Stink Bug Thresholds in First and Second Crop and Efficacy of Malathion

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“Rice Insects Information” website

www.lsuagcenter.com/riceinsects

- Information on biology and management
- Pictures
- Links to videos


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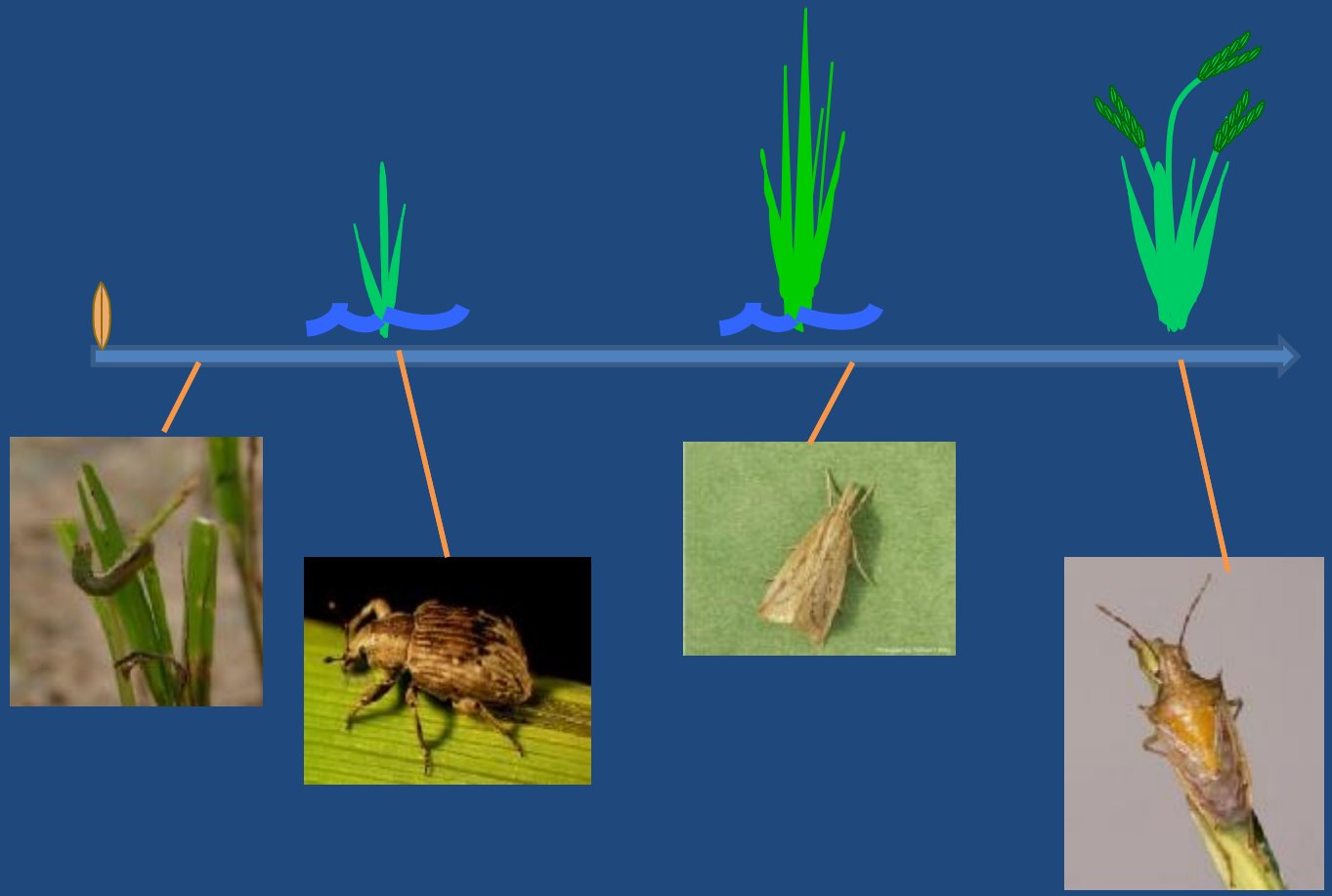
Rice Insects Information
Rice in Louisiana can be injured by a variety of invertebrate pests (insects and mites). The major invertebrate pests of rice in Louisiana are the rice water weevil and the rice stink bug. In addition, rice stem borers, rice seed midge, the rice leafminer, chinch bugs, bill bugs, sugarcane beetles, the South American rice miner, and armyworms can be important rice pests. Under heavy infestation levels, all of these pests can cause economic losses.
This website contains information about the identification, life cycle, injury to rice and current scouting and management practices for these pests.
Please click on the links located in the box below to obtain information on correct invertebrate scouting, identification, and management practices and additional rice Integrated Pest Management information.
Rice Insects Information
Rice Insect Fact Sheets
Rice Insect Photo Galleries
Online Rice Pest Identification Guide
Louisiana Rice Insect Blog by Natalie Hummel
Demonstration Tests (coming soon)
Rice Field Notes by Johnny Saichuk
Meetings (Oral and Poster Presentations) (coming soon)
Rice Pest Management Guide & Insecticide Links (coming soon)
Rice Extension Publications (coming soon)
The scouting and management recommendations are based on the best available information and will be modified as additional research is conducted. If you suspect insect injury in your field(s), contact your county agent for verification and help with insect management and damage assessment.
The preferred approach to controlling insect pests is by developing and following an integrated pest management plan. Integrated pest management is the integration of a variety of pest control strategies in



