CONTROL OF RICE BILLBUG, *SPHENOPHORUS PERTINAX,* IN FURROW IRRIGATED RICE IN ARKANSAS

C.A. Floyd
G.M. Lorenz
N.R. Bateman
B.C. Thrash
J.T. Hardke
N.K. Joshi
N.M. Taillon
S.G. Felts
W.A. Plummer
W.J. Plummer
J.K. McPherson
C. Rice
University of Arkansas Cooperative Extension Service
Lonoke, Arkansas

Abstract

In recent years, furrow irrigated rice production systems have increased in Arkansas. In this system, there is no permanent flood on the top third of the field. This has allowed pests such as rice billbug to flourish in this production system. Rice billbug feeds on the roots and tillers of a rice plant, leading to dead tillers and ultimately yield loss. Insecticide seed treatments are depended on to control multiple rice pests in traditional flooded rice culture. An experiment was conducted in 2018 to determine the effectiveness of seed treatments, combinations of multiple seed treatments, and foliar applications for control of rice billbug. The evaluated treatments had no impact on blank head numbers although some of the combinations of insecticide seed treatments increased yield when compared to the untreated check, and Nipsit or CruiserMaxx alone. Foliar applications of Prevathon did appear to provide some yield protection when used in combination with NipsIt seed treatment, however when Prevathon was applied alone or with CruiserMaxx seed treatment, yield was no different than the untreated control.

Introduction

Furrow irrigated rice acreage has been increasing in Arkansas. In this production system, there is no standing water across the top third of the field, which has altered the pest complex for rice. Rice Billbug (*Sphenophorus pertinax*), has commonly been considered a minor insect pest in the traditional flooded rice system, typically only feeding on rice found on the levee. Billbugs are restricted to the levee rice due to the inhabitable environment when a permanent flood is present. In the furrow irrigated system, the top third of the field has become optimal for rice billbug inhabitance, and rice planted in this zone are more susceptible to billbug feeding. Little to no published research exists for management of rice billbug. Furrow irrigated rice acreage in Arkansas is steadily on the rise, which makes it increasingly important that management strategies for rice billbug are found.

Methods

An experiment was conducted in 2018 at one furrow irrigated rice location in Jackson County, Arkansas. RiceTec RT7311CL hybrid was planted on 4 April. Plot size was 8 rows on 7.5 in spacing by 16.5 ft. Treatments consisted of single insecticide seed treatments, combinations insecticide seed treatments, as well as a foliarly applied treatment (Table 1). Foliar applications were made at the fourth to fifth tiller growth stage, using a CO^2 backpack sprayer calibrated to 10 GPA at 2.5 MPH. Treatments were arranged as a randomized complete block with four replications. At panicle emergence, blank panicle counts were recorded for 50 ft^2 per plot. All plots were harvested using a plot combine equipped with a harvest master system. Data was analyzed in PROC GLIMMIX with SAS v 9.4 at an alpha level of 0.05.

Results

A general trend was observed that combinations of insecticide seed treatments yielded higher than single seed treatments. The combinations of CruiserMaxx + Fortenza, NipsIt + Fortenza, CruiserMaxx + Dermacor, and NipsIt + Prevathon, NipsIt + CruiserMaxx, and NipsIt + Dermacor provided higher yields than either NipsIt or Cruiser alone or the untreated control (Figure 1). No differences or trends were observed among treatments for blank head ratings (Figure 2).

Table 1. Trade Names, Rates, and insecticide class included in analysis

Trade Name	Rate (oz/cwt) & (oz/a)	Insecticide Class
CruiserMaxx Rice	7 (oz/cwt)	Neonicotinoid
Nipsit Suite	2.9 (oz/cwt)	Neonicotinoid
Dermacor X-100	5 (oz/cwt)	Diamide
Fortenza	3.47 (oz/cwt)	Diamide
Prevathon (Foliar)	14 (oz/a)	Diamide

