2025 University of Missouri

Crop Protection

Managing Insect Pests in Rice

Funded Projects

Project 1: Evaluate the Effectiveness of Existing and New Insecticides for Control of Major Rice Insect Pests.

Project 2: Defoliation Threshold in Conventional and Hybrid Rice

Project 3: Reevaluate rice stink bug management now that there is pyrethroid resistance.

Summary of 2025 Rice Insect Populations

The 2025 rice growing season presented some unique challenges regarding pest pressures. Heavy precipitation during the planting period delayed the planting window for many producers, creating conditions that can favor increased pest activity. Interestingly, growers who planted prior to the major rain events experienced minimal pest issues compared to those who planted later.

Early in the season, rice water weevil populations were generally low. Fields located near tree lines showed more cosmetic injury than yield loss. Research plots also reflected minimal pressure, indicating that management strategies were effective for 2024 conditions.

Rice billbug infestations in furrow-irrigated rice were delayed, likely due to early-season rainfall. Despite low trap catches and initial injury during tillering, rice billbug emerged as the most significant pest in Missouri furrow-irrigated rice, causing yield losses of up to 80% in concentrated areas.

Rice stink bug pressure was light in 2025. A wider planting window across the Bootheel helped disperse populations, reducing the need for multiple insecticide applications.

Occasional outbreaks of uncommon defoliators were reported and treated in certain areas. We will continue monitoring these cases to determine if further research is warranted.

Extensive surveys for rice delphacid were conducted across Southeast Missouri, and I'm pleased to report that none were detected this season. However, populations were found near the state border, so continued vigilance will be essential moving into 2026. Current cold temperatures may help suppress this pest, though data on its cold tolerance remain limited. USA Rice has established a Rice Delphacid Task Force, and as a member, I will remain actively involved in monitoring and management efforts.

As always, I appreciate the opportunity to serve Missouri rice growers. Please don't hesitate to reach out if I can assist you in any way. I look forward to continuing to support your success in the coming season.

Thank you,
Chase Floyd, Ph.D.
Assistant Research Professor & State Extension Specialist-University of Missouri

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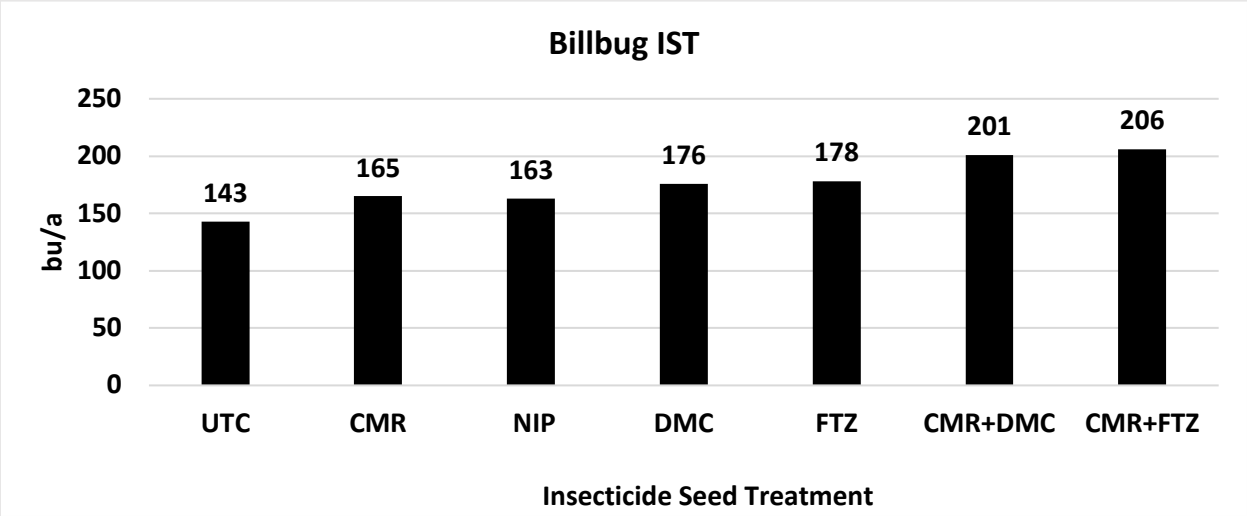
The table below lists the abbreviations and information associated with treatments associated with conducted trials in this packet.

