

RESIDUAL ACTIVITY OF SELECTED INSECTICIDES ON GREEN STINK BUG (HETEROPTERA: PENTATOMIDAE)**James W. McPherson****Angus Catchot****Fred Musser****Don Cook****Clint Allen****Mississippi State University****Mississippi State, MS****Abstract**

These trials show the residual activity from six different insecticides commonly used to control stink bugs in Mississippi. All or the insecticides resulted in minimal mortality beyond 3 days after treatment. Rainfall significantly reduced the amount of residual activity from the insecticides.

Introduction

Stink bugs are major pests of both soybeans, *Glycine max* (L.) Merr. (Musser et al 2010), and cotton, *Gossypium hirsutum* L., (Williams 2010) in Mississippi. There are several species of stink bugs typically found in these crops, most notably green (*Acrosternum hilare* (Say)), southern green (*Nezara viridula* L) and brown (*Euschistus servus* (Say)) stink bugs. In the last several years, redbanded stink bug, *Piezodorus guildinii* (Westwood), has also become a major pest in Louisiana, and Mississippi. In both cotton and soybeans, stink bugs can re-infest fields after insecticides are applied, which can result in the need for sequential applications. The objective of this study was to determine the residual activity of selected insecticides for controlling stink bugs.

Materials and Methods

Green stink bug adults were collected using sweep nets from an untreated soybean field in Grenada County, MS. Stink bugs were kept in plastic boxes with mesh lids in an insect rearing room maintained at 80 degrees F and 60 percent relative humidity. The boxes contained shredded paper to increase surface area of the box, and soybean pods were added as a food source. All stink bugs were held for at least 24 hours before being used in these trials.

Seven different insecticide treatments were tested plus a non-treated control. The treatments were: non-treated control; bifenthrin (Brigade 2EC) at 0.1 lb ai/A; lambda-cyhalothrin (Karate Z 2.08CS) at 0.03 lbs ai/A; acephate (Orthene 90S) at 0.75 lb ai/A; thiamethoxam (Centric 40WG) at 0.05 lb ai/A; thiamethoxam + lambda-cyhalothrin (Endigo ZC) at 4.5 oz form/A; methyl parathion (Methyl 4EC) at 1.0 lb ai/A; and acephate + bifenthrin (Orthene 90S + Brigade 2EC) at 0.75 lb ai/A+0.1 lb ai/A. The treatments were applied to a soybean field at the R5 growth stage using a Mudmaster sprayer with TX6 hollow cone tips calibrated to apply 10 gallons per acre.

At 1 hour and 1, 3, 5, 7, and 10 days after treatment (DAT), 30 leaves and pods were pulled from the second node down from the plant terminal in each plot. One leaf, pod, and stink bug were placed in a four inch petri dish with water agar. After 48 hours of being placed in the petri dish, mortality was recorded. Stink bugs were considered dead if no coordinated movement was detected within five seconds of being prodded. When mortality in a treatment was no longer significantly greater than that observed in the non-treated control, data collection for that treatment was terminated.

All data were corrected for control mortality using Abbott's formula (Abbott 1925).

Results and Discussion

These trials were conducted twice in consecutive weeks beginning on September 7, 2010. In the first trial two inches of rainfall occurred at 2 DAT. Figure 1 illustrated the mortality of green stink bug adults resulting from the seven insecticide treatments out to 5 DAT.

Figure 2 illustrates the insecticide efficacy data from the second trial which was initiated on September 14, 2010. No rainfall occurred during the second trial. By comparing the data from trial one and two it appears that the rain reduced the amount of residual activity of the insecticides. Even in the absence of rain, none of the recommended insecticides resulted in significantly greater mortality compared to the non-treated beyond 3 DAT. The Orthene 90S + Brigade 2EC, which was a full rate of both insecticides mixed together, was the only treatment that provided significant control beyond three days after application.

Mortality resulting from Methyl 4EC declined more rapidly compared to the other treatments and provided the least residual activity. The results from the second trial show that Brigade, Karate, Endigo, and Orthene + Brigade provided the greatest mortality at 1 and 3 DAT.