Rice stink bug: most important late-season insect pest of Louisiana rice

- Ø May be most important insect pest in some areas

Rice stink bug management program

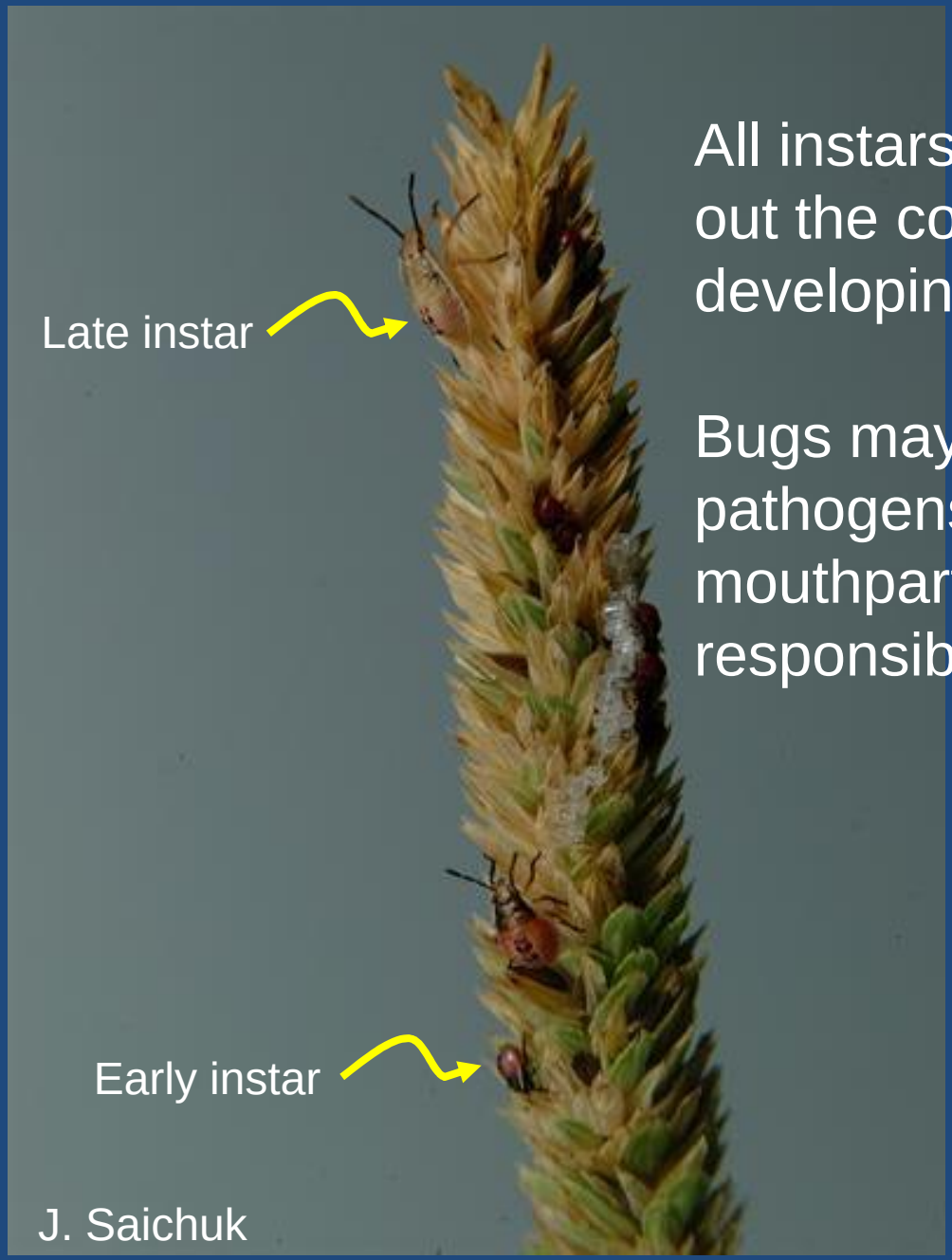
Transitional period

- Loss/lack of efficacy of older insecticides
- Introduction of new insecticides
- Reevaluation of damage and thresholds
- Other management tactics

Your input is needed!

Adult movement – weedy hosts to heading rice

Adults and nymphs feed on developing rice grains



All instars and adults suck out the contents of developing grains

Bugs may carry pathogens on their mouthparts – partly responsible for peck

Rice Stink Bug Damage

Feeding on flowers (non-filled seed)

Remove contents of developing kernels (partially-filled seed)

Pecky rice and broken kernels

Rice stink bug – current management program

- Adults can move into fields rapidly after heading
- Adults are the primary damaging stage
- Thresholds are important – mere presence of stink bugs in a field should not trigger spraying
- Scout with sweep net

Rice stink bug – current management program

- Begin scouting when rice is 50 to 75% heading
- 10 sweeps at 10 different areas
- Avoid hot hours
- First two weeks of heading: 3 bugs per 10 sweeps
- After first two weeks: 10 bugs per 10 sweeps (grains become more resistant as they ripen)

Current Insecticide Options

Pyrethroids

KarateZeon®

MUSTANG MAX®

+ others

Organophosphates

Malathion

Methyl-Parathion

Carbamate

Sevin©

Neonicotinoids

Tenchu

Rice stink bug management program

- Loss/lack of efficacy of older insecticides
- Introduction of new insecticides
- Reevaluation of damage and thresholds
- Other management tactics

