2024 University of Missouri
Crop Protection
Rice Research Trial Results

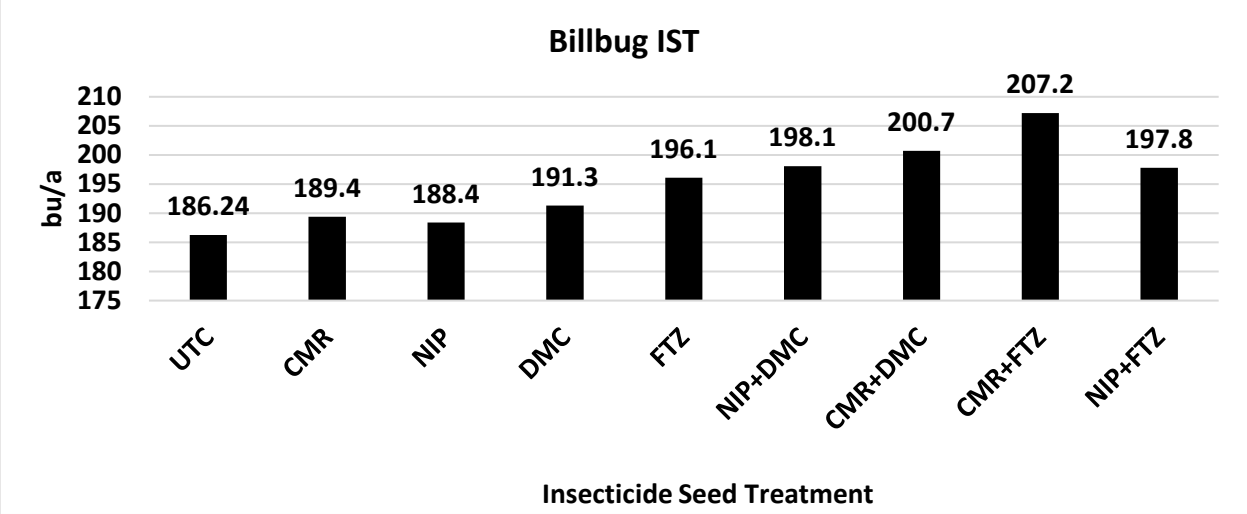
The table below lists the abbreviations and information associated with treatments associated with conducted trials in this packet.

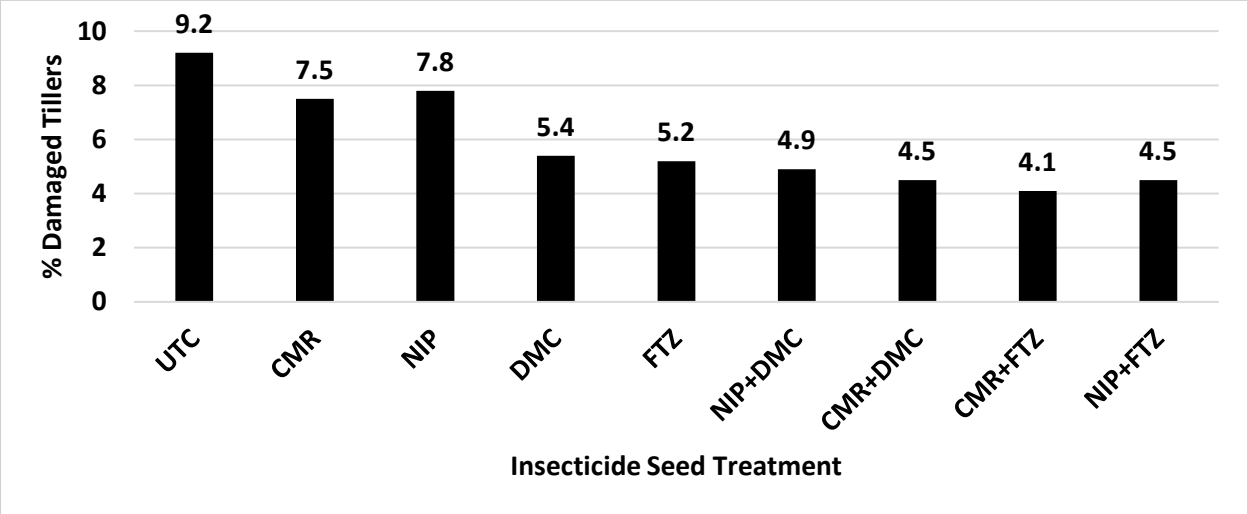
Treatment Name	Active Ingredient	Rate	Insecticide Class	Avg. Price on Hybrid Rice
Fungicide Only				
CruiserMaxx (CMR)	Thiamethoxam	7.0 oz/a	Neonicotinoid	$9.00/a
NipsIT (NIP)	Clothianidin	2.9 oz/a	Neonicotinoid	$7.00/a
Dermacor X-100 (DMC)	Chlorantraniliprole	5.0 oz/a	Diamide	$14.40/a
Fortenza (FTZ)	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

