



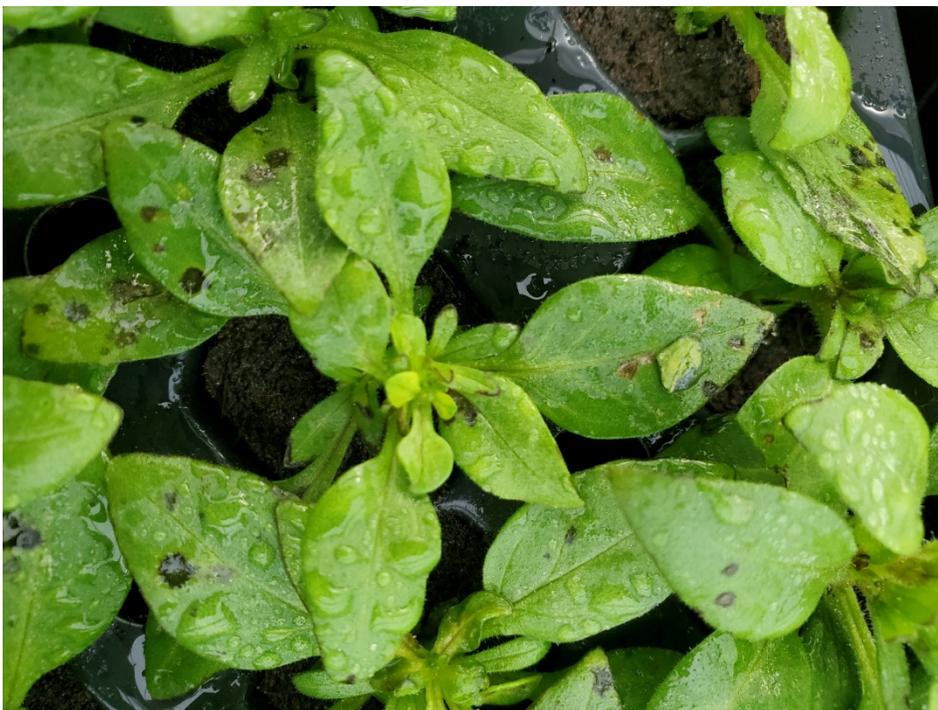
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Wet Weather favors Bacterial leaf spots and Botrytis blight

Wet, humid, overcast conditions favor plant disease development because it causes plant foliage and soil to remain wet for extended periods of time. Recently, two diseases have been very prevalent in southeastern greenhouses: bacterial leaf spots and Botrytis blight.

I recently identified bacterial leaf spots on petunia and Ipomoea. Bacterial leaf spot diseases are usually caused by *Xanthomonas*, *Pseudomonas*, or *Acidovorax* species. To be honest, I have not cultured the bacterium on the petunia or Ipomoea yet, so I am not completely sure which bacterium is causing the spots. I believe, however, that the leaf spots are most likely due to an *Acidovorax* or *Pseudomonas* species.



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Figure 1: Black, greasy-looking round bacterial leaf spots on petunia. Wet leaves and water-splashing can easily spread bacteria. (Image from J. Williams-Woodward)



The leaf spot symptoms on both plants are characteristic of bacterial leaf spot diseases. The leaf spots are brown to black, round to angular when vein-delimited, and greasy or oily-looking (water-soaked) (Figures 1 and 2).

Bacterial pathogens are spread within the greenhouse mostly by splashing water. Overhead irrigation can easily spread the bacterium to adjacent plants on the same bench. Bacteria can also be spread on contaminated hands and tools. Bacterial leaf spot diseases are very difficult to control. Infected plants should be discarded. It is almost impossible to cure a plant of a bacterial disease. Copper-containing fungicide/bactericides can help protect plants from infection, but they will not stop the spread on already infected plants. Bacterial pathogens are often introduced with contaminated seed or seedlings. Inspect all incoming plants for symptoms of infection. It is often a good idea to segregate incoming plants from different suppliers and monitor them for symptoms prior to transplanting. Handling of infected plants can contaminate worker's hands and tools, which can spread the bacterium as well. Always handle healthy plants first, and then suspect or infected plants to reduce spreading diseases through worker activity. Disinfecting hands and tools with 70% ethanol or isopropyl alcohol can reduce disease spread. It is a good idea to provide alcohol gel dispensers (Figure 3) throughout the greenhouse, especially when growing crops that are very susceptible to bacterial diseases.

Bacterial leaf spot disease control summary:

- Inspect incoming plants for symptoms of infection. If planting from seed, use only certified disease-free seed.



Figure 2: Brown to black, greasy-looking, angular (vein-delimited) bacterial leaf spots on Ipomoea. (Image from J. Williams-Woodward)



Figure 3: Hand-sanitizing alcohol gel can be used by workers to disinfest their hands after touching or working among bacterial leaf spot infected plants. (Image by J. Williams-Woodward)

- Discard infected plants.
- Keep plant foliage as dry as possible. If possible, avoid overhead irrigation to reduce water-splashing.
- Disinfest hands and tools after handling infected plants.
- Work from areas with healthy plants toward infected plants to reduce pathogen spread.
- Remove fallen plant debris to reduce bacterium survival.
- Copper-containing fungicides/bactericides (copper hydroxide, copper octanoate, copper sulfate pentahydrate, copper hydroxide + mancozeb) can reduce disease when used preventatively. Cease (*Bacillus subtilis* QST 713 strain) can also help reduce bacterial leaf spot disease.

Botrytis Blight:

The other disease I am seeing in greenhouses, nurseries, and landscapes is Botrytis blight. I found *Botrytis* most recently at a local garden center colonizing, and killing, snapdragons in cell-packs (Figure 4). The fungal spores of *Botrytis* could be easily seen on the flowers and lower stems of infected plants (Figures 5 and 6). *Botrytis* infection was also evident on the flower petals of surrounding plants, including Impatiens. Flower infection can be seen as circular light-colored, almost translucent, spots on pigmented flowers (Figures 5 and 6). For more information on Botrytis disease development and management, see the e-GRO Alert, "Watch out for *Botrytis*!"

(http://www.e-gro.org/pdf/2019_810.pdf).



Figure 4: Profuse, grayish sporulation of *Botrytis* infecting and colonizing snapdragon flowers. (Image by J. Williams-Woodward)



Figure 5: Round, light-colored, translucent spots on Impatiens flowers due to *Botrytis* infection. (Image by J. Williams-Woodward)



Figure 6: White flecking and blighting of Knock-Out rose flowers due to *Botrytis* infection. Wet flowers favor infection. (Image by J. Williams-Woodward)

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