



## Powdery Mildew on Cilantro

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### QUICK FACTS

**Causal Agent:**

Kingdom: Fungi

Family: Erysiphaceae

Genus: *Erysiphe*

Species: *Erysiphe heraclei*

**Primary Symptom:**

White, powdery fungal growth on plant surfaces (mildew)

**Time of First Symptom Appearance:**

Late spring through fall

**Plant Parts Affected:**

Primarily leaves

**Favorable Conditions:**

- High humidity at night and low humidity during the day
- Warm temperatures (70–80°F / 21–27°C)

Cilantro (*Coriandrum sativum* L.) is a popular culinary leafy vegetable valued for its flavor and medicinal properties. Powdery mildew is one of the most damaging diseases affecting cilantro and occurs in both protected cultivation (such as greenhouses) and open fields. It is among the most common fungal diseases, causing significant economic losses across many plants. *Erysiphe heraclei*, the powdery mildew affecting members of the *Apiaceae* family, was predominantly observed in accessions of smooth-leafed cultural forms. This pathogen can appear early in the season and reduce product quality and market value.

### Symptoms

The disease appeared at all growth stages; a white fungal pathogen progressively spread from the basal leaves and petioles to the entire plant, with disease incidence and severity often reaching 100%. Early symptoms appear as small, white, powdery spots on leaf surfaces (Figure 1). As the disease progresses, these spots enlarge and

merge to form patches that may cover the entire leaf, petiole, and occasionally the whole plant. Symptoms are generally observed on mature leaves. Heavy fungal growth interferes with photosynthesis, causing leaves to yellow, curl, dry, and eventually die. In severe cases, premature leaf drop may occur. Disease severity is often greater in densely planted crops.



**Figure 1.** Powdery mildew symptoms caused by *Erysiphe heraclei* on cilantro under field production (a) and on leaves (b) (Photo courtesy: Senthilraja Chinnaiah, MTSU).

### Disease Cycle

Powdery mildew fungi are “obligate parasites”, meaning they require a living host to grow and survive. As the growing season progresses, the fungus begins its sexual stage on some plants, producing overwintering structures called chasmothecia. These structures form on leaves and other plant parts and help the pathogen survive unfavorable conditions such as cold temperatures and drought.

Chasmothecia contain spores that remain dormant through winter. In spring, when temperatures rise (above ~70°F) and humidity increases, they release airborne spores that initiate new infections. Once these spores land on a susceptible plant, they germinate and grow across the leaf surface.

The fungus then develops specialized structures called haustoria, which penetrate plant cells and absorb nutrients.

Within about 7 to 10 days, the typical white, powdery growth becomes visible on infected tissue. After this initial infection, the disease spreads rapidly through conidia (asexual spores), which are easily carried by wind, splashing water, or direct plant-to-plant contact. Unlike many other fungi, *Erysiphe heraclei* can develop even under relatively low moisture conditions, allowing it to spread quickly once established.

### Favorable Conditions

Powdery mildew tends to develop in dense plantings when warm daytime temperatures exceeds 55 to 90°F coupled with dry nights, and high relative humidity, conditions often found in protected cultivation systems. Moderate temperatures (70° to 80°F) and shady environments are typically the most conducive to its growth. Spores and fungal development are vulnerable to extreme heat (above 90°F) and direct sunlight. In Tennessee, these ideal conditions occur frequently during spring and early summer in open-field production, whereas greenhouse-grown cilantro may be affected throughout the year.

### Management

Monitoring and Cultural Practices: During field scouting, look for early symptoms such as white powdery patches on leaves. Begin management as soon as symptoms are detected to limit disease spread. Using drip irrigation and appropriate plant spacing can help to reduce disease development. Improved airflow within the canopy lowers humidity, making conditions less favorable for infection.

Fungicide Applications: Fungicides are most effective when applied early, at the first sign of disease or as a preventive measure under favorable conditions.

- Horticultural oils (e.g., neem oil, jojoba oil) can act as protectants and are effective against light to moderate infections.
- Sulfur products (e.g., wettable sulfur formulations such as Safer® Garden Fungicide) have long been used as preventive measure before symptoms become severe.
- Azoxystrobin (e.g., Quadris®) is a systemic fungicide that can provide effective control when used according to label recommendations.

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#### Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

#### Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication. Use of trade, brand, or active ingredient names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar and suitable composition, nor does it guarantee or warrant the standard of the product. The author(s) and Tennessee State University assume no liability resulting from the use of these recommendations.

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