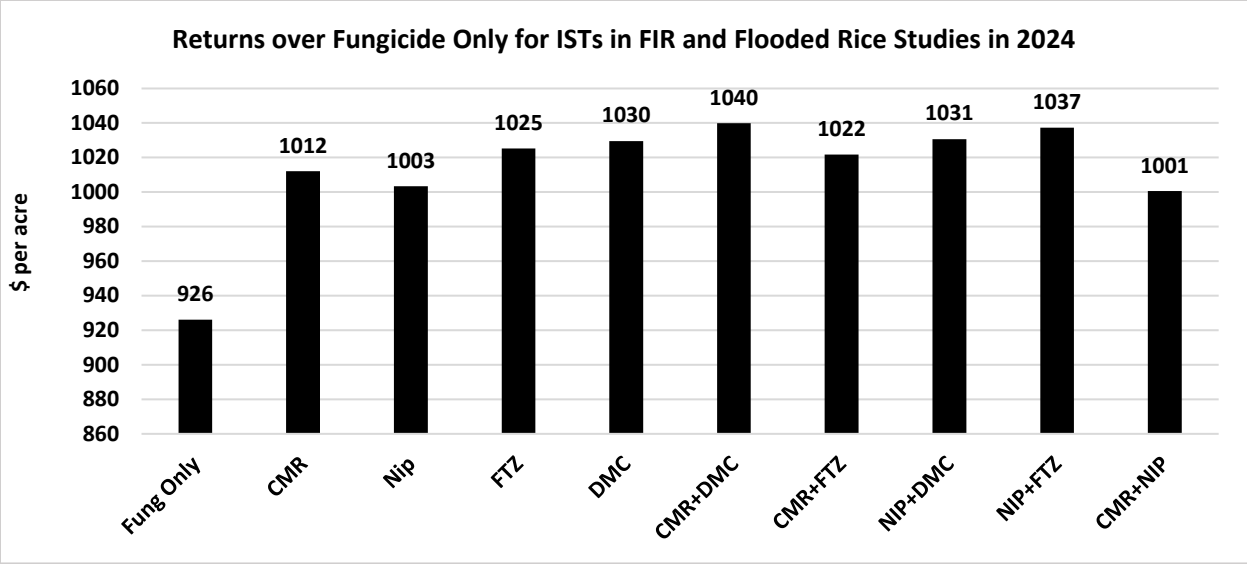
Project Title: Evaluation of Selected Insecticides and Delivery Methods for Suppression of Rice Billbug in Furrow-irrigated Rice

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. Cruisermaxx and and NipsIt only increased rice yields by 3.2 and 2.2 bushels, respectively.

