

Phytophthora Blight in Tennessee: A Southern Perspective

2020 Empire State Producers Expo
Syracuse, NY
January 15, 2020

Zach Hansen¹ and Tim Siegenthaler²

¹Assistant Professor and Extension Specialty Crops Pathologist

²Graduate Research Assistant

Department of Entomology and Plant Pathology

University of Tennessee

Knoxville, TN

Phytophthora blight, caused by the oomycete (water mold) *Phytophthora capsici*, is a very difficult disease to manage and is one of the most constraining factors affecting pepper and cucurbit production in Tennessee. The disease causes direct losses through fruit rot and crown rot and can devastate entire production fields (Figure 1). Phytophthora blight is difficult to manage for several key reasons. First, the pathogen can survive in soil without a host crop for many years which makes it practically impossible to eradicate once introduced. Second, diseased plants produce millions of pathogen spores which are easily spread through rain splash and surface water which leads to rapid disease spread within fields, especially if untreated surface irrigation water is used. Finally, the production of millions of spores creates many opportunities for the pathogen to develop resistance to fungicides, and fungicide resistance has been widely reported. In Tennessee, many medium- to large-scale commercial vegetable producers struggle to manage Phytophthora blight. Despite the extensive use of nearly every available fungicide, growers still suffer significant losses. Our goal was to collect pathogen samples, called isolates, from around the state and test them against some of the most commonly used fungicides to determine the occurrence and distribution of fungicide resistance in the Tennessee. We tested the following fungicides on 87 isolates collected across Tennessee in 2018:

- Ridomil (AI: mefenoxam, FRAC group 4)
- Forum (AI: dimethomorph, FRAC group 40)
- Revus (AI: mandipropamid, FRAC group 40)
- Presidio (AI: fluopicolide, FRAC group 43)
- Ranman (AI: cyazofamid, FRAC group 21)
- Orondis (AI: oxathiapiprolin, FRAC group 49)

We found resistance or reduced sensitivity to Ridomil, Presidio, and Ranman, while all isolates remained sensitive to Forum, Revus, and Orondis. An additional 161 isolates were collected in 2019 and are currently being tested for fungicide sensitivity. The same process will be repeated in 2020. Once testing is complete results will be shared through Extension publications and meetings to help inform management decisions. Given the prevalence of fungicide resistance in *P. capsici*, pathogen avoidance and cultural practices remain extremely important for effective disease management. Unfortunately, most pepper varieties and nearly all cucurbit varieties are susceptible to Phytophthora blight. Therefore, fungicides are often necessary to manage this disease. Given the prevalence of fungicide resistance, rotating fungicide modes of action is crucial to maintaining product efficacy into the future.

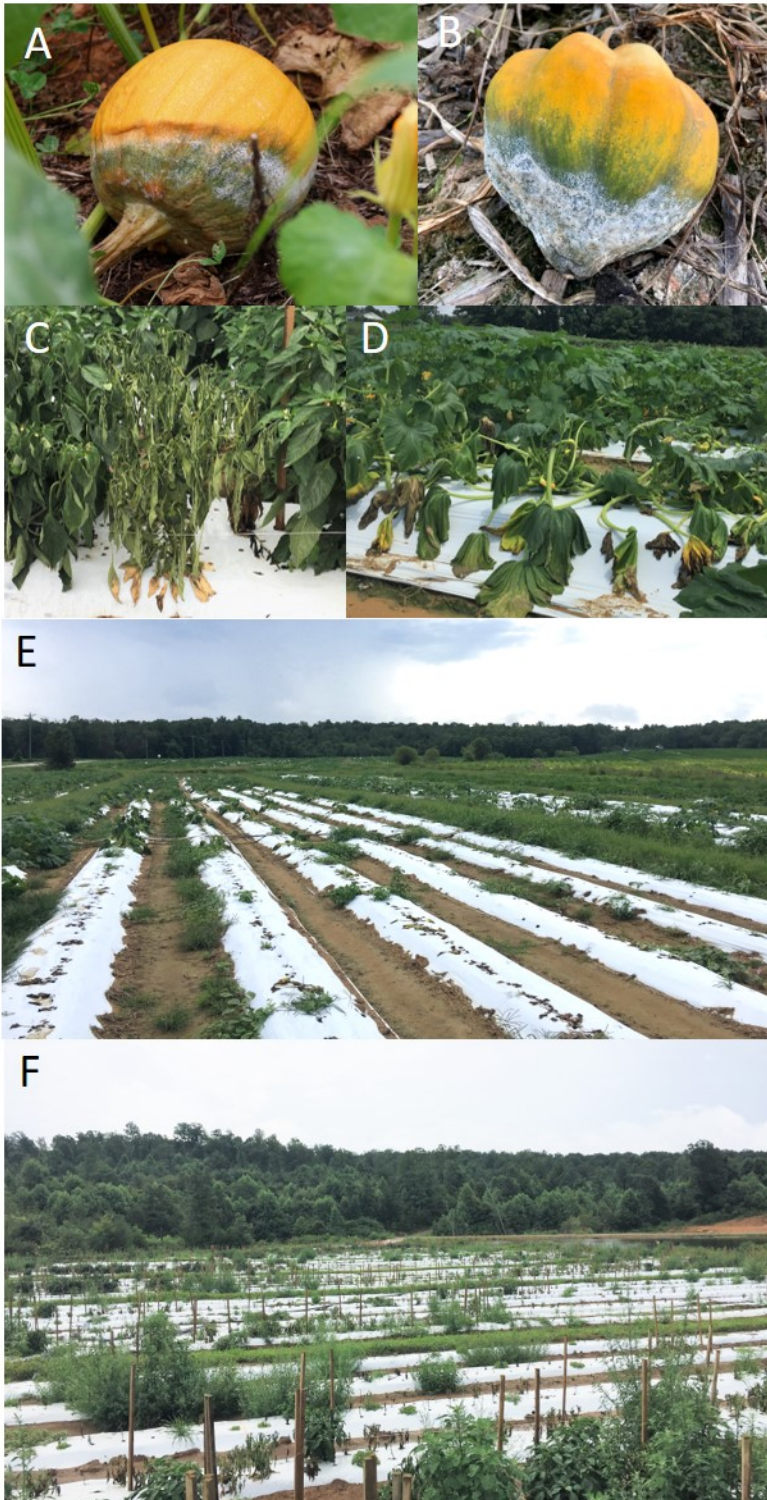


Figure 1. (A, B) Symptoms of *Phytophthora* blight on pumpkin fruit and acorn squash fruit, respectively; (C, D) crown rot of pepper and summer squash caused by *Phytophthora* blight, respectively; (E, F) summer squash and peppers fields devastated by *Phytophthora* blight, respectively.