United States Department of Agriculture
National Institute of Food and Agriculture

Sustainable Anthracnose Management for Watermelon and Cucumber Growers in the Eastern U.S.

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Webpage- https://site.extension.uga.edu/cucurbitanthracnose

SCRI-SAM Mid-Season Grant Update Meeting-minutes

June 25th Wednesday, 11:00 AM – 1:00 PM (Eastern Time) (2025)

Meeting Participants – SCRI-SAM project group members

The session focused on updates regarding the SCRI-SAM mid-season grant, with **Dr. Bhabesh Dutta** welcoming new team members and initiating discussions on budget utilization across various states.

Pooja Malhotra highlighted the need for contributions to the SCRI-SAM webpage, while the meeting transitioned to state surveys, beginning with Georgia, where **Post-doc Kaur** reported an increase in anthracnose incidence in watermelons and cucumbers.

PD Dutta emphasized the importance of collaboration among states for screening *Colletotrichum* spp. due to the severity of the outbreaks influenced by weather conditions.

Post-doc Kaur indicated plans to reach out for isolates related to a suggestion made during the meeting regarding the inclusion of other *Colletotrichum* species in *C. orbiculare* complex for the specificity assay.

Co-PD Brewer and post-doc Tsai discussed the genome assembly results, discussions were held on multi-locus sequencing efforts and the development of a PCR-based marker for fungicide sensitivity.

Graduate student McVay reported on race typing, noting the completion of experimental replications and the observed susceptibility patterns in cucumber and watermelon cultivars, which necessitate standardization of resistance thresholds.

Post-doc Oakley provided insights into seedling transmission assays related to anthracnose symptoms. He also confirmed the optimization of DNA extraction protocol from watermelon seeds.

Co-PI Sintim and graduate student **Khmelnitsky** shared updates on their respective crop debris management and residue trials, indicating significant findings related to pathogen survival.
Updates on fungicide trials were provided by PD Dutta noted the underperformance of organic treatments compared to Bravo. **Graduate student McVay** reported successful results from conventional trials, while **Co-PI Keinath** shared mixed outcomes from his watermelon trials. Additional updates included progress on cucumber trials, breeding trials at the USDA station (Charleston), and economic analysis by **Guy Hancock**, who emphasized the need for yield data and market prices for fungicides. **PD Dutta** also discussed planning for a stakeholder advisory panel meeting, seeking input on potential locations.

2025 Anthracnose Survey and Primer Specificity Update

Post-doc Kaur presented findings on anthracnose affecting watermelons, cucumbers, and muskmelons in 2025, detailing the collection of 73 isolates from watermelons and 70 from cucumbers. PD Dutta emphasized the impact of recent weather on the severity of outbreaks and invited other states to participate in primer-screening efforts. Post-doc Kaur also shared positive results regarding the specificity of primers developed for detecting *C. orbiculare*.

Discussion on Isolate Screening and Primer Specificity

The proposal to test *C. spinosum* to assess specificity was made, and Post-doc Kaur agreed to seek out the necessary isolates. Co-PI Betts group is currently testing other non-*C. orbiculare* isolates including *C. magnum*.

Genome Assembly and Pathogen Analysis Update

Co-PD Brewer and post-doc Tsai provided an update on genome assembly of *C. orbiculare* isolates, revealing a 90 mb size and effective isolation of assemblies from various hosts. Progress in multi-locus sequencing and the analysis of fungicide sensitivity was also provided, including the detection of a mutation in the cytochrome B gene among cucumber and cantaloupe isolates. The development of a PCR-based marker to differentiate between resistant and susceptible isolates was also discussed.

Race Typing and Survey Updates

Graduate student McVay reported on race typing progress, mentioning that two experimental replications have been completed for five isolates. She discussed the susceptibility of different cultivars, particularly noting the unexpected symptoms on

cucumber H19, which may require further investigation. Additionally, updates were shared regarding the inclusion of industry controls in future experiments.

Seed Pathology and Seedling-Transmission Assays Update

Post-doc Oakley provided an update on the collection of infected watermelon fruits and the ongoing seedling-transmission assays for anthracnose symptoms. He noted that the humidity issues in the growth chamber have been resolved, allowing for more accurate results. Additionally, he mentioned the optimization of seed-DNA extraction methods and the potential contamination of seed lots.

Crop Debris Management Updates

Co-PI Sintim reported on his crop debris management trial, highlighting that this is the first year of data collection. He noted a clean field during the season but observed heavy infestation of anthracnose shortly after harvest. **Graduate student Khmelnitsky** mentioned that her team is starting their residue trial, testing treatments such as burning and urea application, but they currently have no significant updates.

Fungicide Trials Update

PD Dutta reported that his fungicide trials in Georgia showed organic treatments for watermelon and cucumber are not performing well compared to Bravo. **Graduate student McVay** confirmed the completion of conventional trials, with proline showing excellent control. **Co-PI Keinath** discussed his watermelon trials, noting that while some treatments are showing promise, a mistake in applying Proline to the entire experiment may affect the clarity of the results. **Co-PI Quesada** discussed the cucumber fungicide trial, emphasizing the need for inoculation with an aggressive isolate due to low disease pressure. **Co-PI Higgins** and **graduate student Mullin** reported on their respective trials, with adjustments made to planting dates and treatments. **Co-PI McAvoy** and **Co-PI Keinath** provided insights into their irrigation trials, noting variations in disease symptoms and the impact of earlier inoculation on results.

Breeding Trials and Cultivar Updates

Co-PI Kousik reported on the breeding trials in South Carolina, highlighting the seed increase for watermelon and cucumber, with plans to plant in two weeks**. Co-PI Quesada** shared details about a cucumber variety trial in North Carolina, and **graduate student Khmelnitsky** mentioned her upcoming cultivar trial. **Co-PI Meru** completed his cultivar evaluation (cucumber and watermelon) last fall in FL.

Co-PI Hancock addressed the economic analysis requirements, highlighting the need for yield data and market prices for fungicides to estimate returns. **PD Dutta** proposed holding the stakeholder advisory panel meeting in conjunction with the Empire State Expo or another Northeast meeting, seeking input from Co-PI Higgins on potential locations.

Action Items: -

- Pooja Malhotra will request updates from each state lead regarding new project members and research outputs for the website.
- Post-doc Kaur will update the table with the number of isolates and detection percentages for the 2025 collection in follow-up work.
- Graduate student McVay will check the race of the GA isolates that Co-PI McGregor is currently using in her breeding trials.
- Co-PI Sintim will analyze the data collected from the crop debris management trials to substantiate the level of pathogen severity in the soil.
- Co-PI Quesada will conduct a cucumber fungicide trial with the treatments agreed upon by the group and will inoculate this year.
- Co-PI Higgins will monitor the fungicide and cultivar trials that were planted on June 26 to assess yield and disease pressure.
- Graduate student Mullin will send the *C. orbiculare* isolates from Delaware to other states based on need.
- Co-PI McAvoy will analyze the data from the irrigation trials and report on the differences observed in the variety trials.
- Co-PI Kousik will start planting the cucumber PI core collection in two weeks and will coordinate with Co-PIs Mcgregor and Meru for seed distribution.

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