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Update and Review: Powdery Mildew on Calibrachoa

We've seen quite a few cases of calibrachoa with powdery mildew this season. An e-Gro Alert was written on this topic in 2015 (http://www.e-gro.org/pdf/2015_436.pdf), but, since we've been seeing a number of samples this year, let's review.

Carefully inspect incoming liners and plants on your bench in order to catch this disease early. Early symptoms and signs of powdery mildew on calibrachoa are typically subtle, the obvious powdery and dusty fungal growth on the leaves may not be visible at first. Keep an eye out for leaves that are chlorotic, yellow, or with purple-gray spotting; be sure to look at the lower and interior leaves. If you notice discolored leaves, inspect carefully for signs of subtle white or light-



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Early symptoms of powdery mildew on calibrachoa include chlorotic or yellowed lower leaves (Photo: Margery Daughtrey)





A closer view of early symptoms of powdery mildew on calibrachoa (Photo: Margery Daughtrey)



A closer view of early symptoms of powdery mildew on calibrachoa (Photo: Margery Daughtrey)

colored fungal mycelial threads or spores. Using high light and magnification can help - I find that holding and rotating leaves in a bright ray of sun helps me to better see what is on the surface of the leaf. Identifying powdery mildew in its very early stages sometimes requires the help of a microscope, and assistance from a diagnostic lab might be necessary. Yellow mottling might also be an indication of a virus infection (e.g. Tobacco mosaic virus and/or Calibrachoa mottle virus), so keep this possibility in mind as well.

As powdery mildew progresses it can also cause lower leaves to turn brown and dry and sometimes there is also leaf drop. Be aware that that dead and/or shriveled lower leaves, or a sparse-looking plant from dropped leaves, can be symptoms of powdery mildew. In later stages you will also see the typical white, powder-like fungal growth that is indicative of the disease. On some cultivars, powdery mildew affects blooms, causing faded color with fungal growth on petals.

While high humidity can favor powdery mildew development, powdery mildew is inhibited by wet leaf surfaces. This means that cuttings under mist may be less prone to new infections, but also that cuttings under mist may not show white powdery fungal growth when infected. It is important to scout plants through all growing stages.

There are a few species of powdery mildew-causing fungi reported to infect calibrachoa worldwide, but currently only *Podosphaera xanthii* has been reported in the United States on calibrachoa. Thus far, *P. xanthii* is also known to infect verbena and cucurbit crops such as cucumber and squash. If you see powdery mildew on your calibrachoa, keep an eye on these plants as well and vice versa.

There is a wide range in susceptibility of cultivars of calibrachoa; many cultivars are resistant to powdery mildew. Keep this in mind when you are scouting and make sure to scout all plants. While some cultivars in a particular series may be resistant, other

cultivars in that series may not be. Additionally, if you are having particular trouble with powdery mildew on certain cultivars, keep notes, and consider finding a substitute next season.

Recent studies with *P. xanthii* on verbena illustrate the variation in susceptibility that we would expect among cultivars of calibrachoa as well. It is likely that you will see infection on some rather than on all of the cultivars of calibrachoa that you grow. A 2018 trial at Cornell's Long Island Horticultural Research and Extension Center conducted by Margery Daughtrey, compared 29 cultivars of verbena from multiple series for their susceptibility to *P. xanthii*. In this trial, no powdery mildew was seen on Firehouse Lavender; Lanai Deep Purple; or Superbenas Violet Ice, Stormburst, Large Lilac Blue, Pink Shades, Royale Peachy Keen, Raspberry, Coral Red, Royale Plum Wine, Royale Iced Cherry, Royale Cherryburst, Red or Whiteout. Traces of powdery mildew appeared on Endurascape Blue Improved and Purple; Superbena Dark Blue, Royale Romance, Royale Chambray, and Scarlet Star; and Lascar White '15. A relatively conspicuous amount of powdery mildew was seen on Firehouse Velvet; Empress Imperial Blue, Violet Blue, Sun Violet, and Sun White Blush; Superbena Purple; Lascar Dark Violet '15; and Lanai Blue Denim. (For specific details on the methodology of the trial, you can contact me, nora.catlin@cornell.edu).

Identifying the disease early will aid in successful management. When the disease is present, a regular schedule



Above: Early symptoms and signs of powdery mildew on calibrachoa.

Below: Powdery mildew on flower petals





Powdery mildew on calibrachoa

Powdery mildew on calibrachoa
(Photo: Margery Daughtrey)

of fungicides is needed. Best management will be realized when there is an effective systemic fungicide used regularly in the rotation, alternating among fungicides with different modes of action (or FRAC groups) which can include fungicides and/or biopesticides. Species of fungi causing powdery mildew are known to have developed resistance in numerous cases, including *P. xanthii* in cucurbit crops. Therefore, it is especially important to pay attention to resistance management - rotate between fungicides with different modes of action and make sure to follow label directions regarding appropriate rates and application timings.

Keeping humidity low and providing good air movement through proper plant spacing and air circulation will also help in the management of the disease.

e-GRO Alert

www.e-gro.org

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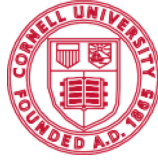
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