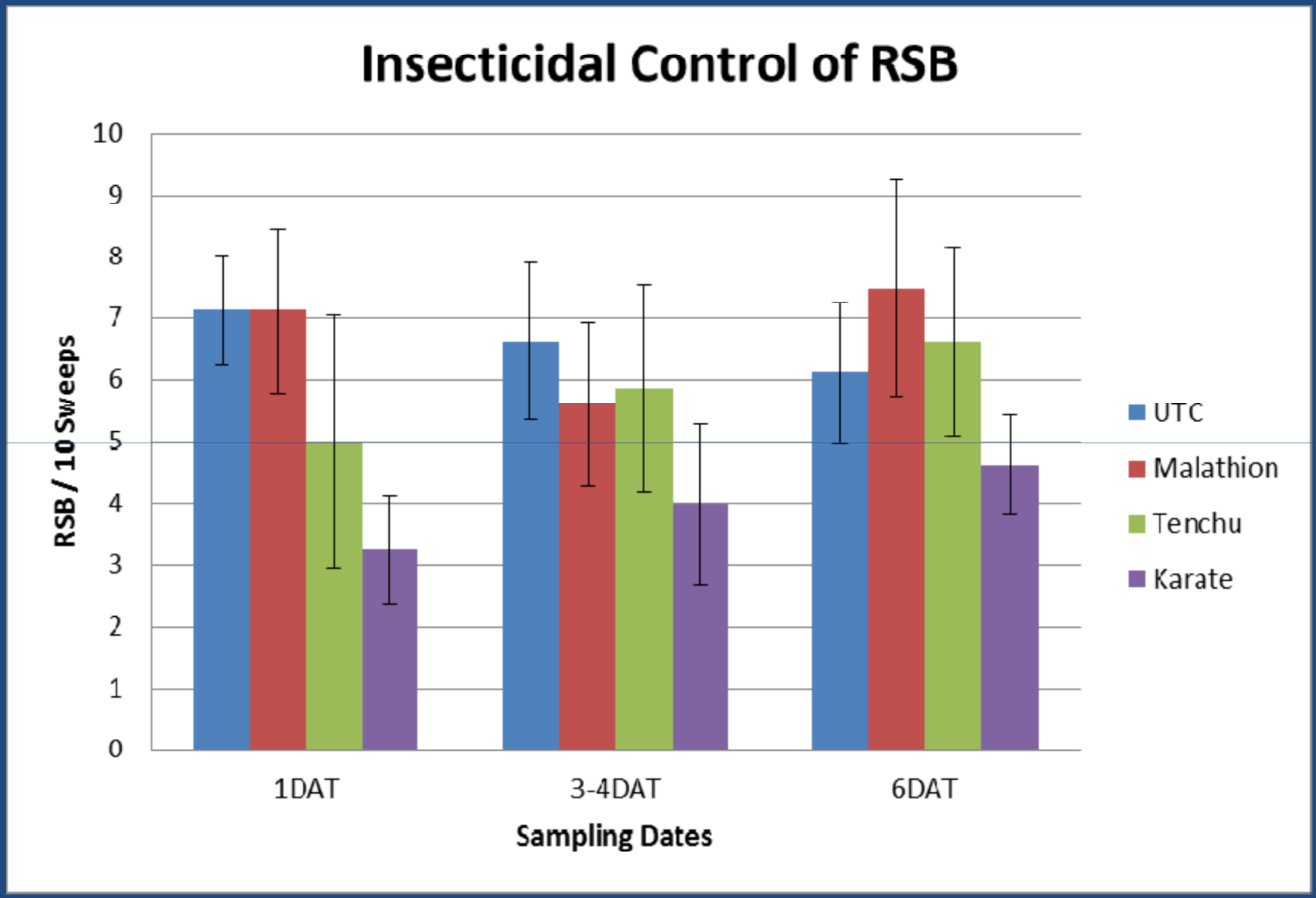
Methyl parathion in rice

EPA has received requests from the registrants to voluntarily cancel all product registrations containing *methyl parathion*, a restricted use organophosphate insecticide and acaricide used primarily on cotton, corn, and rice, as well as on other agricultural crops. These requests would terminate the last methyl parathion products registered for use in the U.S., effective December 31, 2012. *End-use products will not be sold after August 31, 2013, and end-use products cannot legally be used after December 31, 2013.* All end use product labels will be amended to reflect the last legal use date.

Malathion efficacy – two trials, 2012

Treatment	Mean RSB in 10 Sweeps for three sampling dates
Untreated Control	6.63 ± 3.03AB
Karate Z, 0.04 lbs ai/acre	3.96 ± 2.82B
Malathion, 0.9 lbs ai/acre	6.75 ± 4.10A
Tenchu 20SG, 9.0 oz ai/acre	5.83 ± 4.81AB

Treatment	1 DAT	3-4 DAT	6 DAT
Untreated Control	7.13 ± 0.90	6.63 ± 1.27	6.13 ± 1.14
Karate Z, 0.04 lbs ai/acre	3.25 ± 0.90	4.00 ± 1.30	4.63 ± 0.80
Malathion, 0.9 lbs ai/acre	7.13 ± 1.33	5.63 ± 1.31	7.50 ± 1.77
Tenchu 20SG, 9.0 oz ai/acre	5.00 ± 2.04	5.88 ± 1.67	6.63 ± 1.54


Insecticidal Control of RSB
RSB / 10 Sweeps
10
9
8
7
6
5
4
3
2
1
0
1DAT
3-4DAT
6DAT
Sampling Dates
UTC
Malathion
Tenchu
Karate

Rice stink bug management program

- Loss/efficacy of older insecticides
- Introduction of new insecticides
- Reevaluation of damage and thresholds
- Other management tactics