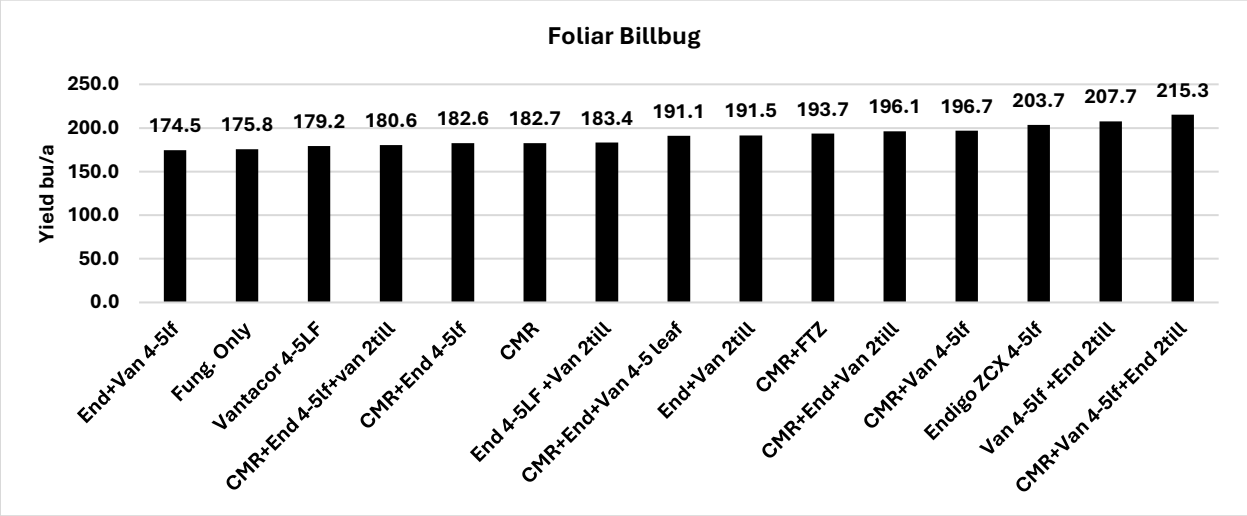
Damaged Tillers

Trends were also observed in damaged tillers data that was collected from this trial. Numerical decreases in percent damaged tillers can be observed in rice plots that had diamide seed treatments present. Lowest numerical damaged tillers were plots that had combination seed treatments.

Conclusions:

Rice billbug pressure was low compared to injury that was observed in 2022 but was higher than pressure observed in 2023. Average grain yield was significantly higher in 2024, more consistently may allow data to significantly separate in 2025.

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:

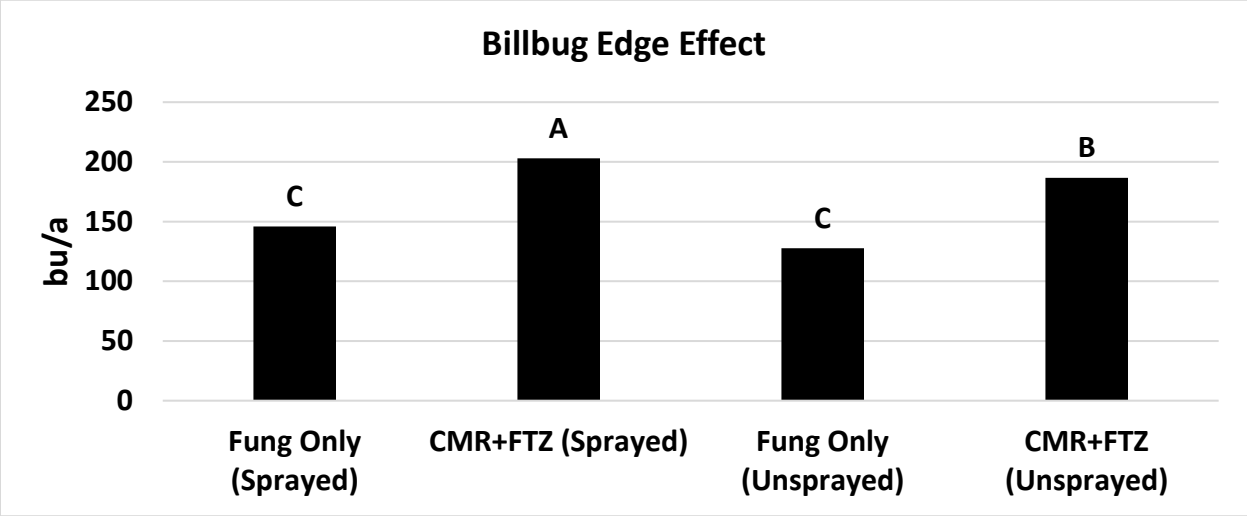
Grain Yield

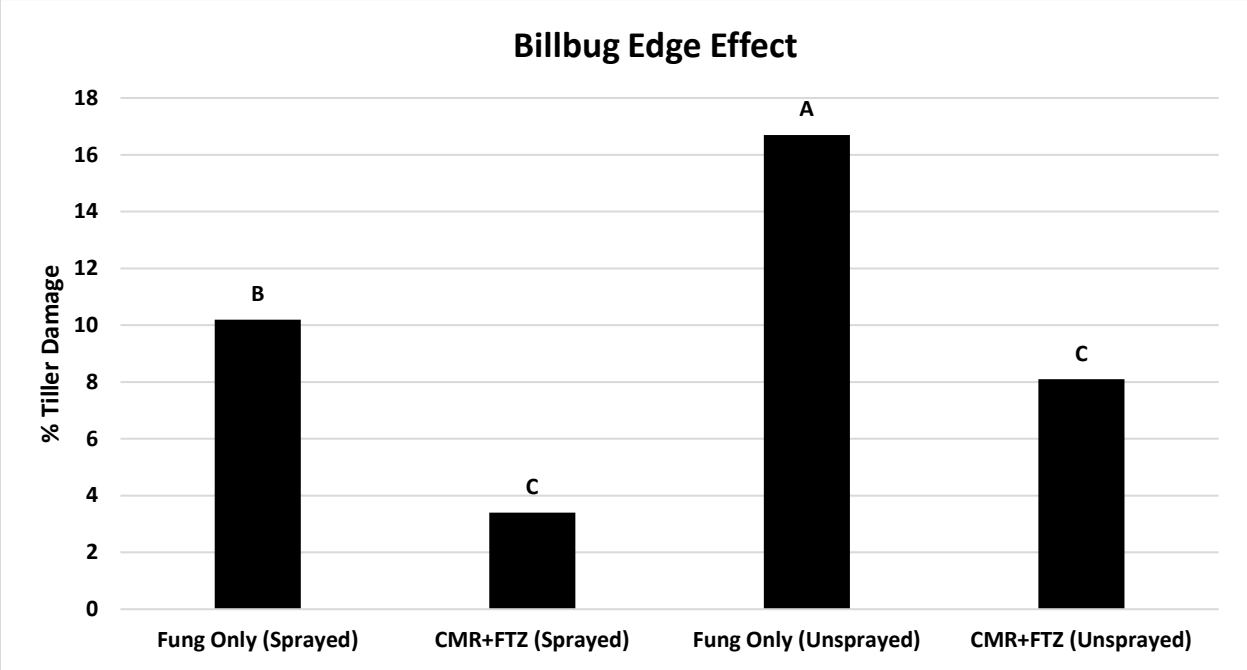
No significant differences were observed between treatments. Two highest numerical rice yields were treatments receiving Vantacor at 4-5 leaf stage followed by Endigo ZCX at the 2nd tiller stage. This is likely due to the Vantacor having residual and beginning to move through the plant, this allows to let the billbug to ingest a first initial dose of poison. Following that with a knockdown product like Endigo ZCX is likely allows the already sick pest to be terminated.

