



## Mississippi Corn Promotion Board 2025 Progress Report

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**Project Title: Evaluating the Mississippi State University Corn Hybrid Trial Program for Plant Diseases**

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### Project Summary (Issue/Response)

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Foliar disease remain a constant concern for corn farmers and one of the driving forces behind foliar fungicide choice. Even though foliar fungicides are an effective means of managing foliar diseases caused by fungi, one of the best ways to manage diseases remains choosing hybrids that have documented resistance to yield-limiting diseases of concern. However, data are lacking on the response of commercially available corn hybrids to important diseases that regularly occur in the Mississippi corn production. For the most part, *Curvularia* leaf spot remains a relatively “new” disease for Mississippi corn producers. However, over the past several seasons we have built a reliable disease observations database to describe some of the more susceptible as well as resistant commercial hybrids. Corn farmers rely on these data to make decisions regarding the hybrids to plant. Determining the response of corn hybrids to plant diseases in the Mississippi corn production system is an important first step to providing farmers with valuable information as to the response of corn hybrids to potentially yield-limiting foliar diseases. Even though seed companies provide information on the hybrids sold in our production system, evaluating commercial offerings within our production system is important to determine how the environment impacts the incidence and severity of plant diseases and how those diseases may ultimately impact yield.

### Project Results/Outcomes

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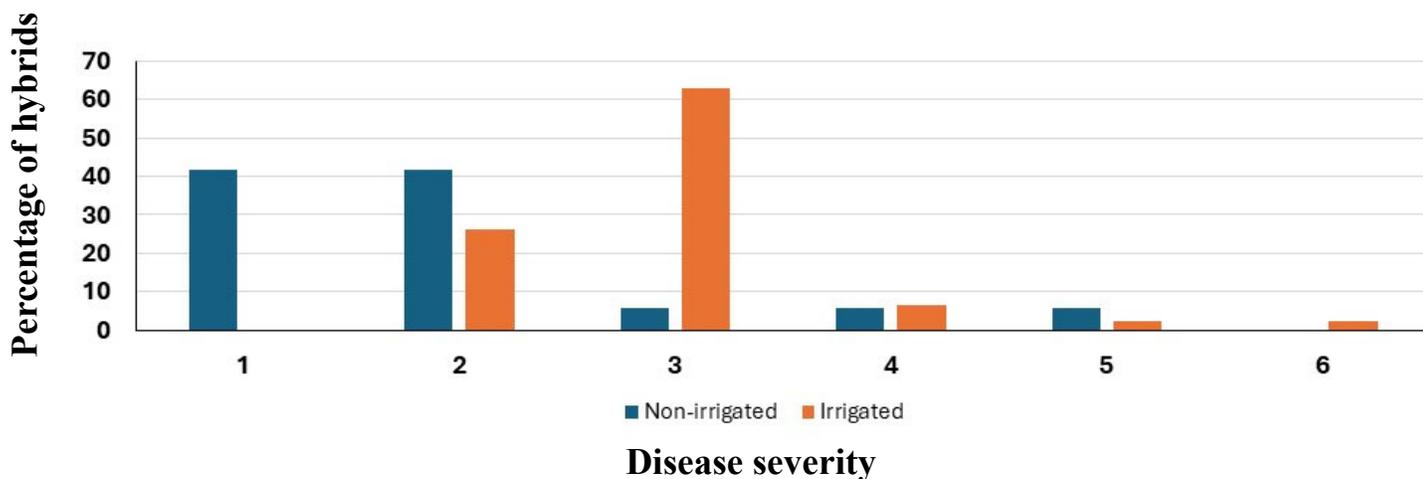
During 2025, ten Mississippi State University official corn hybrid (OHT) trial locations were observed for the presence of foliar diseases. The only location that was not observed was the Stoneville clay location due to a morningglory infestation that made walking plots prior to harvest almost impossible. Each location was evaluated shortly after dent for the presence of economically damaging foliar diseases as well as any additional issues. *Curvularia* leaf spot, southern rust, and an abiotic disorder were some of the more commonly observed diseases. Even though southern rust has continued to be a persistent disease, a limited number of locations were observed since disease severity was not as widespread within Mississippi during 2025. Typically the presence of resistance within commercial germplasm to southern rust has not been observed for more than a decade when the last hybrid was sold with advertised resistance to southern rust. Overall, southern rust was only observed at six of the hybrid trial locations; however, evaluations were only deemed to produce meaningful data from one of those locations. As a result, the most meaningful data came from the observations of *Curvularia* leaf spot since this was the one disease that was consistently observed at all of the hybrid trial locations and there was good statistical separation between each of the hybrids evaluated when observations of *Curvularia* leaf spot were captured.