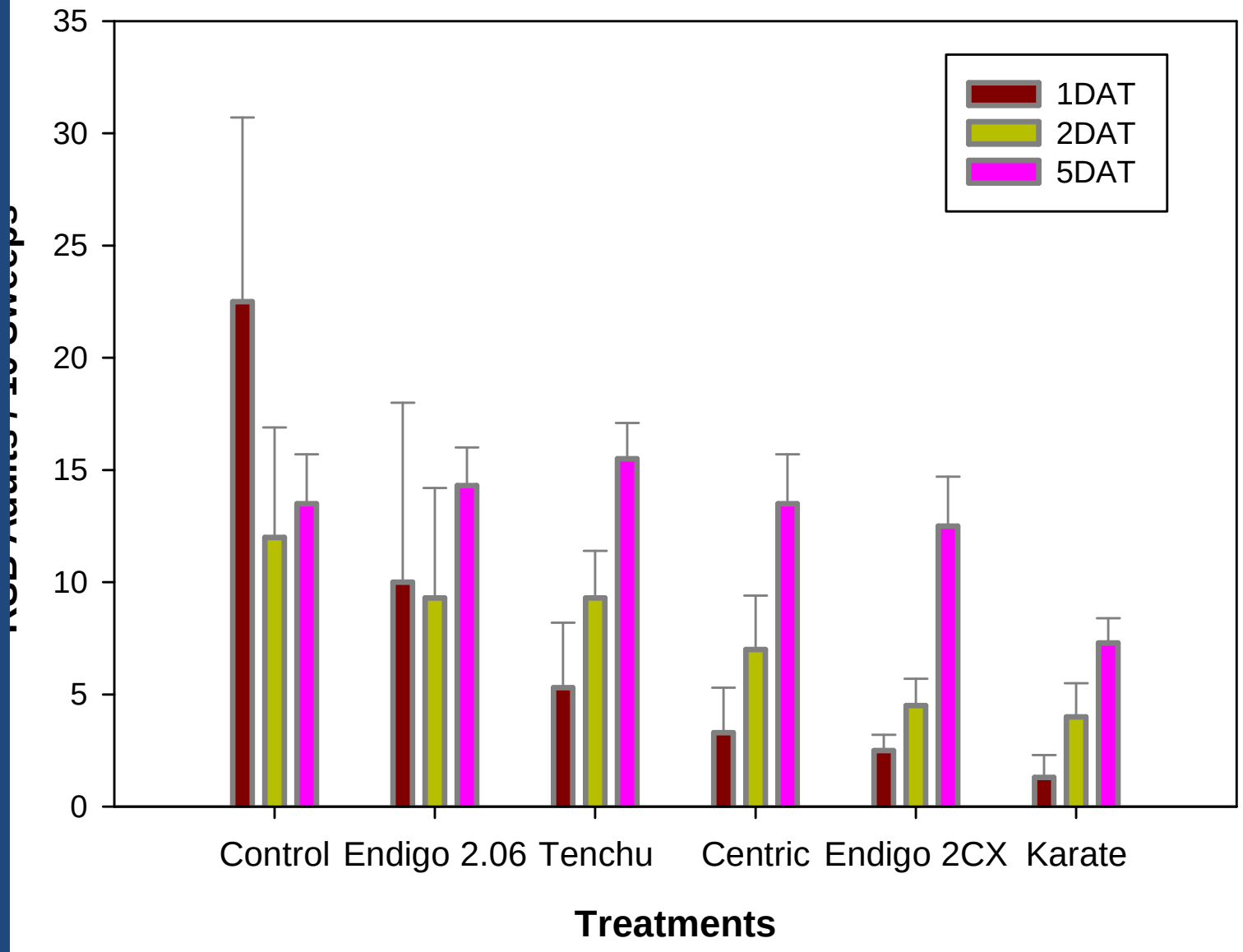
Tenchu 20 SG label

- LX434 Dinotefuran 20SG
- Rate: 7.5 to 10.5 oz. product per Acre (0.094-0.131 lbs ai per Acre)
- Labeled only for rice stink bug in rice
- Maximum of two applications per year
- 7 d phi
- Crawfish restrictions
- Waiting on state label