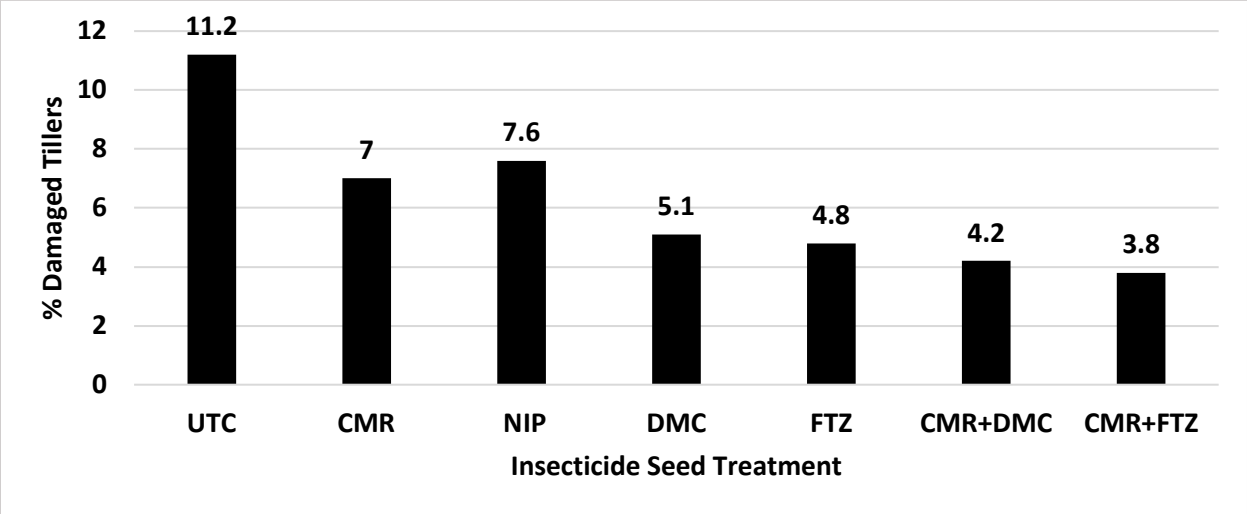
Treatment Name	Active Ingredient	Rate	Insecticide Class	Avg. Price on Hybrid Rice
Fungicide Only				
CruiserMaxx (CMR)	Thiamethoxam	7.0 oz/a	Neonicotinoid	$9.00/a
NipsIT (NIP)	Clothianidin	2.9 oz/a	Neonicotinoid	$7.00/a
Dermacor X-100 (DMC)	Chlorantraniliprole	5.0 oz/a	Diamide	$14.40/a
Fortenza (FTZ)	Cyantraniliprole	3.47 oz/a	Diamide	$9.50/a
CMR + DMC	Thiamethoxam + Chlorantraniliprole	7.0 oz/a + 5.0 oz/a	Neonicotinoid + Diamide	$24.40/a
CMR + FTZ	Thiamethoxam + Chlorantraniliprole	7.0 oz/a + 3.47 oz/a	Neonicotinoid + Diamide	$18.50/a
NIP + DMC	Clothianidin + Chlorantraniliprole	2.9 oz/a + 5.0 oz/a	Neonicotinoid + Diamide	$21.40/a
NIP + FTZ	Clothianidin + Cyantraniliprole	2.9 oz/a + 3.47 oz/a	Neonicotinoid + Diamide	$16.50/a
END	Thiamethoxam + Lambda-cyhalothrin	5 oz/a	Neonicotinoid + Pyrethroid	$8.00/a
VAN	Chlorantraniliprole	1.2 oz/a	Diamide	$17.00/a

Project Title: Evaluate the Effectiveness of Existing and New Insecticides for Control of Major Rice Insect Pests.

Objective: Evaluate the performance of current insecticide seed treatments available to suppress rice billbug in Missouri furrow-irrigated rice production systems.

Results:





Trial Results:

Grain Yield

Despite no statistical differences, trends in the data set were observed. Numerical increases in yield were observed when including any insecticide seed treatment to rice plots. No significant differences were observed between insecticide seed treatments with respect to damage tillers or grain yield. Cruisermaxx+ Fortenza provided the highest numerical yield compared to all treatments. When a combination seed treatment was utilized, the numerical yields were greater compared to single products alone. In 2025, the utilization of insecticide seed treatment regardless of ai resulted in an increase in numerical yield compared to the untreated check.