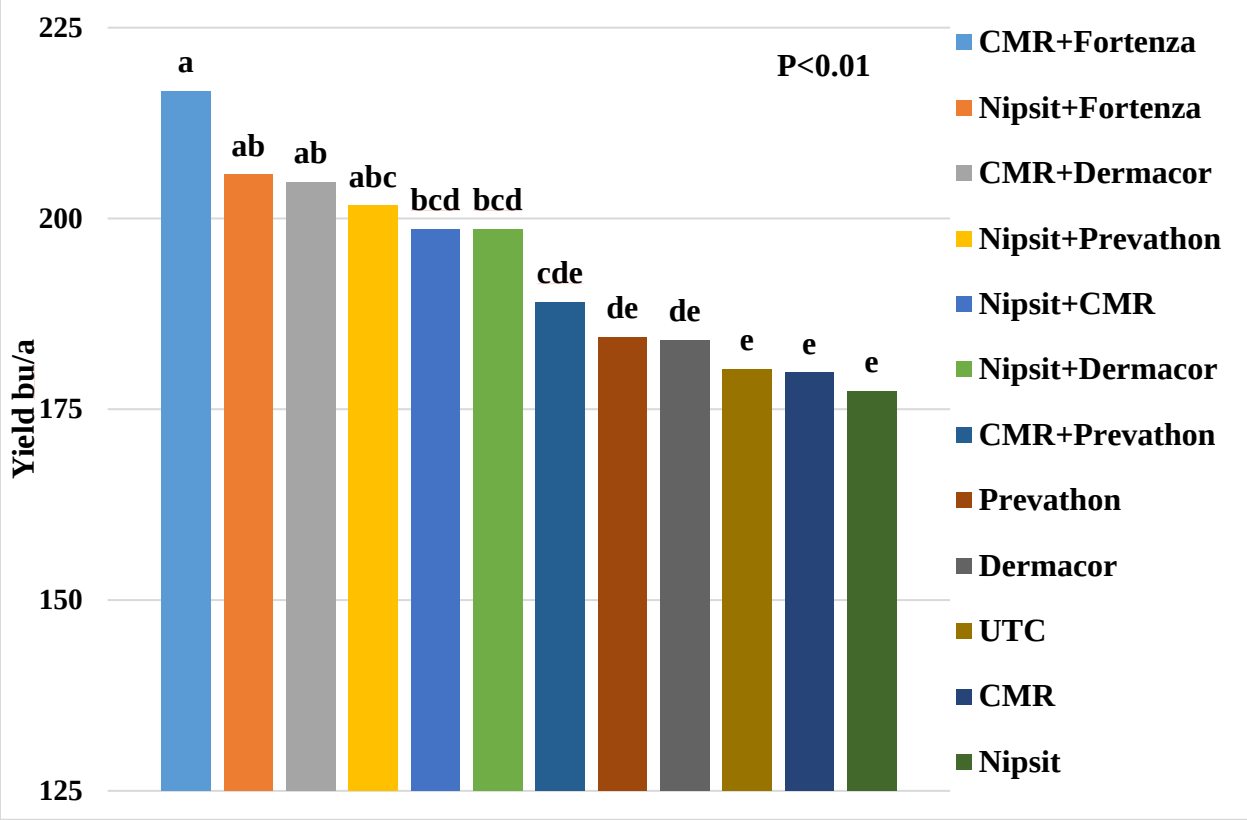

Figure 1. Rice grain yield of selected insecticide seed treatments for control of rice billbug.

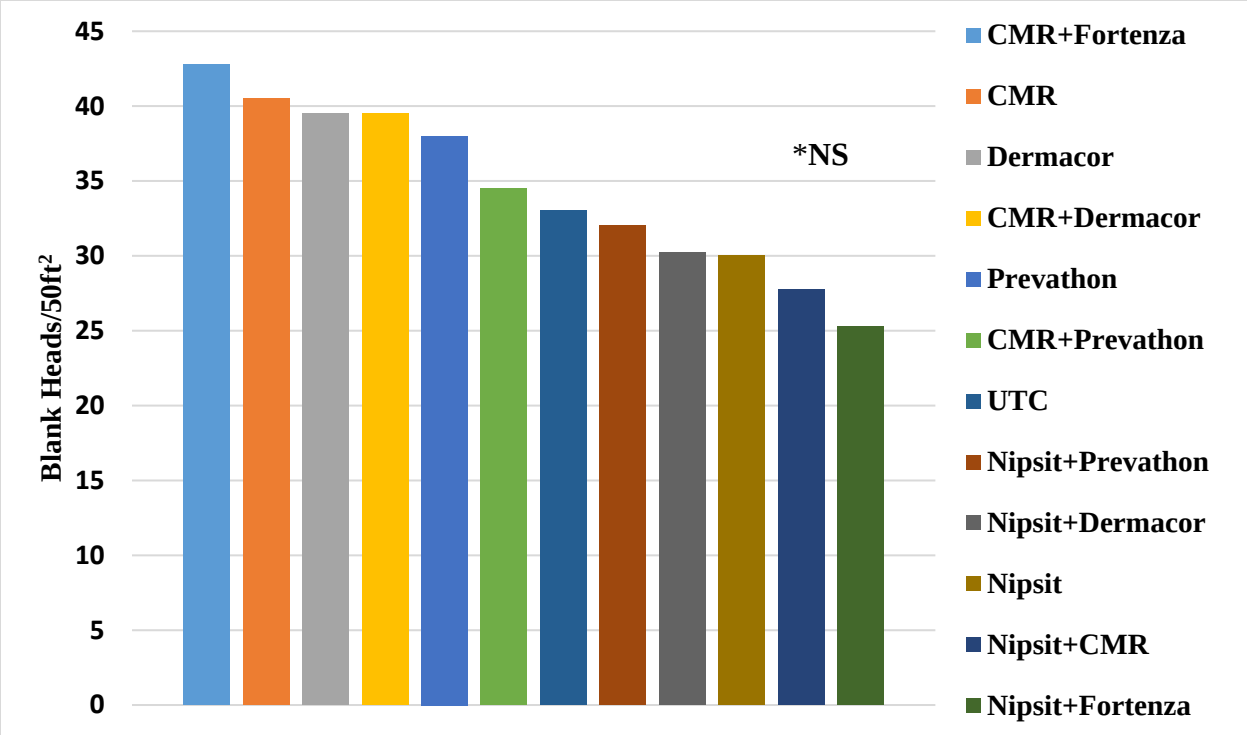

Figure 2. Blank head counts of selected insecticide treatments for control of rice billbug.

Summary

Preliminary data suggest that combining neonicotinoid and diamide seed treatments provide greater suppression of billbug when compared to single product seed treatments. Single product seed treatments, regardless of insecticide class, showed no yield increases when compared to untreated seed. Foliar applications showed some suppression of rice billbug, but the timing of this application needs to be further evaluated. No reduction in blank heads were observed for any treatment. This suggest that blank head counts alone do not correlate with grain yield, and other sampling methods will have to be evaluated. One possible explanation for the lack of differences is that tillers infested by billbug never developed enough to produce a blank head. This could explain why yield and blank head counts did not correlate.

Acknowledgments

We would like to thank Arkansas Rice Promotion Board for funding this research through the Arkansas Rice Checkoff, as well as, cooperating producers, and Arkansas Cooperative Extension Service county agents for their collaborations.