas with poor air circulation are ideal sites for powdery mildew, using disease-resistant varieties and growing plants in well-spaced sunny locations, to allow for good air flow, are two ways to potentially avoid powdery mildew problems. You may also need to reduce shade by trimming trees and shrubs that block the light. This is true for fruits and vegetables too. Pruning and training practices, especially on backyard grapes that promote an open canopy with good air circulation and light penetration, can reduce the favorable conditions for powdery mildew development. Also, do not fertilize infected plants until the problem is corrected. Powdery mildew favors young, succulent growth.

For woody ornamental plantings that have a history of persistent powdery mildew problems (such as lilacs and viburnums), fungicide applications may be necessary to manage the disease. Early detection provides the best way to contain and potentially eliminate the problem. There are many homeowner fungicide products effective for treating powdery mildew. Look for products containing active ingredients such as: triforine, propiconazole, triadimefon and myclobutanil. Neem oil and potassium bicarbonate are readily available organic fungicides, but effectiveness is limited under severe disease pressure. Most fungicides need repeat applications every one to two weeks for continuous protection. Always follow the label directions for both application information and waiting period before harvest.

If you are a patient gardener, consider just "riding it out" with a combination of good plant maintenance and a heavy dose of tolerance for less-than-perfect foliage. There is always hope that the weather pattern will change, the humidity will lessen, and the powdery mildew storm will subside. ♡



Some woody ornamentals with a history of yearly powdery mildew infections, like this lilac, may require fungicide treatment to manage the problem.



Yellow or pale spots often develop on the opposite side of the leaves where powdery mildew has infected.



In areas with severe winters, powdery mildew survives in overwintering structures (cleistothecia) that look like peppercorns, here on fallen pin oak leaves.

Haustoria: Garden-Style Robbery

Powdery mildew has specialized structures, called *haustoria* (from Latin *haustus*, a drawing in), that infect primarily surface plant cells, and are used by the fungus to absorb nutrients and water from the host plant. Plant infection begins with the germination of a spore on the leaf surface, which produces a fungal peg that enters the leaf through a pore (stoma). The infection peg penetrates a cell that conducts photosynthesis, and then a haustorium develops in the cell so that the "drawing in" of nutrients by the powdery mildew can begin. This is garden-style robbery!

Douglas A. Spilker, Ph.D., is a consulting ornamental plant pathologist and entomologist, garden writer and lecturer.

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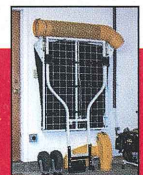
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