References

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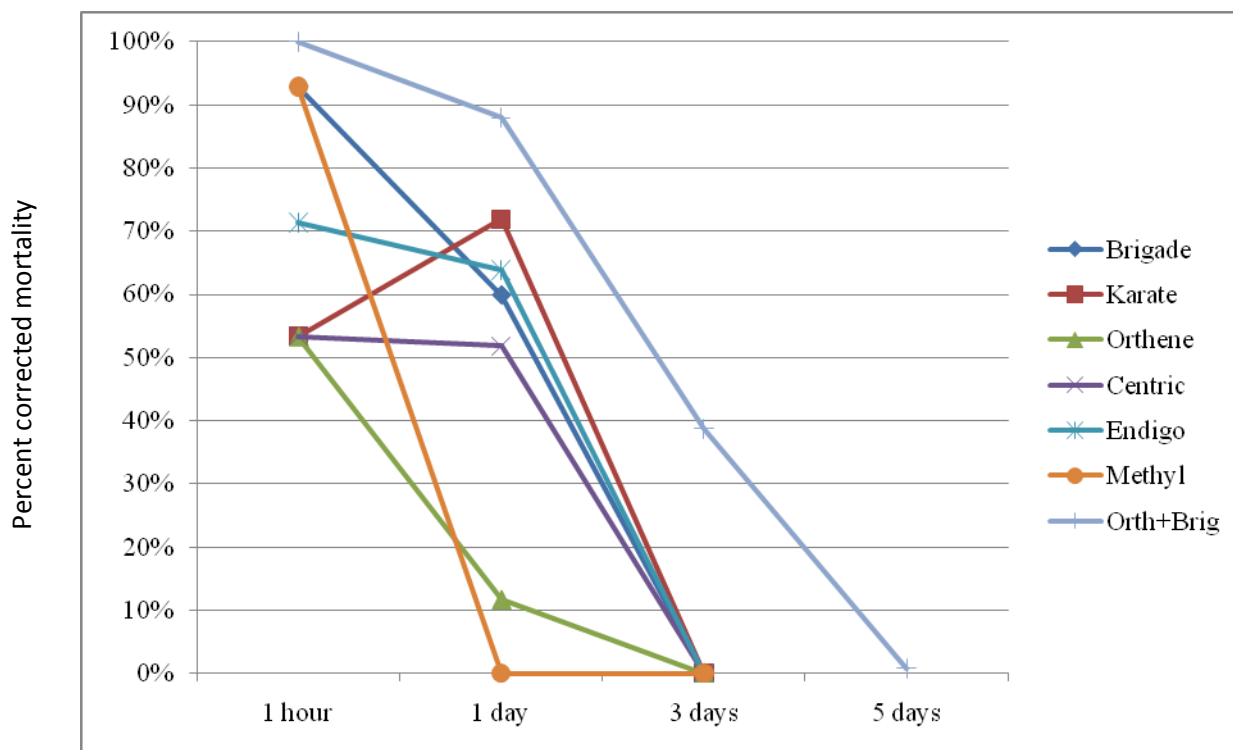


Figure 1. Residual mortality of selected insecticides against green stink bug determined at 48 hours after infestation (Treatments applied 9/7/10).

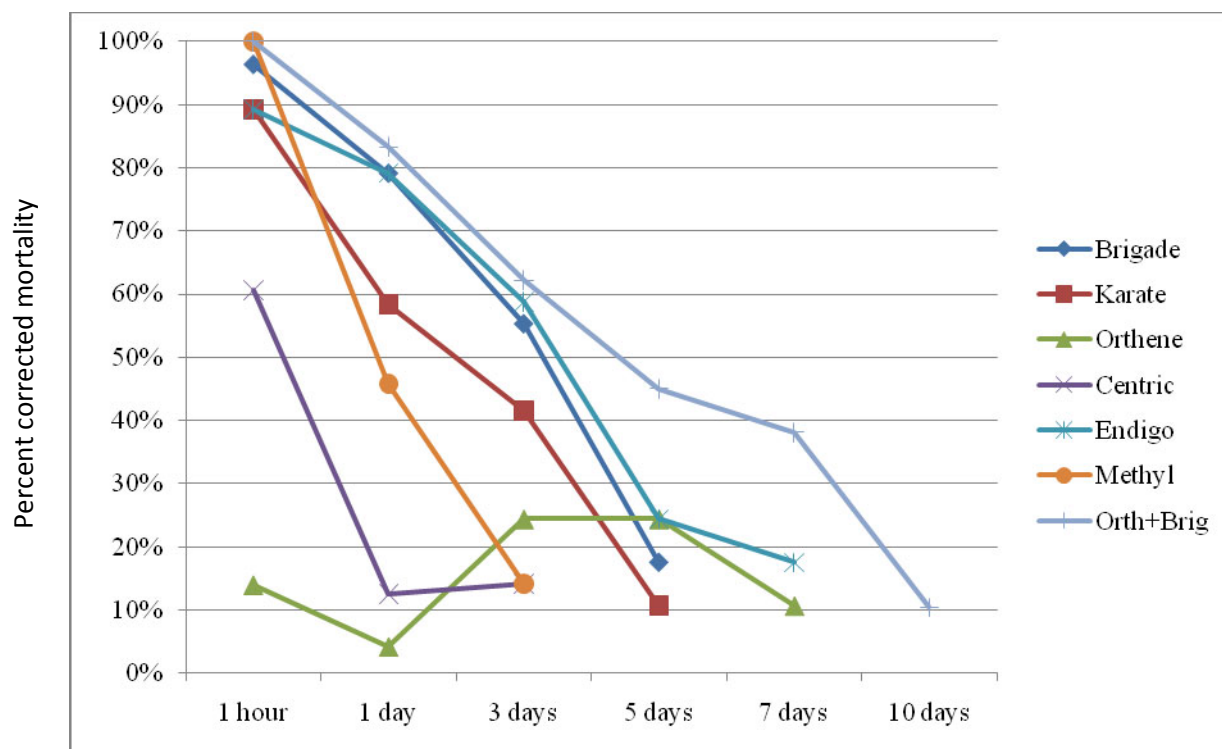


Figure 2. Residual mortality of selected insecticides against green stink bug determined at 48 hours after infestation (Treatments applied 9/14/10).