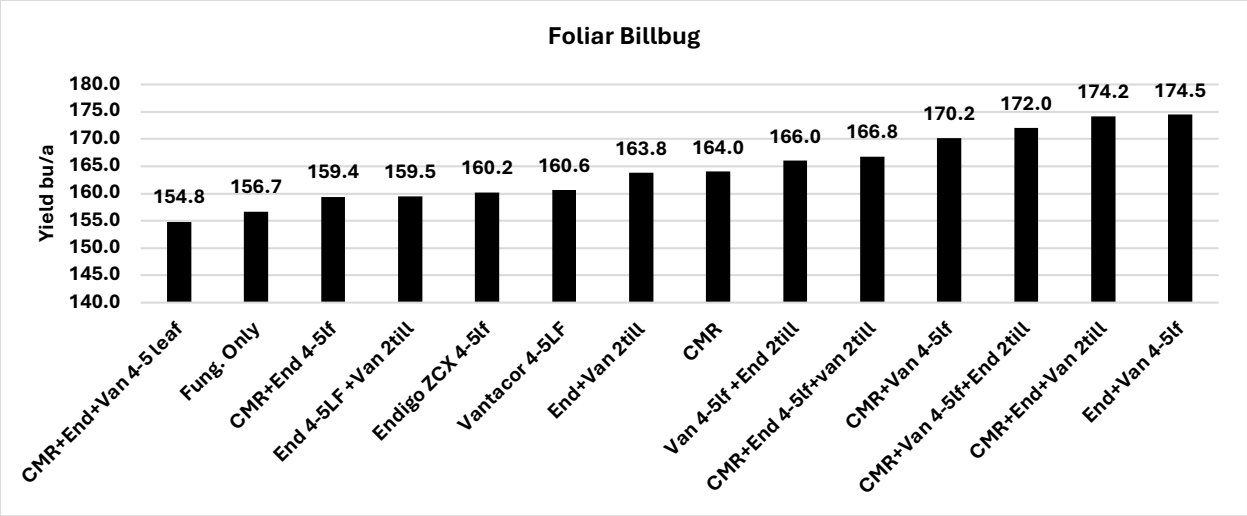
Damaged Tillers

Damage tiller data collected indicated the success of insecticide seed treatments a reverse trend can be seen compared to the rice yield figure. Highest yielding treatments recorded the lowest amount of billbug tiller injury.

Conclusions:

Rice billbug pressure was delayed by heavy rainfall during planting. Initial injury went unnoticed during the early tillering stages. Populations surged during green ring and substantial increases in damaged tillers were observed across SE Missouri. 2025 resulted in less tiller loss and increase in blank heads.

Objective: Evaluate the performance of currently available foliar insecticides for suppression of rice billbug in Missouri furrow-irrigated rice production systems.



***4-5 lf denotes that application was made at the 4-5 leaf growth stage**

***2 till denotes that application was made when the 2nd tiller was present**

Trial Results:

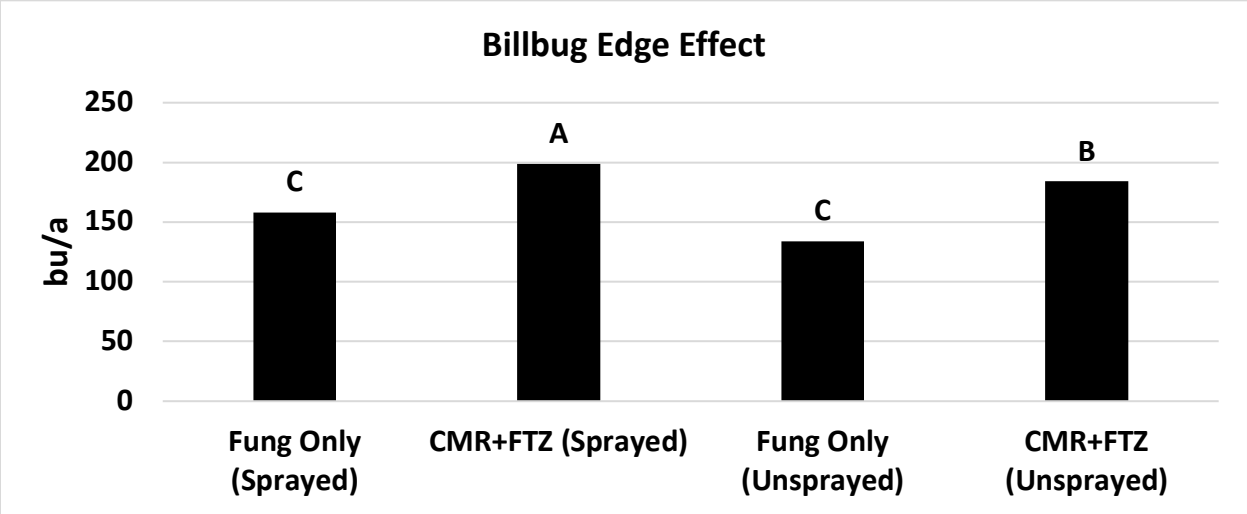
Grain Yield

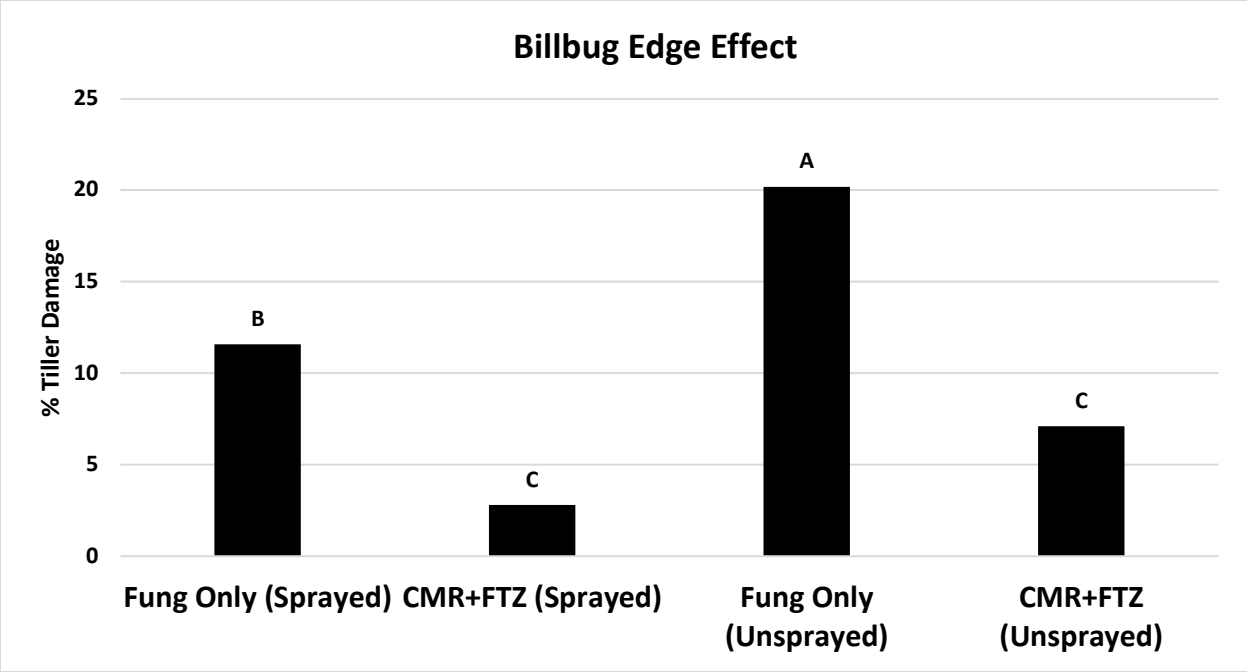
No significant differences were observed between treatments. Two highest numerical rice yields were treatments receiving Vantacor in conjunction with Endigo ZCX at 4-5 leaf stage. This is likely due to the successful timing of the insecticide with rice billbug migration. A mix of contact (Endigo ZCX) and systemic (Vantacor) insecticides were able to suppress rice billbug populations.

Conclusions:

Though data set is not significantly different, data suggest that the tested spray regime may have success in controlling billbug. This trial should be repeated at the successful timings with various insecticide mixtures.

Objective: 4. Determine if field perimeter or edge treatments of foliar insecticide can control rice billbug prior to infestation in production fields.





Trial Results:

Grain Yield

Differences were observed with respect to grain yield in this study. Rice treated with an insecticide seed treatment followed by a foliar application resulted in greatest yields. All rice receiving insecticide regardless of application method resulted in greater yields compared to plots receiving no insecticide. Unsprayed plots containing insecticide seed treatments showed a significant decrease between plots receiving IST and a foliar spray as well as fungicide only plots receiving a foliar insecticide.

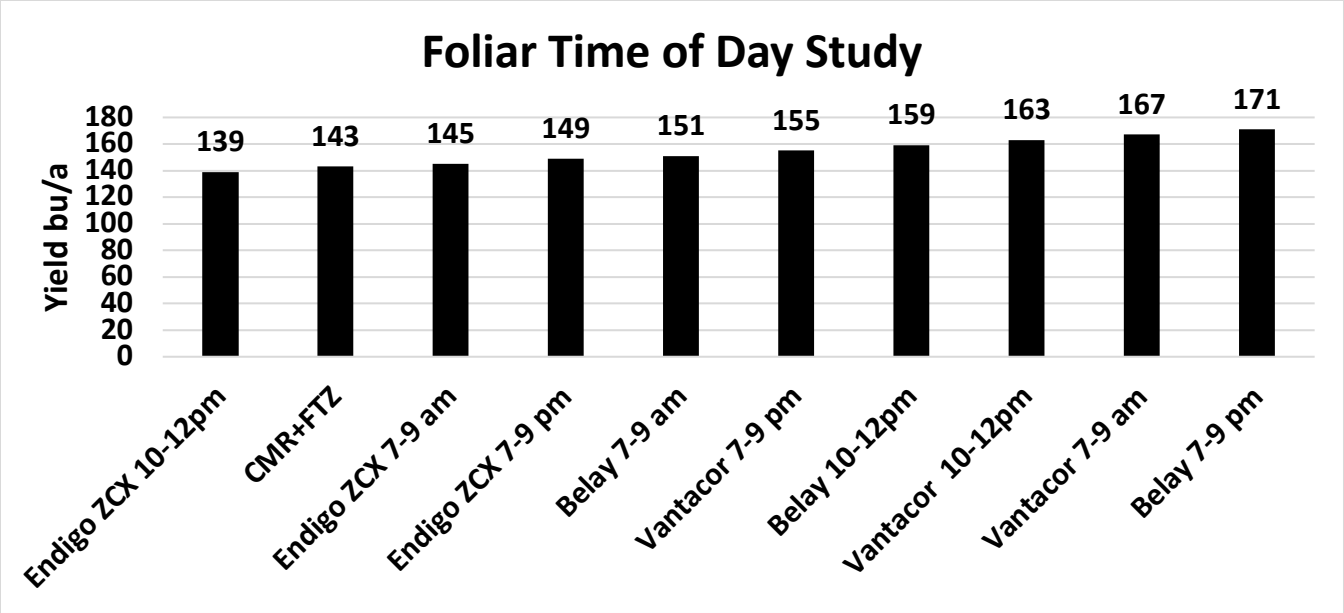
Damaged Tillers

Highest tiller damage percentages were observed in the edge effect studies across all billbug trials. No differences were observed between strips with insecticide seed treatment. Treating the fungicide only strip with Clothianidin showed a significant reduction in tiller damage compared to fungicide only rice receiving no insecticide.

