Rice Insect Management 2014

or

What’s what, What’s where, and Does that insecticide really work or did you just waste your time and money?

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Delta Research Center
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Rice Production:

- 3.0 million acres (2009)

- Arkansas - 1.425 M
- Louisiana – 415,000
- Texas – 168,000
- Mississippi – 240,000
- Missouri – 194,000

* 2009 USDA
Rice Insect Pests

• Many insects inhabit rice fields, but only a few are considered to be pest species
• Missouri is lucky – insect problems are less severe than in other rice producing areas of the US
• Most common pest – rice water weevil
• Others – rice stink bug, grasshoppers
• Rare – armyworms, chinch bugs
Insect Pests During the Vegetative Growth Stages (seedling to tillering)

- Rice Seed Midge
- Grape Colaspis
- Chinch Bugs
- Rice Water Weevil
- Armyworms
Grape Colaspis

- Small, yellow-brown beetle
- Both the adult and larval (1/4-inch in length, off-white) stages feed on rice, but the larval damage to seedling shoots is the biggest concern.
- Rice is most vulnerable to this insect when rice is rotated after lespedeza or soybean.
- After the female beetle lays her eggs in the soil near alternate host plants, the larvae hatch and feed on nearby roots.
- This insect overwinters as a larva in the soil.
- **Damage: seedling root and shoot damage**
# Grape Colaspis

<table>
<thead>
<tr>
<th>Insect</th>
<th>Chemical</th>
<th>Formulation</th>
<th>Rate</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>clothianidin (NipSit Inside 5 FS)</td>
<td>1.92 oz/100 lb seed</td>
<td>0.075/100 lb seed</td>
<td>Use only on dry-seeded rice. DO NOT spray crop with another neonic insecticide after using NipSit Inside. DO NOT use near fish or crawfish farms.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Cruiser 5 FS)</td>
<td>0.03 mg ai/seed</td>
<td></td>
<td>DO NOT plant or sow Cruiser-treated seed by aerial application. Cruiser is NOT labeled for use in water-seeded rice. DO NOT use treated fields for aquaculture of edible fish or crustaceans. DO NOT exceed 120 lb seed per acre</td>
</tr>
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</table>

References to commercial products are included for instructional purposes only. It is not the intention of the University of Missouri to endorse any product listed here.
Rice Water Weevil

• An adult rice water weevil is small (1/8-inch in length) and gray.
• Overwinter in clumps of perennial grasses, leaf litter, etc. adjacent to rice fields.
• Usually one generation per year in Missouri
• Adult foliar damage produces translucent, longitudinal scars, but this damage is not of economic importance.
• The progeny of the overwintering generation causes the most damage because the root systems of smaller rice plants may not compensate for the larval root damage
  – Can lead to lower yields.
  – Weeds have less competition because of reduced root growth.
• Damage: longitudinal scars on leaf, root pruning
Rice Water Weevil

• **Severity of Infestations:**
  - Type of cropping system (drilled-seeded versus water-seeded)
  - Length of time in rice production
  - Intensity of previous year infestation
  - Length of time in rice production
  - Availability and proximity of overwintering sites
  - Stand density
  - Environmental conditions
• The other control option for rice water weevils is to apply an insecticide.
• At-planting applications vs. in-season, rescue treatments
• Seed treatments with
  – chlorantraniliprole (Dermacor X-100 at 1.5 – 6.0 oz/100 lb seed),
  – clothianidin (NipSit Inside 5 FS at 1.92 oz/100 lb seed) or
  – thiamethoxam (Cruiser 5 FS at 0.03 mg ai/seed; 3.3 oz/10 lb seed) targeted at the larval stage,
  – diflubenzuron (Dimilin 2L at 12-16 fl. oz. / acre) for the egg stage,
  – and a pyrethroid insecticide to control the adult stage.

• In drilled-seeded rice with chronic rice water weevil infestations or in water-seeded rice fields,
  – Cruiser, Dermacor, Dimilin, and NipSit provide good residual control of the weevils.
• Disadvantages associated with using seed treatments include:
  – unknown extent of rice water weevil infestations before planting, and
  – additional equipment and costs associated with treating the seed.