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## Project Results

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**Figure.** Frequency response of the average of the response of hybrids contained in the 2025 OHT program. Curvularia disease severity was averaged across all irrigated (n=4) and non-irrigated (n=6) locations and presented as an average of the severity of disease for each hybrid within a given severity category.

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## Project Impacts/Benefits

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As similar to years past, even though there were multiple foliar diseases observed (e.g., Curvularia leaf spot (n=10), Phomopsis leaf spot (n=4), and southern corn rust (n=1)), the most commonly occurring foliar disease was again Curvularia leaf spot with observations made at all of the hybrid trial locations. Based on the results of the evaluations conducted during 2023, corn farmers in Mississippi can rely on these data to aid in selecting corn hybrids that are resistant to some of the more important foliar diseases. Continuing to provide these types of valuable disease observations will greatly aid corn farmers in choosing hybrids with the best response to the specific diseases in our production system. In addition, continuing to evaluate commercial offerings in our production system will allow us to determine how great a threat diseases such as Curvularia leaf spot are to yield. At present, the hybrid trial observation data from the past five years continue to be analyzed and will aid in determining the specific impact of this important foliar disease on yield yield loss potential associated with Curvularia leaf spot in the Mississippi corn production system.

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## Project Deliverables

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Following the 2025 evaluations, two blog posts will be developed to disseminate the information to the broader ag-related community as to the response of the hybrids in the MSU OHT program. One blog post covered will cover the entries as evaluated at the irrigated locations (n=4) while the second blog post covered the entries as evaluated at the non-irrigated locations (n=6).

In addition to the blog posts with the aid of the Mississippi Corn Promotion Board efforts have begun to work on a more comprehensive data analysis of the response of hybrids over the past years of funded projects to determine the impact of Curvularia leaf spot on yield and response of individual hybrids within the MS corn production system.

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## Additional Questions

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1. What value does this research give the grower? Describe any financial decision-making tools your project provides.

Results from the observations made on an annual basis should aid corn farmers in choosing hybrids that are locally adapted and have some potential resistance to the more commonly occurring foliar fungal diseases in the MS corn production system.

**3. List other sources of funding you have acquired over the past 2 calendar years.**

Additional sources of funding for specific corn projects include funding as a part of the National Pest Monitoring Tool Initiative (NPMTI; USDA funds) which provides funds to monitor for plant diseases and is ultimately attempting to use disease evaluation data as well as spore trapping to develop disease predictive models that may enhance our strategies to manage foliar diseases in corn. At present that project is on it's sixth year and has considered diseases such as tar spot (which to date has not been detected in MS), and continues to valid previously developed models on diseases such as gray leaf spot (which is not a major concern in MS), and northern corn leaf blight. The next iteration of the project that is set to begin in 2026 will consider mycotoxin-producing organisms within commercial fields and attempt to add to a predictive model that has previously been developed by Pierce Paul at The Ohio State University. Having these types of models, could one day greatly benefit corn farmers and make it much easier to determine whether disease management alternatives are needed, effective in a biological sense, and cost-effective in today's current economic climate. Data and models associated with this project should start to trickle out over time in the future. However, continued funding of the project may be in jeopardy, so using those funds to continue to develop regional models may definitely be at risk in the future.