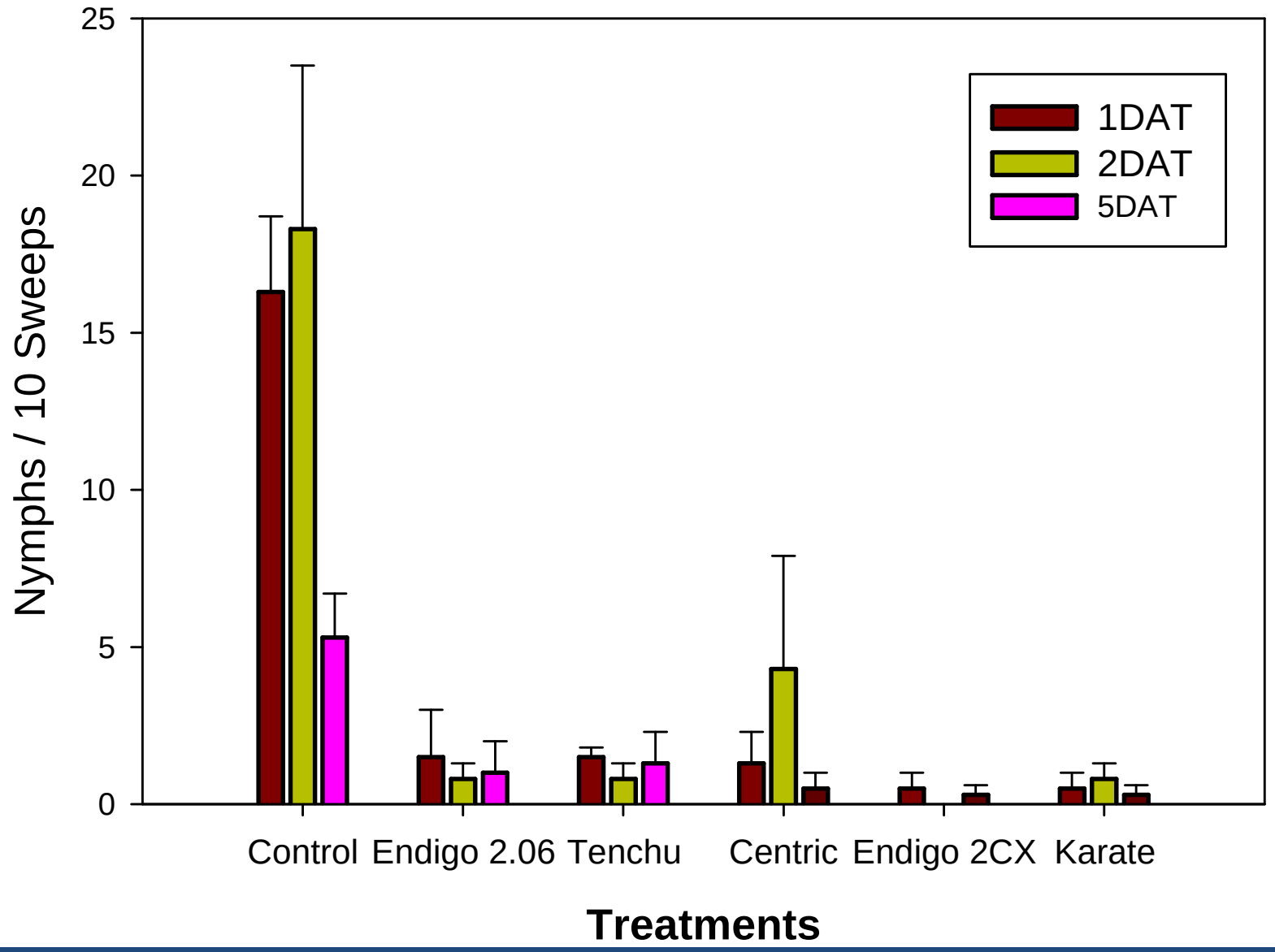
Fastac label

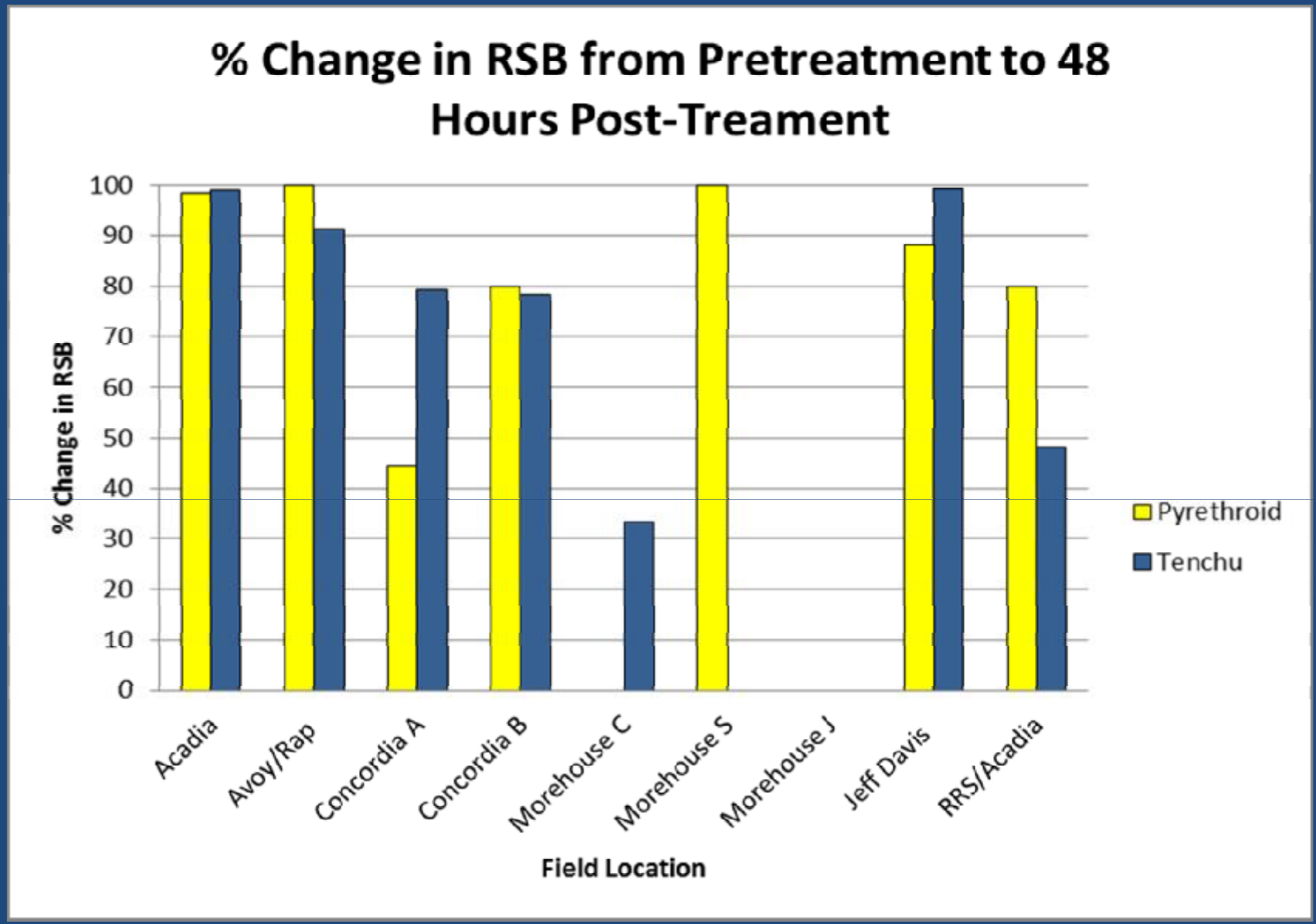
- Active ingredient: alpha-cypermethrin (pyrethroid)
- Rate: 2.6 to 3.8 fl oz/acre (0.02-0.025 lb ai/acre)
- Use like other pyrethroids
- Do not apply > 11.4 fl oz/acre/year
- “Do not use treated rice fields for the aquaculture …”
- Rice water weevil, aphids, armyworms, stink bugs