• A foliar insecticide application may be preferable when rice fields are infrequently infested with the rice water weevil.
  – Disadvantage: **timing these applications is absolutely crucial.** Once the permanent flood is established and female weevils submerge to lay their eggs, these foliar treatments may no longer provide effective control of the adults.
    • Apply Karate Z, Prolex, Proaxis, Declare, and Mustang Max within 7d after permanent flood. A second application may be necessary 5 – 7d later. Only Dimilin is recommended to control the egg stage.
  – Foliar insecticide applications are most effective when applied 7 to 10 days after permanent flood in drilled-seeded rice. With water-seeded rice, recommended application timing is when approximately 50% of the plants are just above the water surface.
## Recommended Rice Water Weevil chemicals, rates, and misc. management

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<tr>
<td>Rice water weevil adults</td>
<td>gamma-cyhalothrin (Prolex 1.25CS)</td>
<td>1.28-2.05 oz</td>
<td>0.0125-0.02</td>
<td>Karate Z and Mustang Max can be safely applied before or after herbicide applications. Drill Seeded: Apply Karate Z, Prolex, Proaxis, Declare, and Mustang Max within 10d after permanent flood when adults are present. Water Seeded: Apply Karate Z, Prolex, Proaxis, Declare and Mustang Max within 7d after permanent flood when adults are present; a second application may be necessary 5-7d later. Karate Z, Prolex, Proaxis, Declare and Mustang Max prevent adults from laying eggs. Treat based on leaf scar treatment threshold using Karate for drill or water seeded.</td>
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<tr>
<td></td>
<td>(Proaxis 0.5 CS)</td>
<td>3.2-5.12 oz</td>
<td>0.025-0.04</td>
<td></td>
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<td></td>
<td>lambda-cyhalothrin (Karate 22.08CS)</td>
<td>1.6-2.56 oz</td>
<td>0.025-0.04</td>
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<td></td>
<td>zeta-cypermethrin (Mustang Max 0.8E)</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
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<td>Rice water weevil eggs</td>
<td>diflubenzuron (Dimilin 2L)</td>
<td>12.0-16.0 oz</td>
<td>0.125-0.25</td>
<td>Drill Seeded: Apply Dimilin within 10d after permanent flood when adults are present. Water Seeded: Apply Dimilin within 7d after permanent flood.</td>
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<td>Rice water weevil larvae</td>
<td>chlorantraniliprole (Dermacor X-100)</td>
<td>1.5-6.0 oz/100 lb seed</td>
<td>0.06-0.08</td>
<td>Use only on dry-seeded rice. DO NOT spray crop with another neonic insecticide after using NipSit Inside. DO NOT use near fish or crawfish farms.</td>
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Why Seed Treatments in Rice?

• Effective treatments for control of grape colaspis and RWW
• Effective, economical way to control GC and RWW
• Value beyond insect control?
Prairie County, (Price Bros. Farm) Seeding Rate Trial

UTC (90 lbs/a)

Dermacor 0.025 (90 lbs/a)

Cruiser 0.03 (120 lbs/a)

UTC (120 lbs/a)

Dermacor 0.125 (120s lbs/a)
St. Francis County Rice Seed Treatment 2 (Pinetree Exp. Station) 2010

Dermacor 0.025 UTC
St. Francis County, Rice Seed Treatment 2 (Pinetree Exp. Station)
Large Block Insecticide Seed Treatment Study 2013

July 26

UTC
NipsIt Inside 1.92 oz/cwt
Cruiser 7 oz/cwt
Dermacor X-100 1.75 oz/a
Large Block Insecticide Seed Treatment
Study 2013

- Dermacor X-100 1.75 oz/a
- Cruiser 7 oz/cwt
- NipsIt Inside 1.92 oz/cwt
- UTC

Yield Bu/acre

September 26
Planted May 14

112 114 116 118 120 122 124 126 128 130 132 134

Red: a
Purple: a
Green: b
Blue: UTC
2013 ALL Early Seed Treatment x Seeding Rate Study

Yield (bu/A)

- Dermacor
- CruiserMax
- Untreated

Dermacor – $R^2 = 0.3868$
CruiserMax – $R^2 = 0.727$
Untreated – $R^2 = 0.7451$
Roundup 4 oz/A 20 DAT

