FMC Corporation
Residual Activity of Mustang Max and Orthene 90S in Combination with Gibberellic Acid for Rice Stink Bug Control
Beaumont, TX
2006

Agronomic and Cultural Information

Planting:  
*Drill-planted Cocodrie @ 90 lb/A into League soil* (pH 5.5, sand 3.2%, silt 32.4%, clay 64.4%, and organic matter 3.8 - 4.8%) *on May 17*
Plot size = 7 rows, 7 in. row spacing, 18 ft long
Experimental design: randomized complete block with 4 replications
Emergence on May 24

Irrigation:  
Flushed block (temporary flood for 48 hours, then drain) on May 17
*Note: Plots were flushed as needed from emergence to permanent flood*
Permanent flood on Jun 14

Fertilization:  
*All fertilizer (urea) was distributed by hand.*
113.3 lb N/acre (⅔ of 170) on May 17 at planting
56.7 lb N/acre (⅔ of 170) on Jun 29 at panicle differentiation
40 lb N/acre on Jul 19 at late boot/heading
*Total season N/acre = 210 lb N/acre*

Herbicide:  
Applied Stam 80EDF @ 2.0 lb, Basagran @ 0.75 lb, Facet 75DF @ 0.25 lb and Ordram @ 2.0 lb (AI)/acre and Agri-Dex @ 1.0 pt/acre with a 2-person hand-held spray boom (13- 80015 nozzles, 50 mesh screens, 21 gpa final spray volume) on Jun 12 for early season weed control

Treatments:  
*All treatments included Latron AG-98 @ 0.5% v/v and were applied with a hand-held CO₂-pressurized spray boom* (3-800067 nozzles, 50 mesh screens, 20 psi, 24 gpa) *on Aug 23*.  *Rice panicles were in soft dough stage.*

Sampling:  
*Four rice stalks with panicles attached were removed from each plot 1 day after treatment (DAT) on Aug 24.*  The four stalks from each plot were inserted into sand-filled plastic cups (in a greenhouse) sitting in 1-2 in. of water to keep plant material moist.  Each set of 4 rice stalks (with panicles attached) was then covered with a plastic tube and infested with 10 rice stink bug (RSB) adults.  Number of dead RSB was recorded for each plot 24 and 48 hours after infestation.  *This procedure was repeated on Aug 28 (5 DAT) and Sep 1 (9 DAT).*

*Note: Number of dead RSB was transformed to percent mortality.  Percent mortality was subjected to angular transformation to degrees and all data analyzed using ANOVA and LSD.*
Residual Activity of Mustang Max and Orthene in Combination with GA for RSB Control

Discussion

The purpose of this experiment is to identify insecticides with residual activity for control of adult rice stink bug (RSB). A product which effectively controls RSB with immediate direct contact and also provides residual activity a few days or a week or more after treatment would be extremely valuable to the rice industry. Also, gibberellic acid (GA, a plant growth regulator sometimes used in rice) was tank-mixed with insecticides in this test to determine if GA interferes with insecticidal activity.

The artificial environment inside the plastic tubes seemed acceptable for normal RSB activity. Very little to no mortality occurred throughout the experiment in tubes containing untreated panicles (Table 1). Orthene 90S provided 95% control of RSB at 1 day after treatment (DAT) and showed significant control 5 DAT. Mustang Max provided only minimal control of RSB at 1 and 5 DAT. All treatments showed no residual activity toward RSB by 9 DAT. GA had no apparent effect on the efficacy of Orthene 90S or Mustang Max. Also, GA did not exhibit any insecticidal activity.

Table 1. Percent rice stink bug (RSB) mortality after 24 and 48 h exposure to treated or untreated rice panicles. Beaumont, TX. 2006

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate [lb (AI)/acre]</th>
<th>1 DAT&lt;sup&gt;a&lt;/sup&gt;</th>
<th>5 DAT</th>
<th>9 DAT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>24 h&lt;sup&gt;b&lt;/sup&gt;</td>
<td>48 h&lt;sup&gt;b&lt;/sup&gt;</td>
<td>24 h</td>
</tr>
<tr>
<td>Untreated</td>
<td>---</td>
<td>3 b</td>
<td>5 b</td>
<td>0</td>
</tr>
<tr>
<td>Mustang Max</td>
<td>0.025</td>
<td>3 b</td>
<td>20 b</td>
<td>3</td>
</tr>
<tr>
<td>Orthene 90S</td>
<td>0.5</td>
<td>58 a</td>
<td>95 a</td>
<td>3</td>
</tr>
<tr>
<td>Gibberellic acid</td>
<td>0.009</td>
<td>3 b</td>
<td>5 b</td>
<td>0</td>
</tr>
<tr>
<td>Mustang Max + gibberellic acid</td>
<td>0.025 + 0.009</td>
<td>3 b</td>
<td>13 b</td>
<td>0</td>
</tr>
<tr>
<td>Orthene 90S + gibberellic acid</td>
<td>0.5 + 0.009</td>
<td>73 a</td>
<td>90 a</td>
<td>3</td>
</tr>
</tbody>
</table>

<sup>a</sup> DAT = days after treatment
<sup>b</sup> Percent RSB mortality after 24 and 48 hours exposure to rice panicles

Means in a column followed by the same or no letter are not significantly different (NS) at the 5% level (ANOVA and LSD).