Conclusions:

Based on damage percentages across all rice billbug trials, preliminary observations suggest that rice billbug feeding was more severe on field edge. Though field dependent, anecdotal observations suggest that water scarcity may increase billbug feeding. Further research should expand on implementing water as a possible cultural control tactic to suppress rice billbug feeding.

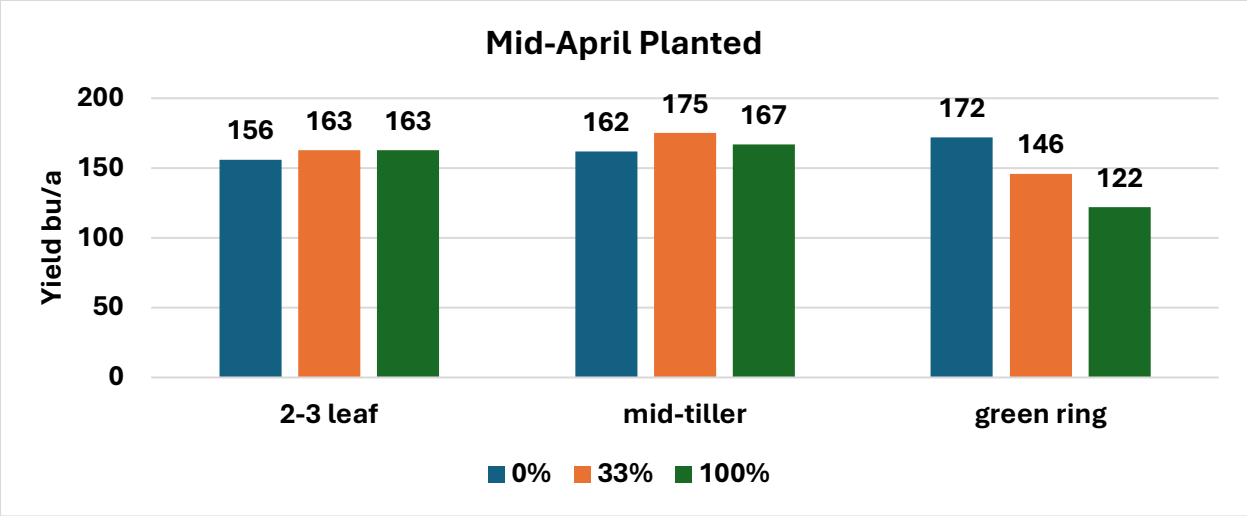
Objective: Evaluating time of day for insecticide applications for control of rice billbug