Treated

Untreated
Insecticide ST
Roundup at 4 oz/A

Fungicide ST only
Roundup at 4 oz/A
Insecticide ST
Newpath at 0.5 oz/A

Fungicide ST only
Newpath at 0.5 oz/A
Insecticide ST
Newpath at 1 oz/A

Fungicide ST only
No drift herbicide
CONSIDER SEED TREATMENTS

• HIGH VALUE SEED – LOW SEEDING RATES
• LESS THAN OPTIMUM CONDITIONS
  – March/ April Planting : No Till : Marginal Seed Quality
• KNOWN PROBLEM FIELDS
• VARIETIES WITH POOR VIGOR
• BURNDOWN TIMING
• FIELD YIELD POTENTIAL
• PRODUCER’S ATTITUDE ON INPUTS

• Try to choose the seed treatment you want...not what the seed company wants
• Don’t take anybodies word for what a seed treatment will do for you....try it yourself, they cost too much
• Beware of lower end use rates .... usually aren’t as good as upper end rates, you get what you pay for and you will pay for what you get
Insect Pests During the Reproductive Growth Stages (panicle initiation to harvest)

- Rice Stalk Borer
- Grasshoppers
- Rice Stink Bug
Rice Stink Bug
Rice Stink Bug

- **Biology**
  - Adults are approximately 3/8-inch in length
  - Shield-shaped with a sharp spine at the widest point on their bodies
  - Straw-brown to a bright yellow underneath
  - Adults overwinter near food sources within leaf debris.
  - After mating, females lay their green, barrel-shaped eggs in masses on leaf blades.
  - The nymphs hatch within five days and mature to adults within 18 days.

- Prefers to feed on barnyardgrass or any other grass species.

- Populations usually increase in grassy field margins before movement into nearby rice fields.
  - Avoid mowing these field margins once rice enters the heading stage.

- Both the adult and nymph stages can cause economic damage when they feed on developing rice kernels. Yield reductions are rare, but kernel quality can be affected in some years.
Rice Stink Bug

**Threshold:** An insecticide application is recommended when >5 stink bugs / 10 sweeps are collected during the first two weeks after 75% panicle emergence. For the remainder of the year, the threshold doubles to >10 stink bugs / 10 sweeps.

**Damage:** "pecky" rice

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<tr>
<td>Rice stink bug</td>
<td>carbaryl (Sevin XLR or 4F)</td>
<td>2.0-3.0 pt</td>
<td>1.0-1.5</td>
<td>Check infestation levels weekly or bi-weekly following 75% panicle emergence using a 15in sweep net. Apply insecticide when 2 stink bugs are found/sq yard, when 5 or &gt; stink bugs/10 sweeps are present during the first 2 wks after fields initially reach 75% panicle emergence, or when 3 stink bugs are found/sq yard or more than 10 stink bugs/10 sweeps are present thereafter. Sample between 8-10am and 6-8pm. Repeat treatments when necessary. Apply Karate Z in min of 5 gal of water/ac. DO NOT release flood water within 7d after application of Karate Z, Prolex, Proaxis, Declare, or Mustang Max.</td>
</tr>
<tr>
<td></td>
<td>(Sevin 80S)</td>
<td>1.25-1.88 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion (57% EC)</td>
<td>1.0-1.5 pt</td>
<td>0.625-0.94</td>
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<td>0.0165-0.025</td>
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Foliar Rice Stink Bug, 2012

- UTC
- Endigo ZC 5 oz/a
- Endigo ZCX 5 oz/a
- Karate Z 2.56 oz/a
- Centric 3.5 ozwt/a
- Tenchu 9 oz/a

Stink bugs/15 sweeps:
- 4 DAT 1
- 7 DAT 1
- 3 DAT 2

Legend:
- a
- b

Notes:
- Stink bugs/15 sweeps for each product at different DAT.
Foliar Rice Stink Bug Trial @ Lolly
2013

- Stink bugs / 10 sweeps

- Adults

- Sprayed July 31
- Assessment 5 days after application
Foliar Rice Stink Bug Trial @ Lolly
2013

Sprayed July 31
Assessment 8 days after application
Rice Stink Bugs

• Must scout on a regular basis (weekly)
• Evaluate control 4-5 days post application
• 2 apps may be required if populations are high
• Avoid stink bugs as possible- don’t be first and don’t be last
• Growers and consultants doing a great job
• Need to be prepared to do the same in 2014
Thanks to:

- April Forrester
- Tayler McLane
- Gus Lorenz (efficacy slides)
Any Questions?

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