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

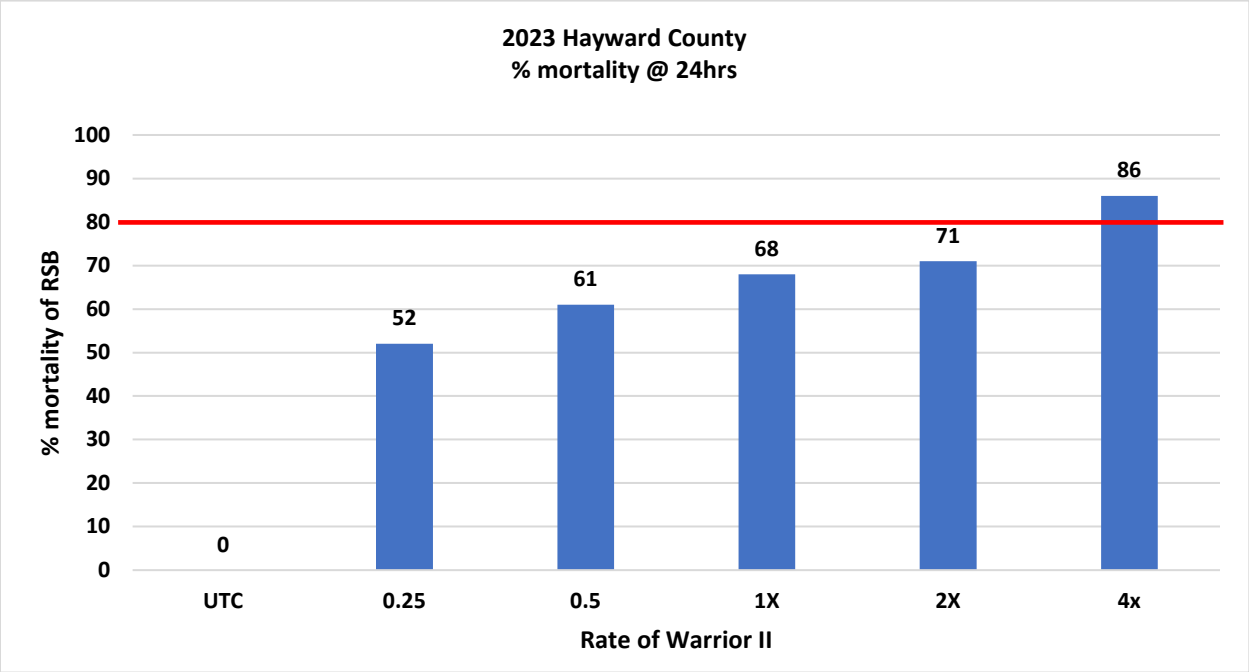
Highest tiller damage percentages were observed in the edge effect studies across all billbug trials. No differences were observed between strips with insecticide seed treatment. Treating the fungicide only strip with Clothianidin showed a significant reduction in tiller damage compared to fungicide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

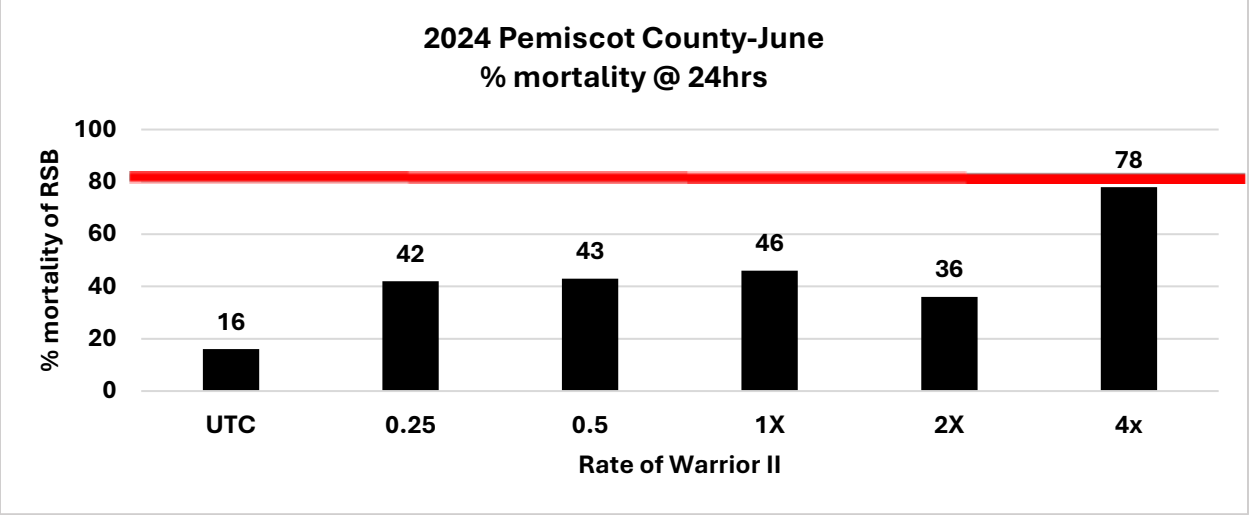
Conclusions:

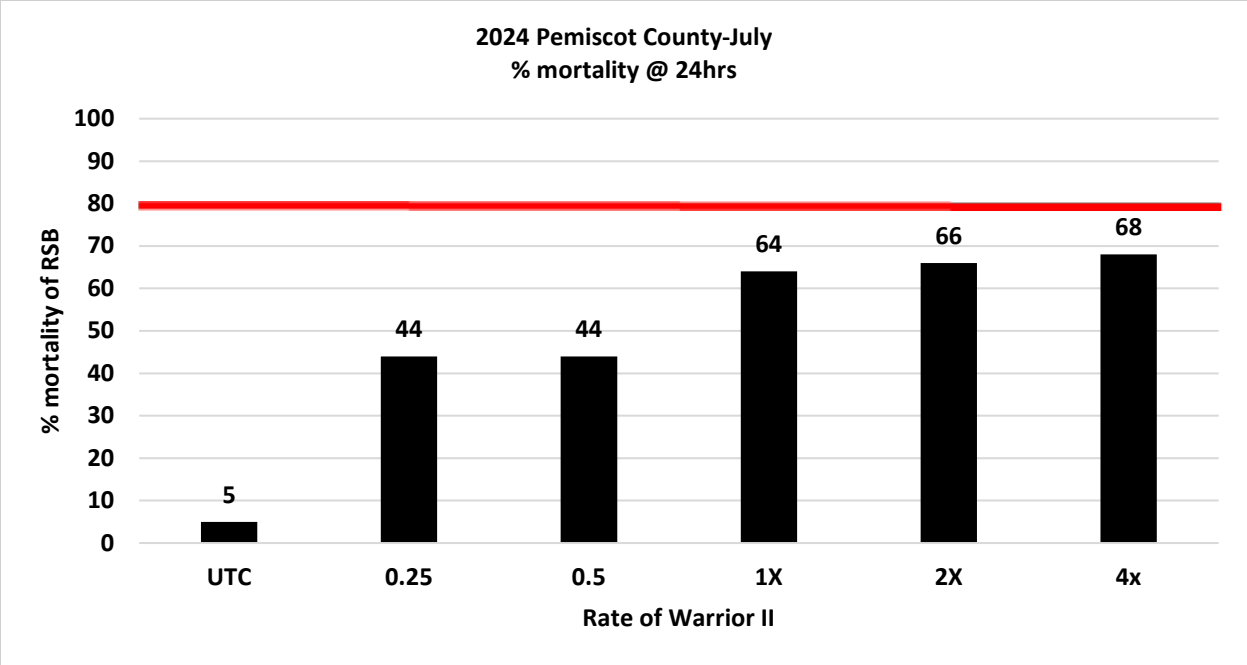
Based on damage percentages across all rice billbug trials, preliminary observations suggest that rice billbug feeding was more severe on field edge. Though field dependent, anecdotal observations suggest that water scarcity may increase billbug feeding. Further research should expand on implementing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

Project Title: Evaluation of Insecticide Efficacy for Control of Rice Stink Bug in Missouri Rice

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 required to achieve an acceptable level of control for rice stink bug. The standard applied rate of lambda-cyhalothrin provides only 68% control of rice stink bug, increasing possibility of yield and quality losses to Missouri rice producers. Doubling the amount of ai applied only allowed a 3% increase in control compared to the standard recommended rate.

Additional notes: This Missouri population was taken from wheat early in the 2023 growing season, data from Arkansas suggest that rice stink bug population increase percentage of survival in later generations. Missouri data coincides with with Arkansas findings where resistance increases later in the season.

Conclusions:

Rice stink bug populations showing possible resistance to applications of lambda-cyhalothrin are being frequently identified across the mid-south. Decades of use of solely lambda-cyhalothrin, have created potential resistance issues and alternative insecticides are not in large supply.

This trial should be repeated in 2025, obtaining more rice stink bug populations across the rice producing counties of Missouri to strengthen data set, and determine where resistant populations are present.