

Downy Mildew on Coleus A New Problem

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Last year, a downy mildew on coleus was detected for the first time in the U.S. This spring, downy mildew has occurred again in the U.S. and was recently verified in Michigan.

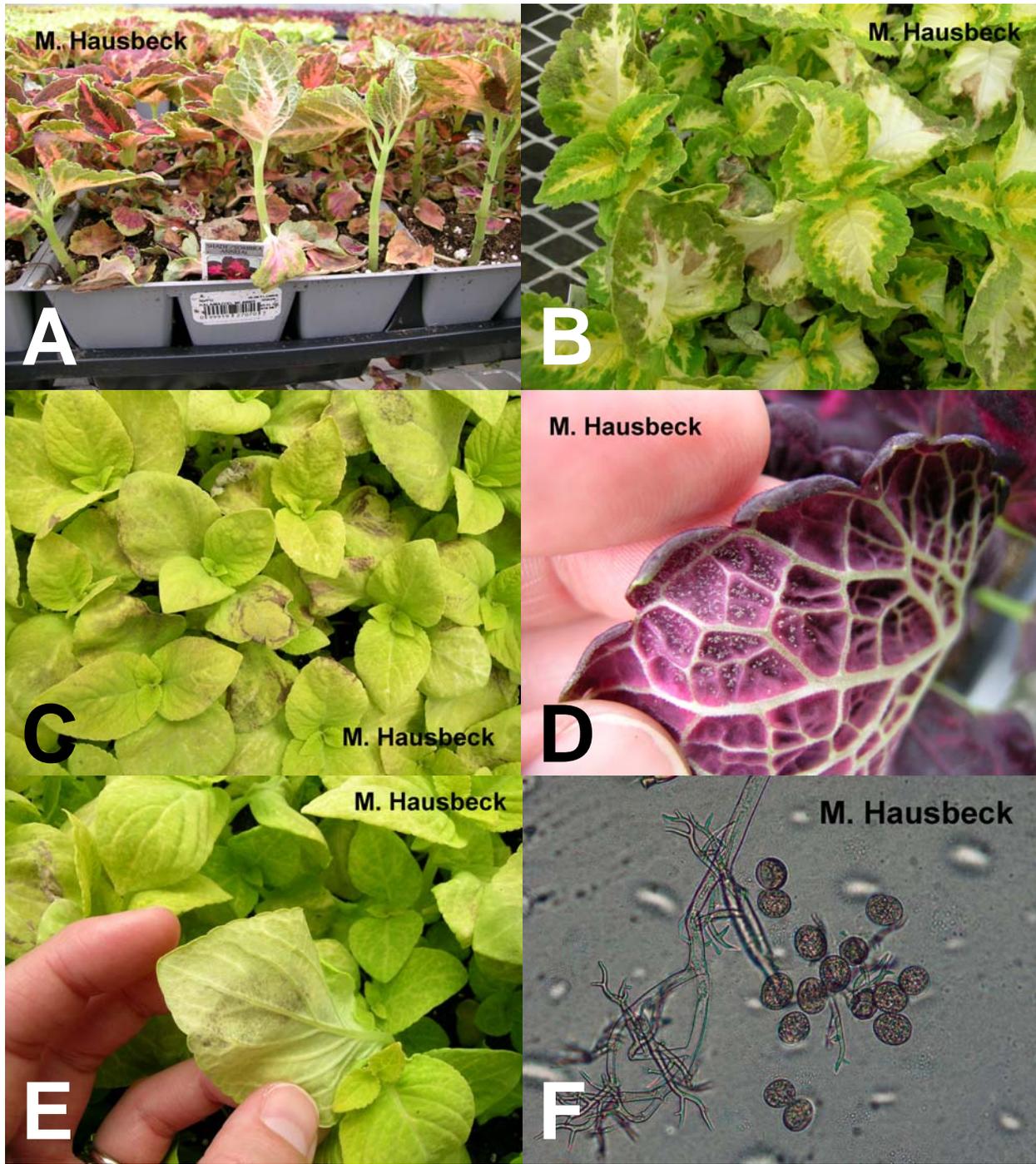


Figure 1. Downy mildew symptoms on plants (A-C), underside of leaves (D-E), and spores (F).

