



## Mississippi Corn Promotion Board 2015 Progress Report

Project Title: In-furrow fungicide applications for disease prevention and yield enhancement

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### Project Summary (Issue/Response)

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Fungicide applications continue to be marketed as providing an automatic yield benefit when applied at any growth stage (e.g., in-furrow, vegetative, reproductive) in the absence of observable plant disease. At vegetative growth stages yield-limiting foliar diseases are generally not observed and the need for a fungicide at early growth stage timings, including as an in-furrow application, is essentially non-existent. This is especially the case when seed-applied fungicides do an excellent job of allowing corn to reach an even stand in a timely fashion and reduce the risk from seedling diseases. However, data originating from unbiased sources to either support or refute the potential impact of in-furrow fungicide applications has generally been limited regarding the effect of the fungicide applications either alone or in combination with additional tank-mix components such as an insecticide and/or starter fertilizer.

In response to the chemical company marketing campaign, limited trials have been conducted in Stoneville over the past three seasons. In most cases the trials have included single fungicides as well as tank mix combinations of fungicide + insecticide + starter fertilizer to attempt to determine if an in-furrow application practice would be beneficial.



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### Project Results/Outcomes

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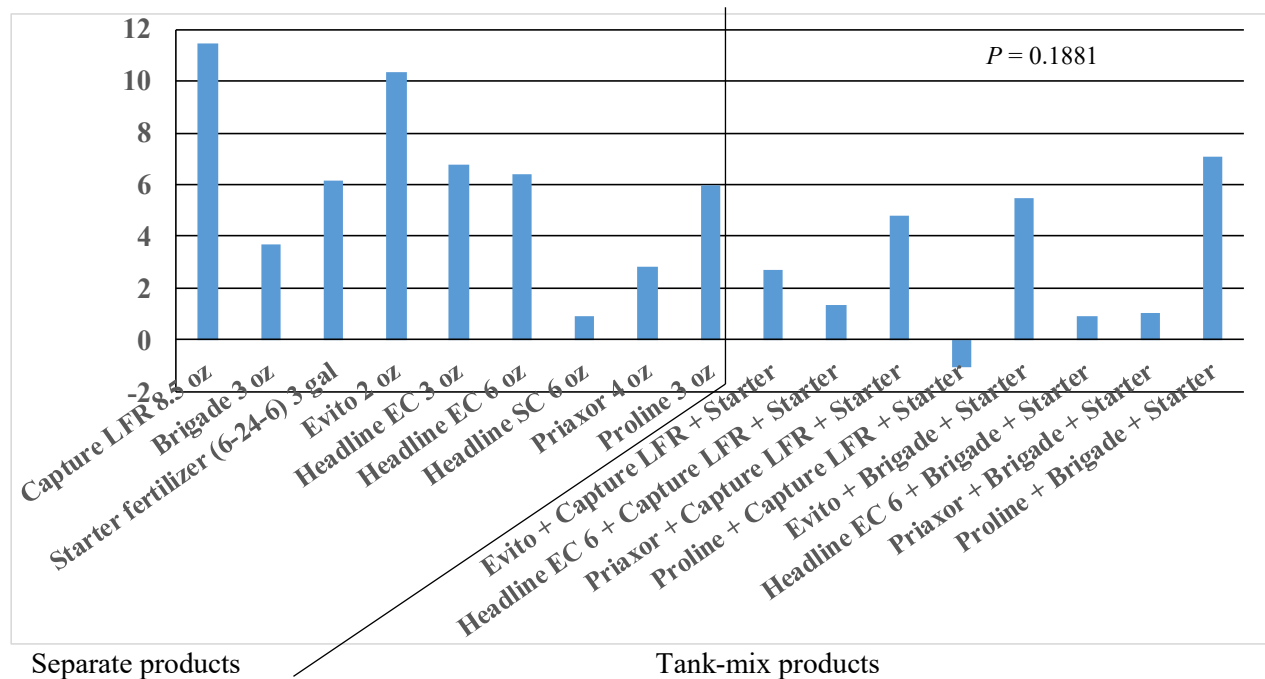
A trial was conducted in Stoneville during 2015 using a normal in-furrow application practice. However, due to a severe crazy top downy mildew infection (a soilborne disease that may have benefited from an in-furrow fungicide application) in Stoneville that followed planting in 2015, the results of the trial are inconclusive. Yields were extremely variable (from less than 20 bu/A to over 190 bu/A across the entire field) and the only salvageable data were the stand counts (presented in Figure 1). In-furrow fungicide applications were made at planting in a 2 gal/A mix size and applied at 5 gal/A and plots were assessed for disease at reproductive growth stages. Plots were harvested at physiological maturity with yield standardized to 15.5% moisture; however, yield data were not presented. Treatment and treatment combinations consisted of four different fungicides and one fungicide with two different rates and formulations (emulsifiable concentrate (EC), and suspension concentrate (SC)). In addition, two different insecticides (Brigade and Capture LFR) were included with a starter fertilizer (3-18-8).

Based on stand count results, some treatments (Evito and Capture LFR) greatly increased the percentage of stand above the non-treated, by 10.3 and 11.4%, respectively. Tank mix combinations of a fungicide + insecticide + starter fertilizer resulted in less stand than fungicides alone, but still resulted in an increase in the percent stand over the non-treated.

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## Project Results

**Figure 1.** Each treatment (as separate products: fungicide, insecticide, starter fertilizer) and the tank mix combinations for the 17 treatments used in 2015. Data are presented as the percent increase (or decrease) in stand (60 foot of row) of each treatment over the nontreated check.



## Project Impacts/Benefits

MS corn farmers rely on unbiased information regarding the role of fungicide applications in the absence of foliar disease. Little if any information exists in the Mid-southern U.S. regarding the utility of in-furrow fungicide applications and whether or not they may benefit the corn production system. Since yield-limiting plant diseases are generally not present in corn fields reproductive stages, determining the fit for in-furrow fungicides in an overall disease management scheme is important. However, since percent stand increases were observed during the 2015 trial, and yield as a result of a soilborne disease was so great, it would be nice to see how the in-furrow fungicide increases root growth and yield when the environment is not so challenging.

Results from these experiments should aid in the specific placement of fungicide applications and determine whether a tank mix of a fungicide, plus starter fertilizer, plus insecticide would be beneficial for corn farmers. In addition, determining the economics behind the applications may be beneficial, since some farmers are considering dropping seed-applied fungicides and moving to an in-furrow application system will be economically beneficial in their particular production system.

## Project Deliverables

To date, several presentations have included data from the above outlined trial. More specifically: Stoneville corn and soybean field day (2015) and several producer meetings held throughout MS during 2015 as well as into 2016. At present, blog articles have not been drafted due to the poor trial as a result of crazy top downy mildew during the 2015 season. However, going into the 2016 season at least one blog article will be drafted about the use of in-furrow and early fungicide application systems as an automatic yield benefit.