

# Plant Diseases Spread by Tropical Storms

By **Anthony P. Keinath**, Vegetable Pathologist, Clemson University, Charleston, South Carolina

---

Vegetable growers in South Carolina were hit a double blow last week by Tropical Storm Bonnie on Thursday and Hurricane Charley on Saturday. Many areas of the state had four or more inches of rain in four days. Excess rain, heavy winds, and saturated soils increase many vegetable diseases, diseases that already often cause problems in the fall without tropical storms.

**Bacterial diseases** are known to be worse after storms. Wind-driven rain spreads bacteria. Blowing sand and debris injure leaves, stems, and fruits, creating wounds through which bacteria enter. Black rot on cabbage, collard, kale, broccoli, and cauliflower and peppery leaf spot on collard and greens are examples of this type of disease. In Charleston County, we have already seen an increase in bacterial spot on tomato because of Hurricane Charley.



Black rot on broccoli. The bacteria usually enter at the leaf margins.



Peppery leaf spot on turnip. Symptoms range from small black peppery spots with yellow rings to brown dead blotches on leaves.

The only control for bacterial diseases is copper sprays, but they are not very effective once

disease has begun. Copper hydroxide may even make peppery leaf spot worse. Tomatoes that were treated preventively with Actigard should be protected to a certain degree from bacterial spot and speck.

**Downy mildew** of cucurbits is spread long distance by weather currents. The spores of the fungus can survive at least 48 hours in the air during cloudy weather. Based on forecasting model predictions, spores from infected plants in Florida can travel into South Carolina in 24 hours and spores from South Carolina can travel as far north as Massachusetts in 48 hours.



Early symptoms of downy mildew on pumpkin.

There are several fungicides with curative activity against downy mildew: Ridomil Gold Bravo is labeled on all cucurbits and Ridomil Gold MZ is labeled on melons, watermelon, summer squash, and cucumbers. Cucurbit crops with symptoms of downy mildew should be sprayed with one of these fungicides. On crops without symptoms, growers could also use Cabrio or Pristine, which have some systemic activity.

**Phytophthora blight** often begins in low spots in a field where soils become saturated for a few hours. Wet soil triggers the resting “oospores” to germinate and produce “sporangia” that produce swimming “zoospores” that infect crowns of susceptible plants. Summer squash

and pepper plants are very susceptible, as well as fruit of other cucuribts, tomato, and eggplant.



Phytophthora blight on summer squash.

Applying fungicides after Phytophthora blight hits is useless. As growers select and prepare fields for fall-planted summer squash, pepper, and pumpkin, they should anticipate problems with this disease. On farms with a history of Phytophthora blight, preventative applications of Acrobat, Gavel, or Tanos are recommended.

**Several more tropical storms** or hurricanes are predicted this fall. Before the rain bands from a tropical storm hit, growers should apply preventative sprays for all foliar diseases, including fungal diseases not discussed here. It is important to protect leaves from infection during the wet periods that follow tropical storms. On the practical side, it may be difficult to drive in wet fields for several days, delaying fungicide sprays.

Fungicides with systemic activity, such as the strobilurins Quadris, Amistar, Quadris Opti, Cabrio, and Pristine, will provide better protection than protectant fungicides alone. If chlorothalonil or mancozeb are used, rain-fast formulations, such as Bravo Weather Stik or Dithane Rainshield, should be chosen.

August 2004