Coleus, snapdragons, roses, and impatiens each have a unique downy mildew pathogen. While the disease may look similar on the different crops, the downy mildew organisms are quite different. The downy mildew on snapdragons cannot blight roses, nor can the downy mildew on impatiens spread to any plant outside of the *Impatiens* group. The downy mildew that infects coleus can also infect basil. It is currently not known how many different plants can be infected by the downy mildew affecting coleus. Plants that are closely related to coleus may be at risk.

Downy mildew distorts plants and blights the foliage. Severely infected plants drop their leaves. A very characteristic symptom of the disease is purplish, gray, or white fuzz that develops on the underside of the leaves. Perhaps other than an especially severe case of Botrytis, no other disease on produces gray or purplish fuzz on the underside of the leaf.

Scout for the disease. Downy mildew can be explosive, so early detection is especially important. This disease can reproduce heavily and make plenty of seeds (spores) to be dispersed to nearby healthy plants. These spores can serve as “hitchhikers” on coleus plant material coming into the greenhouse. Be especially vigilant when scouting vegetatively-propagated coleus.

Keep the production area clean. Downy mildew has a unique thick-walled survival structure that allows it to persist in soil, growing media, or diseased plants for years. If downy mildew is found, dispose of all diseased plants immediately. Place the entire plant, including the growing media and pot, in a bag and promptly seal it. Do not carry diseased plants through the greenhouse for disposal because spores on the infected plants will be released and may infect nearby healthy plants of the same plant type. Disposing of diseased plants removes a source of spores that would otherwise allow the downy mildew to spread.

Monitor and control the environment. Downy mildew can be explosive when the weather is wet and humid. The downy mildew pathogen requires free moisture from condensation or watering on the plant surface to germinate. Limit disease by venting, reducing the time that leaves are wet (fewer than 6 hours) and keeping relative humidity to a minimum (less than 85%).

Apply effective fungicides preventively. Fungicides should be applied preventively before disease develops. Protectant fungicides act as a barrier to the downy mildew pathogen. Protectant fungicides include mancozeb (example: Protect T/O) or copper-based products (examples: Kocide, Champion, Nu-Cop). Mancozeb is the preferred protectant fungicide. These products are not absorbed by the plant, so the spray program must begin before downy mildew becomes established. While copper hydroxide could also be helpful, it has not been tested as widely and repeated use with short intervals could increase the risk of phytotoxicity. Systemic fungicides can be especially helpful in managing downy mildew because these products are absorbed by the plant and can help fight newly-established infections. Systemic fungicides include mefenoxam (example: Subdue Maxx, applied to the soil) and dimethomorph (example: Stature DM 50WP). Aliette 80WDG is applied as a foliar spray and is a unique fungicide because it helps prompt the plant to defend itself. In research trials on snapdragon, mefenoxam (example: Subdue Maxx) applied to the soil performed well against downy mildew. Stature WP, a relatively new product, was also effective.

Keeping the fungicides working: A sample program. Downy mildew has the bad habit of changing and becoming resistant to the systemic fungicides. Subdue MAXX is especially at risk and should only be used once in a production program and must only be applied as a drench.

An example of an intensive fungicide program:

Subdue MAXX drench. Weekly foliar sprays could include the following:

Spray 1: Heritage 50WG + Mancozeb

Spray 2: Stature DM 50WP+ Mancozeb

Spray 3: Aliette + Mancozeb

Spray 4: Repeat the program beginning with Spray 1

An example of a protective fungicide program:

Subdue MAXX drench. Weekly foliar sprays could include the following:

Spray 1: Mancozeb

Spray 2: Heritage 50WG + Mancozeb

Spray 3: Mancozeb

Spray 4: Stature DM 50WP + Mancozeb

Spray 5: Mancozeb

Spray 6: Aliette + Mancozeb

Spray 7: Repeat the program beginning with Spray 1