2011 Small Plot Insecticide Efficacy

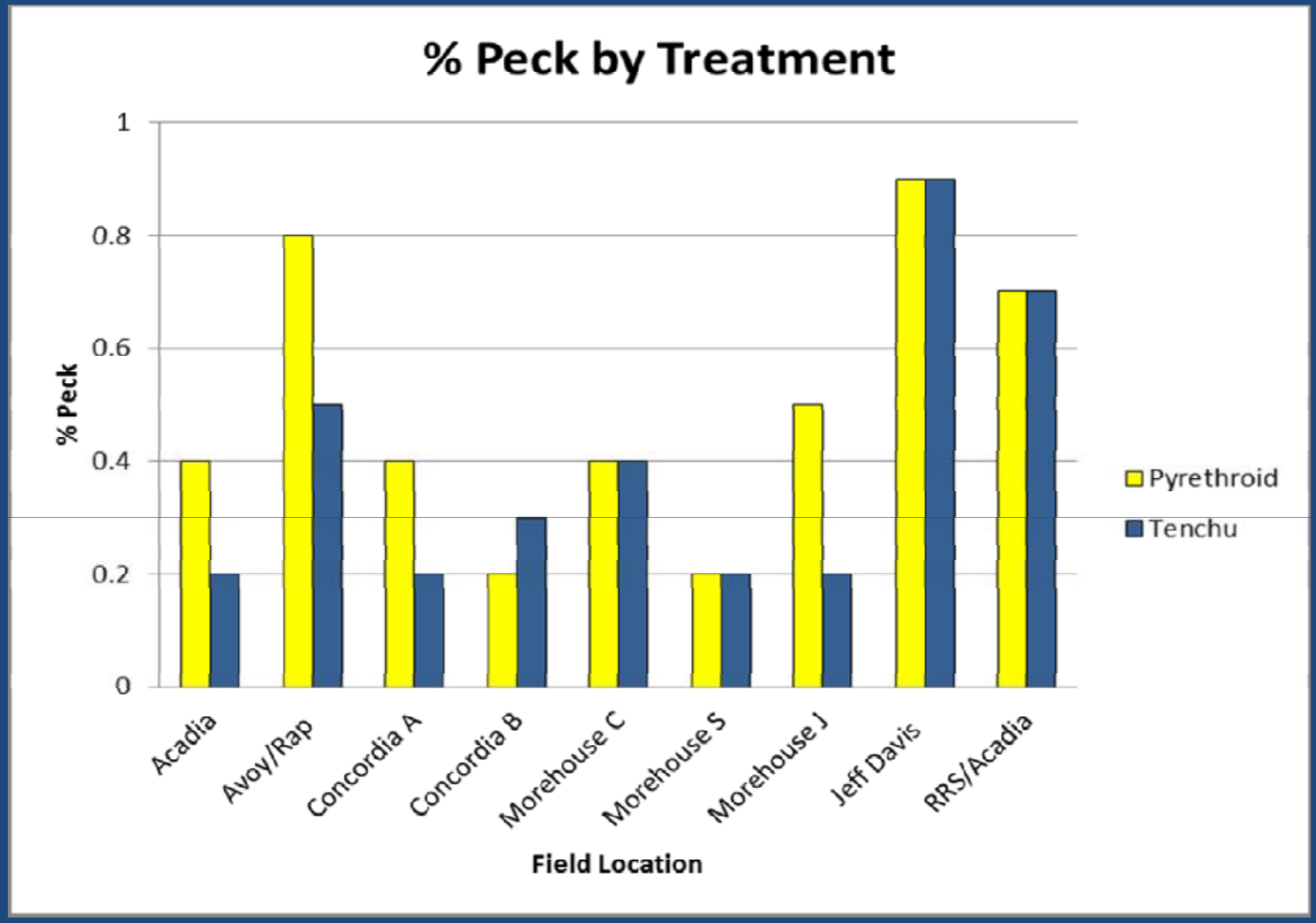


2011 Small Plot Insecticide Efficacy





Percent reduction in RSB numbers - 24hr before treatment vs. 48hr after treatment.



Percent pecky rice by treatment (Pyrethroid- yellow, Tenchu 20 SG- Blue) at each location.

Rice stink bug management program

- Loss/efficacy of older insecticides
- Introduction of new insecticides
- Reevaluation of damage and thresholds
- Other management tactics

Your input is needed!

Why re-evaluate application thresholds?

- Origins of current thresholds unknown
- Recent results from TX suggest thresholds may be too low – spraying too much?
- New insecticides, varieties