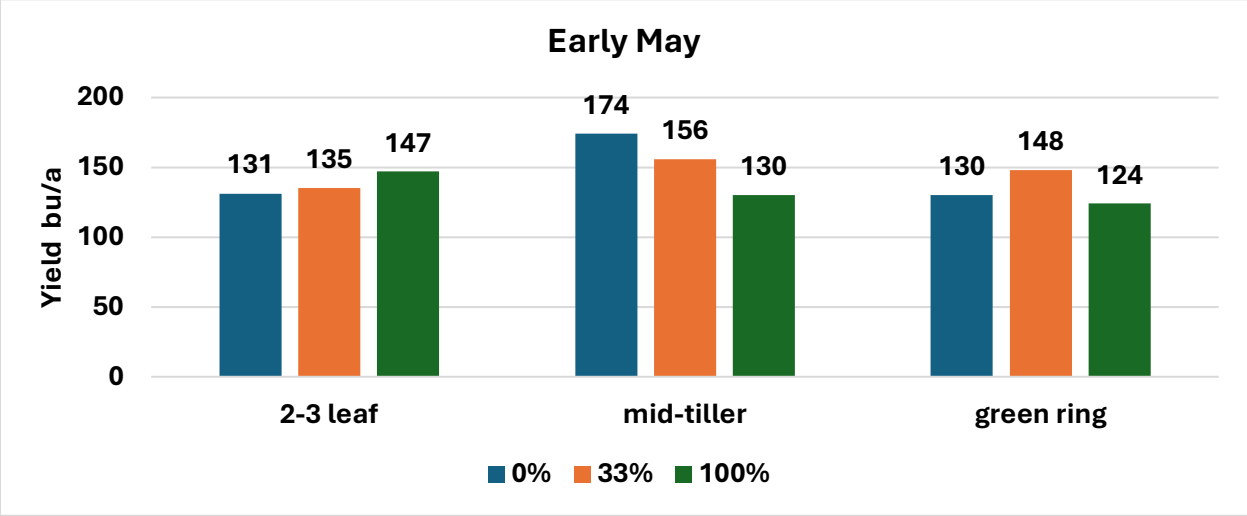


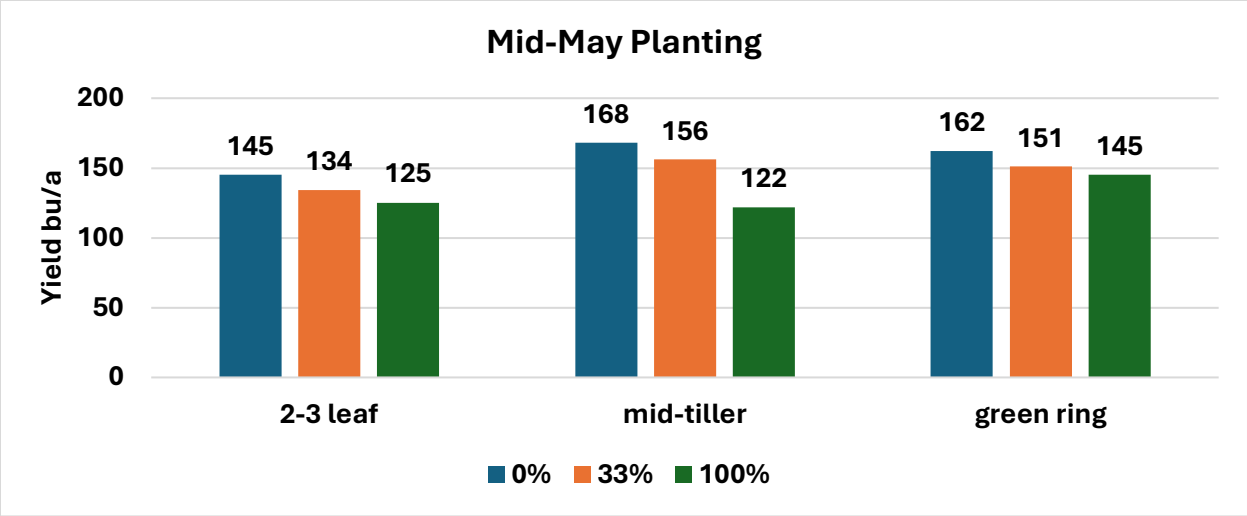
Trial Results:

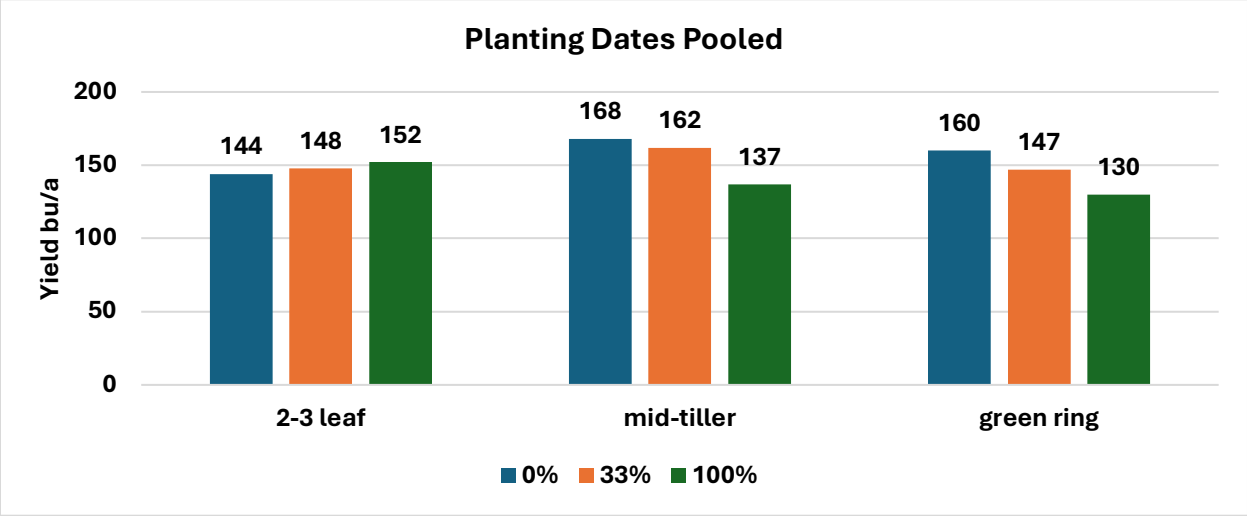
Preliminary data suggest that regardless of time Endigo ZCX alone was not successful in controlling rice billbug as well as Belay or Vantacor. Further exploration is warranted to better distinguish if timing of application influences rice billbug control.

