

Summary of the Spring Institute on Phytophthora Research and Extension (SIPRE) Workshop – February 2025

By Jason Fechner, Program Manager

On February 3rd, 2025 we held our first workshop on a soilborne pathogen known as *Phytophthora capsici*. In this meeting, we discussed the impacts and implications of this pathogen on various crops, and the industries and farmers producing these crops. We had people in attendance from many different backgrounds including farmers, growers, breeders, researchers, industry workers, government agencies, and stakeholders. This was a hybrid workshop with some attending in person and others attending online via Zoom.

Below is a sample set of presentations or posters discussed at this workshop.

1. **Introductory remarks**

Dr. Soum Sanogo

Summary: Dr. Sanogo opened this workshop with introductory remarks explaining what phytophthora blight is, how long it's been studied, and what plants and plant families it affects. Dr. Sanogo also explained the grant funding, provided by the United States Department of Agriculture - National Institute of Food and Agriculture (USDA-NIFA) Specialty Crops Research Initiative to study this pathogen and why it is important that we understand how to manage it. He also discussed the objective of this grant and every state, researcher, grower, and stakeholder involved in making it possible to study this pathogen.

2. **Title of Presentation: *Phytophthora capsici* Research in Illinois in 2024**

Presenter: Dr. Mohammed Babadoost

Summary: Dr. Babadoost is conducting research on phytophthora blight in cucurbits caused by the pathogen *Phytophthora capsici*. This pathogen affects the seedling, vine, leaf and fruit of more than 50 species in 15 plant families. It is economically important due to the up to 100% crop loss that it can cause and can be managed via integrated practices. In pumpkins and other cucurbits, phytophthora blight can cause lesions on the stems, the rotting of fruits both pre- and post-harvest, necrosis of the vine, and eventually wilt and death of the plant. Dr. Babadoost's work focuses on evaluating the efficacy of various commercial fungicides in the lab and field, with 10 fungicides tested and 18 field treatments in 2024. A list of recommended fungicides for Illinois include Orondis Ultra, Revus, Ranman + Silwet L-77, Elumin, Presidio, and ProPhyt. These fungicides were applied at 7 day intervals. Integrated practices to manage phytophthora blight include crop rotations and weed control, seed treatment using Apron XL LS at a rate of 0.64 fl. oz./100 lbs of seed, the avoidance of using contaminated water to irrigate the field, removing infected plants from any low spots in the field, applications of fungicides, and sanitation during

harvest. Phytophthora can spread via human touch, therefore, sanitizing your hands after handling infected fruit can mitigate the spread to non-infected fruit.

3. Title of Presentation: *Irrigation Management in Chile Peppers and Pumpkins and Plant Susceptibility to Phytophthora capsici and Development of Phytophthora Blight*

Presenter: Dr. Koffi Djaman

Summary: The aim of this research is to investigate different irrigation regimes and their effect of the growth and yield of chile peppers in Farmington, New Mexico. These regimes will also be tested against their efficacy to curb Phytophthora blight caused by *Phytophthora capsici*. This experiment used a split-split pot design in which there were main plots and subplots with varying irrigation regimes using a center pivot sprinkler. Plants included in these plots were chile peppers and pumpkin. Soil moisture was measured twice per week and rainfall was accounted for. Results showed that all chile varieties tested performed the best in terms of total yield and marketable yield at 80% evapotranspiration (ET). In pumpkin, the yield as correlated with the irrigation regime depended on the variety of pumpkin, with variety “New England Pie outperforming the other two varieties in all cases. Phytophthora was not reported on pumpkin or chile in the 2024 growing season.

4. Title of Presentation: *Evaluating Watermelon (Citrullus spp.) F₂ Hybrid Populations for Phytophthora capsici Resistance*

Presenter: Dr. Kevin Crosby

Summary: Watermelon is a vegetable of economic importance that is affected by *Phytophthora capsici*. It affects the roots, stem, leaves, and fruit and causes root, crown, stem, and fruit rot, and also causes blight on leaves of the plant. Symptoms include dark colored roots, and stem, leaf, and/or fruit lesions. The objective of this research is to use resistant F₂ plants in backcrossing, calculate the heritability of resistance to Phytophthora blight, and calculate the number of genes likely to be involved in resistance.

5. Title of Presentation: *2025 Spring Field Trial Plans*

Presenter: Dr. Kiersten Fullem

Summary: In Florida, researchers on this project are looking to evaluate the efficacy of different biological controls against Phytophthora blight in watermelon. They are looking at biological controls primarily based on competitive and antagonistic bacteria and fungi including *Bacillus*, *Streptomyces*, *Trichoderma*, and *Gliocladium*. This work involves applying these controls early in the growing season, either as transplant drenches and/or soil applications, to detect whether they provide an early barrier against Phytophthora. The products used in this research include Theia (active ingredient *Bacillus subtilis*) and Double-Nickel (active ingredient *Bacillus amyloliquefaciens*).

6. Title of Presentation: *Developing a Disease Risk Management Index: An Insight from Experts' Perception*

Presenter: Ankita Khatiwada

Summary: This research involves creating a more cohesive and effective Phytophthora blight management plan using results collected from a completed survey, including input from growers, producers, post-harvest handlers, and anyone else within the industry affected by this pathogen. Preliminary data from fifteen researchers show that soil moisture, previous infestation, host resistance, fungicide resistance, and soil health are all critical factors that cause and promote this disease.

There was a total of 53 participants who attended the event in person or online. Participants were from varying institutions and industries including the US Department of Agriculture, Texas A&M, New Mexico State University, RioGro, Ag Bio Fusion, Rutgers University, Curry Farms, Cornell University, University of Florida, Insignia, Syngenta, New Mexico Chile Association, and several growers and processors.

On behalf of the SIPRE organizing group, we would like to thank everyone who attended this event and showed their support for this workshop.

If there are any questions, please contact:

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