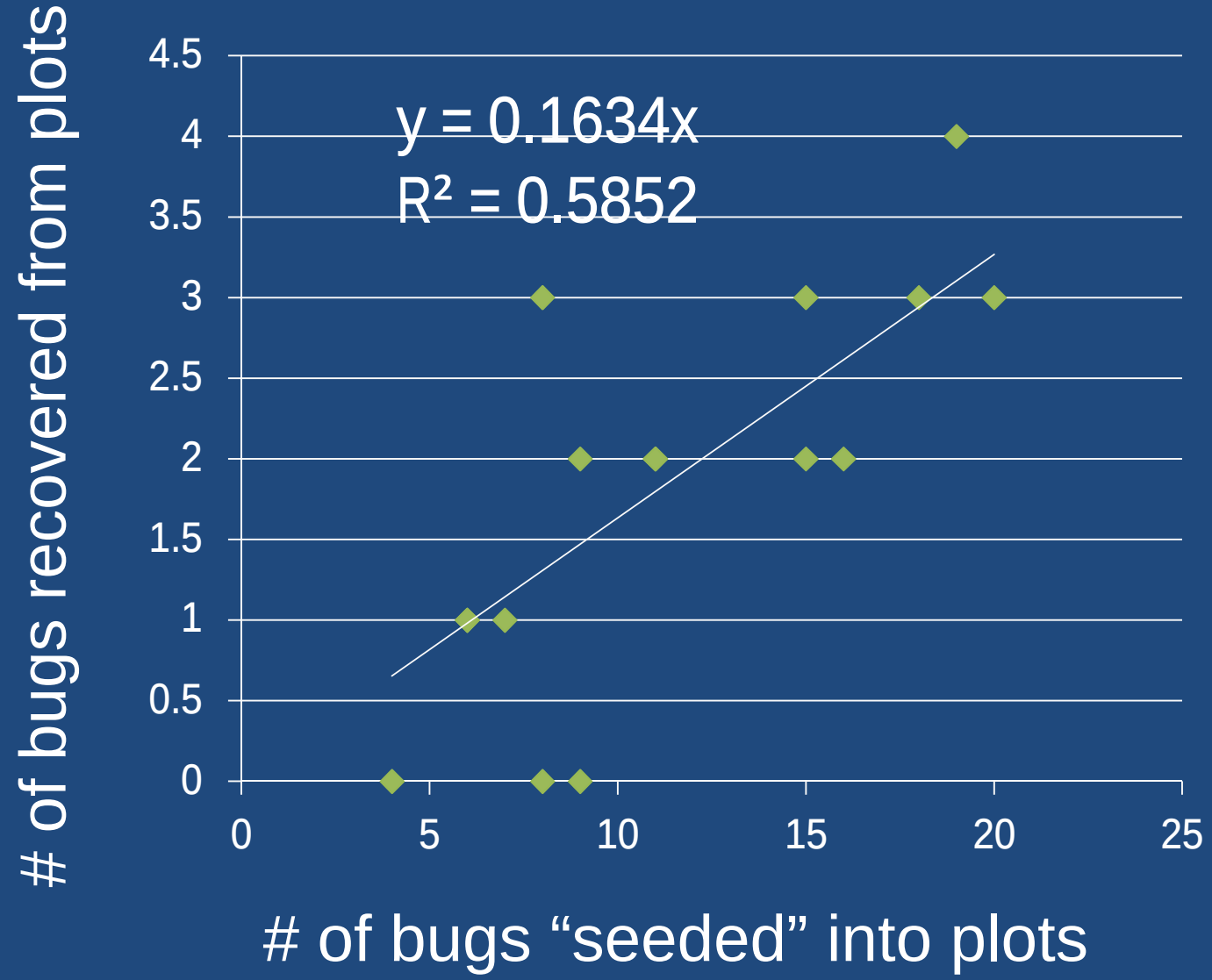
Ø First step: re-evaluate relationship between stink bug density and damage (peck, blanks)

Rice Stink Bug Cage Studies

Cage Study


Beginning: Plant 5 Plots of Cocodrie
Install Cages at First Sign of Emergence
Infest with 0,2,5,10, or 20 RSB Adults

Sweep net sampling efficiency



RSB Cage Study

- Recapture rate is 16%
- Early LA threshold is 0.3 RSB per sweep (= 3 RSB per 10 sweeps)
- So, threshold of 0.3/sweep is equivalent to 1.88 bugs actually present in the sweep radius

