Research on Insecticide-Impregnated Fertilizer for Rice Water Weevil Control
Beaumont, TX
2005

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 3
Plot size = 7 rows, 7 in. row spacing, 18 ft long with metal barriers around plots
Emergence on May 14

Irrigation: Flushed blocks (temporary flood for 48 hours, then drain) on May 4
Note: Plots were flushed as needed from emergence to permanent flood
Permanent flood on Jun 7

Fertilization: 113.3 lb N/acre (2/3 of 170) on May 4 at planting
86.7 lb N/acre (⅓ of 170) on Jun 7 at permanent flood
86.7 lb N/acre (⅓ of 170) on Jun 21 at panicle differentiation
_Total season N/acre = 286.7 lb N/acre_

Herbicide: 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 3

Treatments: See Table 1 for treatment descriptions and rates.
Foliar sprays immediately before flood (BF) were applied with a hand-held CO2-pressurized spray boom (3-800067 nozzles, 50 mesh screens, 25 gpa) on Jun 7
Urea impregnated with Mustang Max and urea impregnated with Karate Z was applied by hand (BF) on Jun 7
Urea impregnated with Mustang Max was applied by hand 14 days after flood (DAF) on Jun 21
Urea was impregnated with insecticide by dissolving measured amount of product in a small amount of water and dispersing into a premeasured amount of urea (4 plots) by shaking in a plastic bag. Material was spread out briefly to air dry, then applied by hand to plots.

Sampling: Rice water weevil (RWW) cores (5 cores per plot, each core 4 in. diameter, 4 in. deep, containing at least one rice plant) were collected on Jun 28 and Jul 8, washed through 40-mesh screen buckets and immature RWW counted.
Note: Prior to analysis RWW core data transformed using $\sqrt{x} + 0.5$

Harvest: Harvested plots on Aug 31
Size harvested plot = 7 rows, 7 in. row spacing, 18 ft long
Yields converted to lb/acre adjusted to 12% moisture
Note: All data analyzed using ANOVA and LSD
Discussion

Populations of immature rice water weevil (RWW) were high (the economic injury level is about 15 per five cores) on both sample dates, so treatments were adequately tested (Table 1). Mustang Max applied immediately before flood (BF) gave excellent control of RWW, regardless of the addition of urea; thus, urea did not interfere with the efficacy of Mustang Max. Yield response to Mustang Max impregnated on urea and applied before flood was 329 lb/acre greater than the untreated. When Mustang Max was impregnated on urea and applied 2 weeks after flood, immature RWW control was good which implies Mustang Max directly affected immature RWW. Earlier applications (close to permanent flood) of pyrethroids target adult RWW before they lay eggs. Thus, application of Mustang Max 2 weeks after flood probably targeted immature RWW feeding on the rice roots. This suggests Mustang Max impregnated on urea entered the mud profile where larvae were feeding. In hindsight, a foliar application of Mustang Max applied 2 weeks after flood should have been included in this experiment. However, data show Mustang Max treatments with urea produced lower yields than remaining treatments without urea, but these differences were not significant.

These data show that impregnating urea with pyrethroids is an effective method of controlling RWW. Implementation of this practice, could significantly reduce insecticide application costs.

Table 1. Research on insecticide-impregnated fertilizer for rice water weevil (RWW) control.
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>Method</th>
<th>Rate (AI)/acre</th>
<th>Timing</th>
<th>No. immature RWW/5 cores</th>
<th>Yield (lb/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>42 c 51 c</td>
<td>7885 b</td>
</tr>
<tr>
<td>Mustang Max</td>
<td>Foliar spray</td>
<td>0.023</td>
<td>BF</td>
<td>2 a 5 b</td>
<td>8363 a</td>
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<tr>
<td>Karate Z</td>
<td>Foliar spray</td>
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<td>BF</td>
<td>2 a 0 a</td>
<td>8304 a</td>
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<td>Prolex</td>
<td>Foliar spray</td>
<td>0.015</td>
<td>BF</td>
<td>1 a 0 a</td>
<td>8327 a</td>
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<td>Mustang Max</td>
<td>Impregnated fertilizer</td>
<td>0.025</td>
<td>BF</td>
<td>2 a 2 ab</td>
<td>8214 ab</td>
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<tr>
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<td>Impregnated fertilizer</td>
<td>0.025</td>
<td>14 DAF</td>
<td>9 b 5 b</td>
<td>8212 ab</td>
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<tr>
<td>Karate Z</td>
<td>Impregnated fertilizer</td>
<td>0.030</td>
<td>BF</td>
<td>2 a 5 b</td>
<td>8331 a</td>
</tr>
</tbody>
</table>

BF = immediately before flood
DAF = days after flood
Means in a column followed by the same letter are not significantly different at the 5% level (ANOVA, LSD). Yield, however, is significant only at the 15% level.