



by Nora Catlin  
nora.catlin@cornell.edu

## Coleus Downy Mildew Update

*Coleus downy mildew can cause leaf spots, necrotic lesions, leaf twisting, leaf drop, and/or stunt. Management options include using less susceptible cultivars, good air movement, low humidity, and fungicides.*

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Each spring we see coleus crops suffering from downy mildew. Symptoms generally include leaf spots, which can range in size from small spots to larger patches. On the undersides of the leaves, opposite the leaf spots, you can see the fine gray-brown downy mildew sporulation; sometimes the sporulation may be very difficult to see. In some cases symptoms of leaf twisting, stunt, or leaf drop are observed. You can always get help with identification from your local extension specialist or plant diagnostic lab.

Both seed and vegetative types are susceptible to this downy mildew; agastache and perilla are also. However, the good news is that there is that symptom severity varies a good deal between different coleus cultivars, and there are a lot of coleus cultivars to choose from. Some cultivars will show symptoms of scattered leaf spots, with little overall effect on plant quality in the garden, while other cultivars will shed their leaves and/or have more dramatic necrotic lesions and have very poor garden performance.



Leaf spot symptoms of downy mildew.

## e-GRO Alert

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### CONTRIBUTORS

**Dr. Nora Catlin**

Floriculture Specialist  
Cornell Cooperative Extension - Suffolk County  
[nora.catlin@cornell.edu](mailto:nora.catlin@cornell.edu)

**Dr. Chris Currey**

Assistant Professor of Floriculture  
Iowa State University  
[ccurrey@iastate.edu](mailto:ccurrey@iastate.edu)

**Thomas Ford**

Commercial Horticulture Educator  
Penn State Extension  
[tgf2@psu.edu](mailto:tgf2@psu.edu)

**Dan Gilrein**

Entomology Specialist  
Cornell Cooperative Extension - Suffolk County  
[dog1@cornell.edu](mailto:dog1@cornell.edu)

**Dr. Joyce Latimer**

Floriculture Extension & Research  
Virginia Tech  
[jlatime@vt.edu](mailto:jlatime@vt.edu)

**Dr. Roberto Lopez**

Floriculture Extension & Research  
Purdue University  
[rglopez@purdue.edu](mailto:rglopez@purdue.edu)

**Dr. Neil Mattson**

Greenhouse Research & Extension  
Cornell University  
[neil.mattson@cornell.edu](mailto:neil.mattson@cornell.edu)

**Dr. Rosa E. Raudales**

Greenhouse Extension Specialist  
University of Connecticut  
[rosa.raudales@uconn.edu](mailto:rosa.raudales@uconn.edu)

**Dr. Beth Scheckelhoff**

Ext. Educator – Greenhouse Systems  
The Ohio State University  
[scheckelhoff.11@osu.edu](mailto:scheckelhoff.11@osu.edu)

**Lee Stivers**

Extension Educator – Horticulture  
Penn State Extension, Washington County  
[ljs32@psu.edu](mailto:ljs32@psu.edu)

**Dr. Paul Thomas**

Floriculture Extension & Research  
University of Georgia  
[pathomas@uga.edu](mailto:pathomas@uga.edu)

**Dr. Brian Whipker**

Floriculture Extension & Research  
NC State University  
[bwhipker@ncsu.edu](mailto:bwhipker@ncsu.edu)

**Heidi Wollaeger**

Floriculture Outreach Specialist  
Michigan State University  
[wollaeger@anr.msu.edu](mailto:wollaeger@anr.msu.edu)

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Angular leaf spots of downy mildew.

Numerous cultivars of both seed and vegetative types were tested for their susceptibility and tolerance to downy mildew from 2006-2013 by Michigan State University and Cornell University. You can find a review of these trials and list of susceptibility ratings for 147 coleus cultivars at: <http://endowment.org/wp-content/uploads/2013/03/136-ColeusDM-Cv-2014.pdf>.

This past summer an additional trial that tested only seed cultivars was completed at Cornell University's Long Island Horticultural Research and Extension Center. While all the tested cultivars showed symptoms of downy mildew, the following cultivars had the best plant quality at the end of the trial:





Sporulation of downy mildew on the underside of the leaf.

- Kong Salmon Pink
- Kong Rose
- Premium Sun Mighty Mosaic
- Kong Mix Empire
- Kong Scarlet
- Kong Red
- Premium Sun Crimson Gold
- Kong Lime Spritz
- Wizard Jade
- Wizard Velvet Red
- Kong Mosaic
- Wizard Sunset
- Rainbow Mix
- Superfine Multi Rainbow
- Wizard Scarlet
- Fairway Yellow
- Superfine Festive Dance
- Fairway Orange
- Premium Sun Dark Chocolate
- Premium Sun Chocolate Splash
- Premium Sun Lime Delight
- Superfine Red Velvet
- Premium Sun Chocolate Covered Cherry
- Wizard Pastel

(This spring a complete report will be posted at: <https://cuaes.cals.cornell.edu/farms/lihrec>.)

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Keep in mind that all disease incidence and severity will be affected by environmental conditions. On Long Island, this past summer was an extremely dry one, with limited rainfall. While the trial plants discussed above were kept on overhead irrigation, it is possible that some of the above-listed cultivars may exhibit more severe symptoms in wet years. Also know that not all coleus cultivars have been tested, so keep notes on particularly susceptible cultivars you encounter in production as well as cultivars that your customers have had trouble with. If you know of a problematic cultivar, try an alternative.

Don't expect the cultivars rated as low susceptibility to be entirely free from disease, but know that using a less susceptible cultivar is one tool in an effective management strategy. What shouldn't be forgotten is that cultivars less susceptible to downy mildew will perform better in the landscape if/when disease is present, meaning happy customers.

Downy mildew can be particularly destructive in greenhouse coleus crops where high humidity conditions can be ideal for disease development and spread. You should aim to provide conditions of good air movement (use good plant spacing and fans), keep the humidity low (<85%), carefully watch your coleus crops, and treat with fungicides in the greenhouse when needed.

Some products labeled for downy mildew management on ornamentals include: flupicolide (Adorn), cyazofamid (Segway), dimethomorph (Stature), ametoctradin+dimethomorph (Orvego), mefenoxam (e.g., SubdueMAXX), phosphites (e.g., Aliette, Alude, Flanker, Fosphite, KPhite, Rampart, Vital), oxathiapiprolin (Segovis), azoxystrobin+benzovindiflupyr Solatenol (Mural), other strobilurin-containing materials



Leaf spots and necrotic patches caused by downy mildew.

(e.g., Heritage, Insignia, Compass, FenStop, Pageant), mandipropamid (Micora), mancozeb materials (e.g., Protect, Dithane), polyoxin D zinc salt (e.g., Affirm), and various copper materials.

As always, make sure to follow all label recommendations and restrictions, and be sure to rotate among active ingredients with different modes of action as described on the label. State or local restrictions may apply; some of these materials are not registered for use on coleus for downy mildew in all states.

You can find additional photos and information in a previous e-GRO Alert: [http://www.e-gro.org/pdf/EGRO\\_2\\_15.pdf](http://www.e-gro.org/pdf/EGRO_2_15.pdf).