

Using environmental modifications, fungicides, and resistant varieties to fight basil downy mildew

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A basil leaf exposed to nighttime darkness (left) shows plentiful spore formation, and a basil leaf exposed to red light (right; $\lambda_{\text{max}} = 625 \text{ nm}$; $\approx 60 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$) for 10 h displays no spore formation of *Peronospora belbahrii*. These basil leaves were picked from whole plants that were exposed to nighttime darkness or red lighting. Credit: Jaimin S. Patel, Christian A. Wyenandt, and Margaret T. McGrath

The most widely grown of all the herbs, basil, is also highly susceptible to downy mildew, which spreads quickly through spores dispersed by wind and can wipe out an entire field or greenhouse. The disease was first spotted in Uganda in 1932; then it disappeared for nearly 70 years. Later, it was spotted again in Switzerland in 2001. Scientists still don't understand why it reappeared, but they are working hard to learn more about the disease and develop effective management strategies.

"Currently an integrated management approach with multiple practices is recommended to achieve the very high level of [downy mildew](#) control," explain Patel et al, authors of the recently published article on basil downy [mildew](#) management in *Plant Health Progress Focus Issue*.

First, after determining that spice types of basil were less susceptible to downy mildew than the more commonly grown sweet basil, breeders were able to start finding resistance genes to breed into basil, a process that can take many years. There are now several resistant basil varieties that are commercially available, but recent observations are finding that downy mildew is more severe than expected.

Fungicides are also an important part of downy mildew management. Research trials have shown that there are some fungicides that are suitable for downy mildew management. Scientists recommend that growers alternate fungicides and begin applying weekly before symptoms appear to minimize opportunity for the pathogen to develop resistance. Other downy mildew [pathogens](#) have shown they can evolve quickly to develop resistance to [fungicides](#). Scientists suspect that this will also happen with [basil](#) downy mildew pathogen.

Additional and more cutting-edge control methods are also gaining traction, such as keeping leaves dry to prevent pathogen spores from

germinating, turning on red or white lights at night to prevent germination, and dehumidifying the air.

More information: Jaimin S. Patel et al, Effective Downy Mildew Management in Basil Using Resistant Varieties, Environment Modifications, and Fungicides, *Plant Health Progress* (2021). [DOI: 10.1094/PHP-02-21-0041-FI](https://doi.org/10.1094/PHP-02-21-0041-FI)

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