Project Title: Defoliation Threshold in Conventional and Hybrid Rice









Trial Results:

Due to failed stand in the hybrid research plots, 2025 data is only observed on DG263.

Mid-April Planting:

The highest numerical observed was observed when rice was defoliated 33% at the mid-tiller timing. An increase was also observed when rice was defoliated 100% at this timing. All rice plots that were defoliated prior to green ring showed a numerical increase in yield compared to plots that were not defoliated.

Defoliation that occurred during the green ring timing resulted in yield decreases compared to the untreated check.

Early May Planting:

The early May planting showed similar trend to the mid-April planting date at the 2-3 leaf defoliation timing. Plots defoliated 100% during this timing resulted in the highest numerical yields when compared to plots also defoliated at this timing.

A slight numerical increase was observed when plots were defoliated at green ring 33%.

Mid-May Planting:

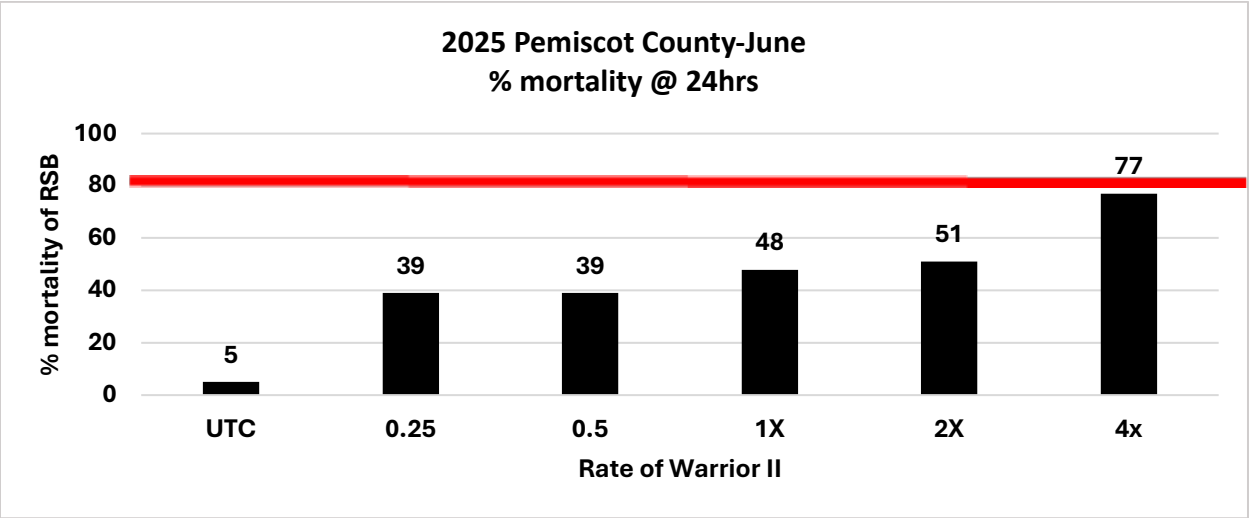
When defoliating during the late May planting date, regardless of timing or defoliation amount a numerical yield decrease was observed. This planting window does not provide enough recovery time to let rice overcompensate.

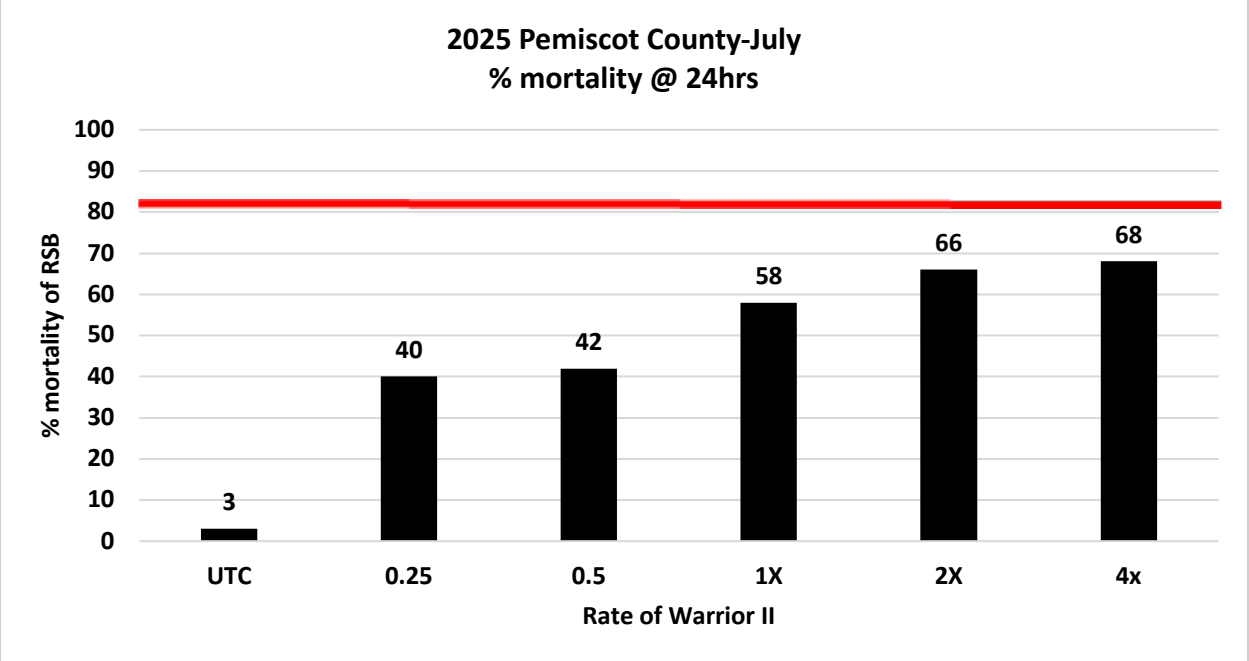
Conclusions:

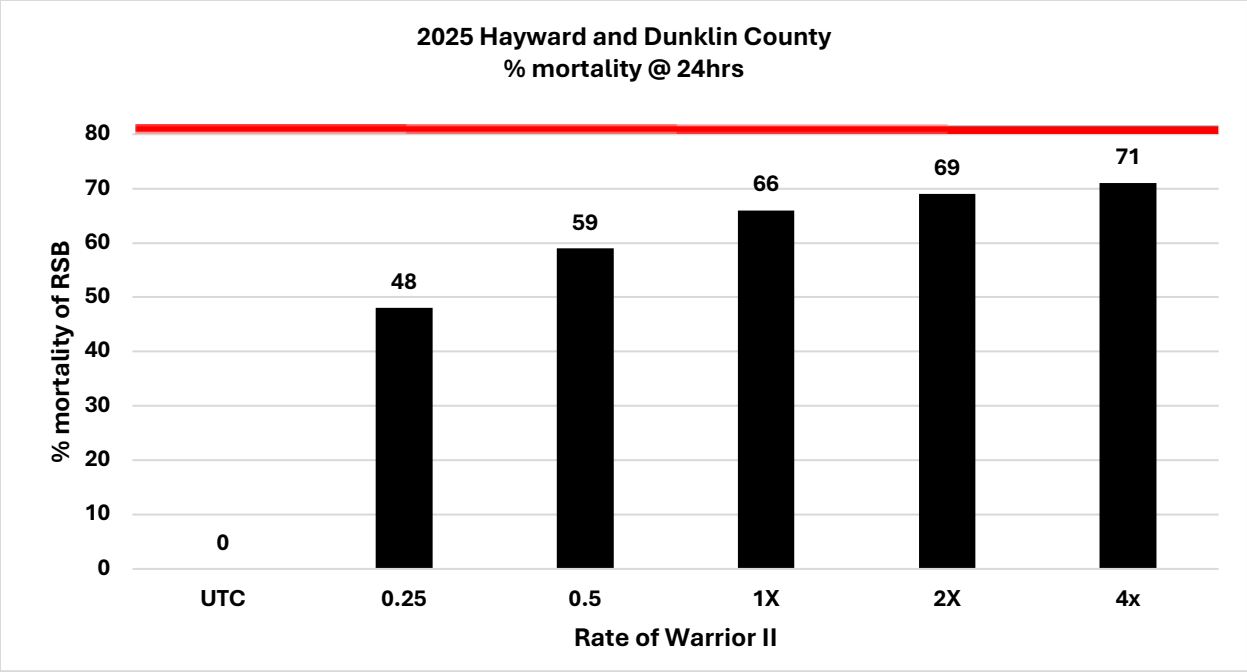
As hypothesized, smaller levels of defoliation early are beneficial to rice yields planted in the optimum planting window. As rice planting is delayed, the less likely we see a benefit from a level of defoliation. This anecdotal data may suggest yield benefits can be observed from levels of defoliation early, but larger data sets may be required.

Project Title: Reevaluate rice stink bug management now that there is pyrethroid resistance.

Objectives: Monitor potential rice stink bug resistance to applications of lambda-cyhalothrin.







Results: Results from this bioassay suggest that a 4x rate of lambda-cyhalothrin is no longer able to achieve an acceptable level of control for rice stink bug. The standard applied rate of lambda-cyhalothrin provides only 66% control of rice stink bug, a slight decrease from control of the 2024 populations.

Conclusions:

Rice stink bug resistance to lambda-cyhalothrin applications continue to be an issue in Mid-South rice production. Lambda-cyhalothrin may still have a fit for use for controlling rice stink bug, but only in scenarios close to cut-out. If rice stink bug populations are close or at economic threshold only a few days away from cutout lambda-cyhalothrin may be warranted. Currently, dinotefuran is the best active ingredient for successful control and also provides some residual activity.

These data sets are beneficial for the requests of Section 18 for active ingredients needed for control of RSB. Continuation of these studies provides valuable insight to the EPA on these types of decisions.