insideGROWER

FEATURES

4/30/2026

New DM-Resistant Basil Cultivars

Dave Clement, Sheena O'Donnell & Suzanne Klick

Downy mildew is an ever-looming threat to field-grown basil crops in Maryland and the Mid-Atlantic region. Basil is grown and sold as live plants, or as cut bunches for culinary use.

Left: Planted at the end of June 2025, you can see the start of blocks of basil plants for outdoor trials in central Maryland.

For culinary markets, the Genovese varieties (including Aroma) have been the most popular due to the high levels of aromatic oils present in the leaves. Other varieties have also been created for ornamental value. However, all basil—and especially the Genovese-type cultivars—are susceptible to basil downy mildew caused by the water mold, *Peronospora belbahrii*, that stunts growth, discolors the leaves and eventually kills the plant.

In Maryland, downy mildew (DM) typically shows up towards the end of the growing season when nights are cool, days are warm and overall temperatures are generally mild. The first symptoms typically appear on the lower leaves and the signs of the pathogen become visible on the lower leaf surfaces. Leaves then start to yellow and eventually form necrotic patches before drying up and falling off. DM thrives and spreads quickly when leaves remain wet for longer periods of time and can move to other plants via air/wind or rain/irrigation. To date we haven't observed overwintering in Maryland. However, in more southern states, overwintering might occur if temperatures remain above freezing.

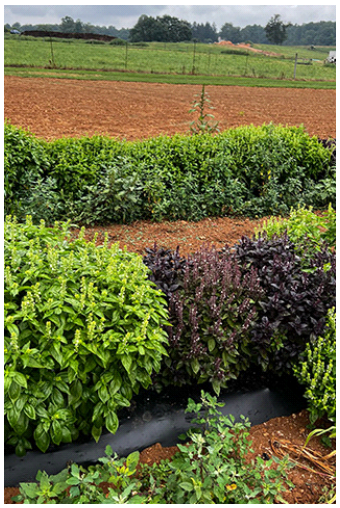
Right: A comparison of Aroma 2 to the Italian basils in early August.

Infection usually occurs within the basil harvest window, and DM can spread quickly, lowering yields for basil growers. Recently, many new resistant cultivars have been developed for growers to minimize loss from DM. Our trial set out to evaluate some of the newer cultivars compared with the older, more susceptible varieties for DM resistance and yield/marketability in Maryland.

Field trials in central Maryland

In past years' trials, we were able to attribute the highest resistance to Prospera. This cultivar still exists on the market, but the DM resistance seems to be breaking down and seed companies continue to put out new cultivars with DM resistance (DMR). Johnny's Seeds has several new varieties with DMR and we set out to compare those against the older, more susceptible varieties in the 2025 growing season. We chose Prospera Red, Dark Opal *, Prospera Thai Thai, Sweet Thai *, Prospera Noga, Prospera Mia, Prospera Compact, Prospera and Aroma 2 *. (Those marked with an asterisk are the more susceptible varieties.)

Left: Aroma 2 was clearly showing downy mildew on October 27.



This was a randomized block design, with nine varieties, three blocks and eight reps within each block. Plants were spaced 6 to 8 in. apart, with 1.5 ft. between each rep within the block. Plants were started from seed in a greenhouse, planted out at about 3-in. tall, and monitored for disease incidence. Disease symptoms appeared after the first late-summer hurricanes, around August 23, 2025. DM spores were carried up from the south during these weather events, so the timing came as no surprise. Two ratings were carried out: the first on August 27 and the second on October 6.

There were varied responses to the spore arrival across varieties, with the susceptible ones (Dark Opal, Sweet Thai and Aroma 2) showing the most severe symptoms.

Right: A look at the established basil plants in early August before they experienced an influx of downy mildew.

Results and observations

Non-parametric statistical analyses were performed within each group of basil varieties (Dark Opal with Prospera Red; Sweet Thai with Thai Thai, Aroma 2 with the Italian varieties). All susceptible varieties showed significantly more severe responses to DM than their newer counterparts, but response varied slightly.

Left: Comparison between Prospera Red vs. Dark Opal basils in early August.

The three susceptible cultivars (Dark Opal, Sweet Thai, Aroma 2) suffered from DM damage almost immediately after the summer storms started. At the first rating, they were the only cultivars with any damage. All other cultivars showed no damage at that time. On our second rating, about 1.5 months later, all cultivars except for Mia, Noga and Thai Thai showed at least some symptoms with the most severely affected plants being completely defoliated. It was hard to see the symptoms on the red varieties because of the color of the leaves, but we were able to find spores when we took a closer look. Dark Opal developed symptoms and became unmarketable significantly earlier than Prospera Red did.

Some of the cultivars had an added ornamental value, particularly the Prospera Red and Thai Thai cultivars. Thai Thai has large, vivid purple inflorescences that contrast with the light green leaves very nicely. Prospera Red has beautiful, dark red leaves, but significant variation across individual plants when started from seed. Some plants were completely solid purple, some speckled with green and some were green with purple spots. This cultivar had ornamental value, but the inconsistency could be an issue for some growers, depending on the desired outcome.

Left: Comparison between Thai Thai and Sweet Thai basils in early August.

Overall, the best-performing cultivars were Noga, Mia and Thai Thai—all part of the Prospera line of basil cultivars. All three of these cultivars remained significantly DM-free throughout the trial and the other six cultivars were completely damaged by mid-September. Aroma 2, Dark Opal and Sweet Thai were most susceptible, showing symptoms very quickly after the hurricane winds. Prospera, Prospera Red and Prospera Compact were able to fend the DM off for the first rating, but were eventually affected by the disease. **IG**

Dave Clement is the Plant Pathology specialist for the IPM & Commercial Horticulture Team (CHT) at University of Maryland Extension (UME). Sheena O'Donnell is a recent M.P.S. grad from UMD and technician at UME. Suzanne Klick is the editor of UME's IPM Alert Newsletter & Technician for the IPM & CHT team at UME. *The authors would like to thank Alan Leslie (Center Director, Central Maryland Research & Education Center, UME) for the statistical analysis of this data and Steve Hershfeld (Owner, Hillcrest Nursery) for supplying the plants for this trial.*