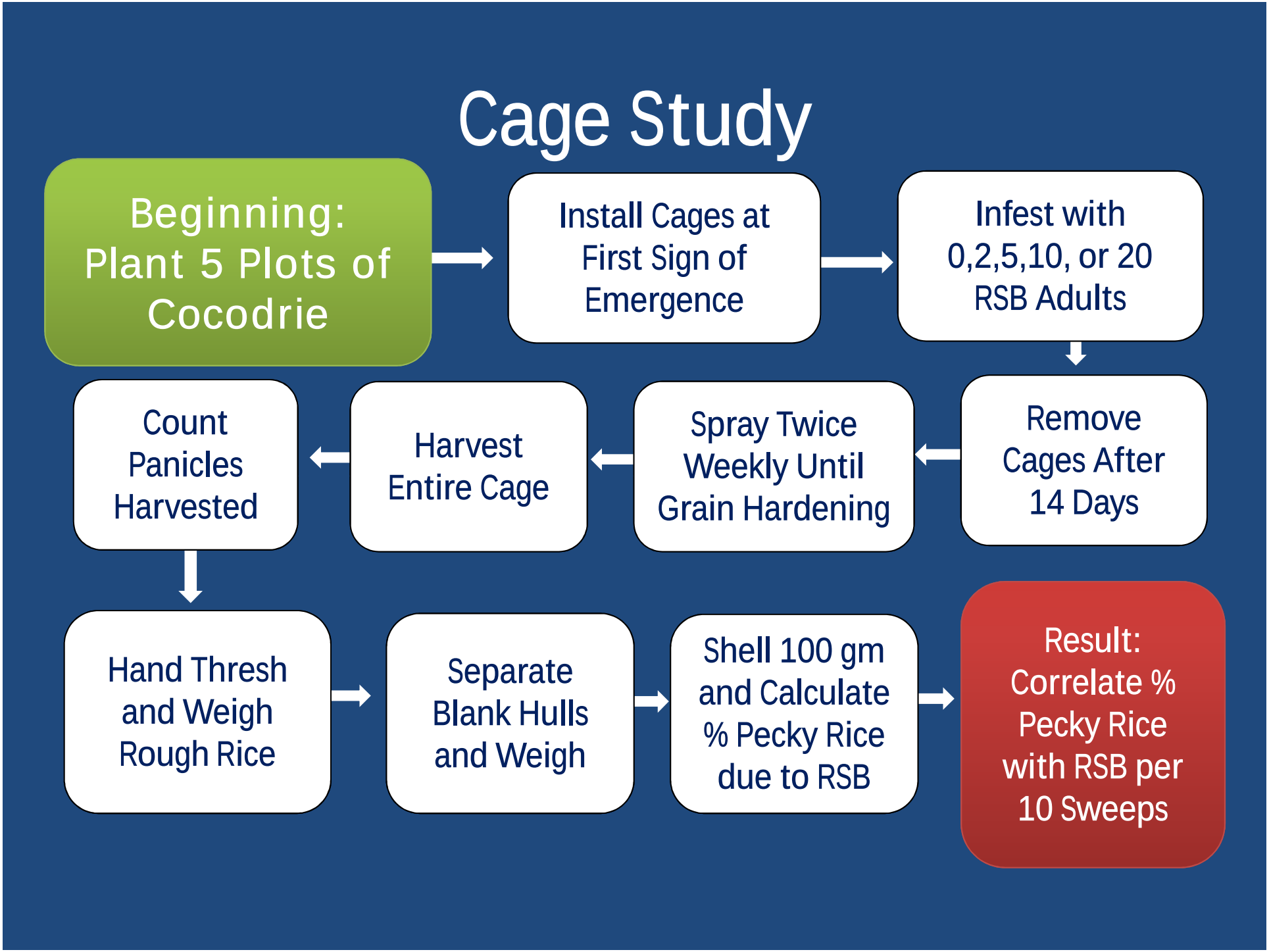
RSB Cage Study

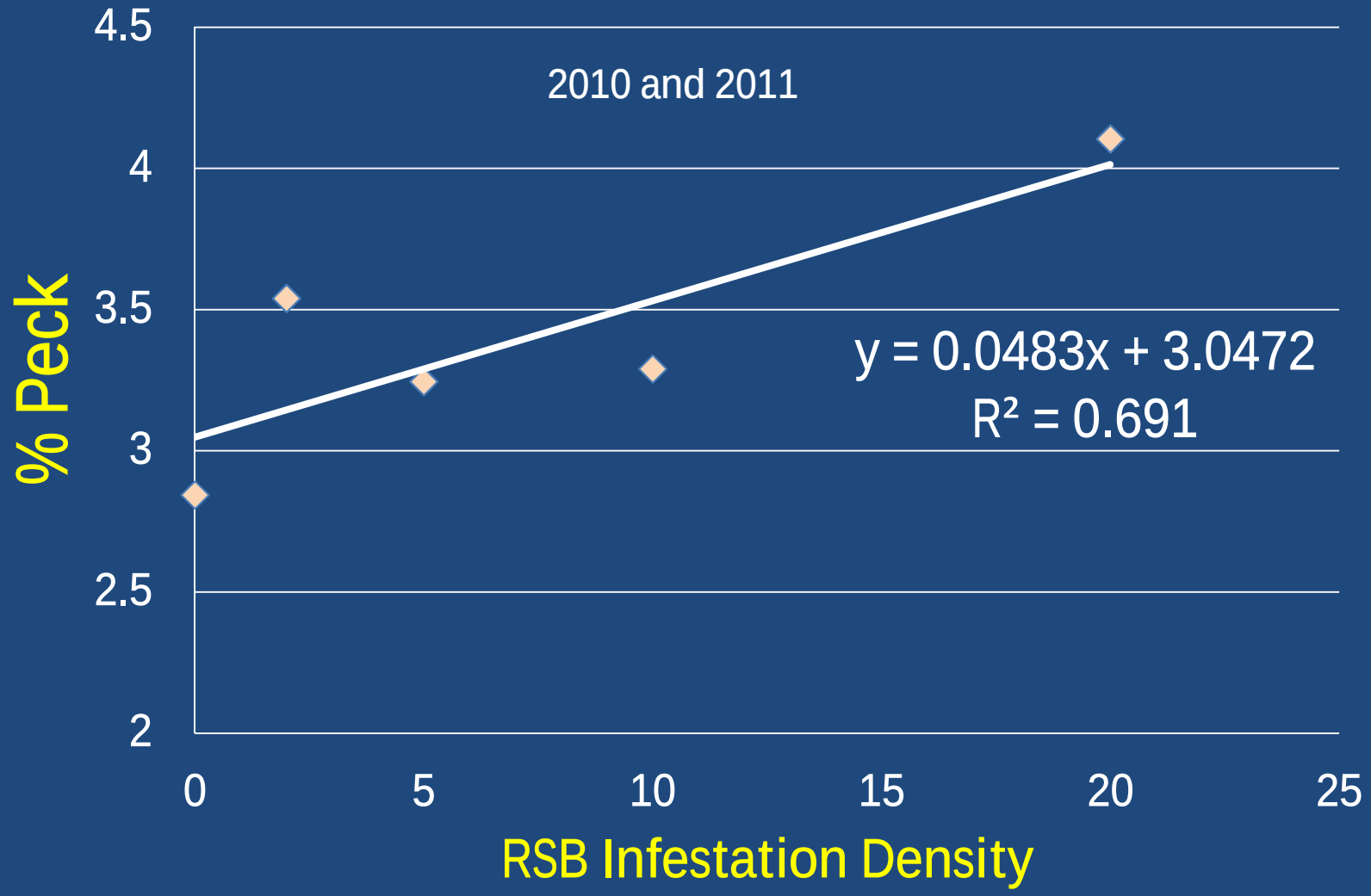
- Cages are 6.67 sq. ft
- Recommended sweep covers approximately 9.5 sq. ft.
- Cage area is 70% of 1 sweep

RSB Cage Study

- 3 RSB per 10 sweeps equates to 1.313 RSB per cage
- 2010-Cage Study 4 reps w/ 0, 1, 2, 5, or 10 bugs per cage
- 2011 & 2012- 4 reps each year w/ 0, 2, 5, 10, 20 bugs per cage

Cage Study


Beginning: Plant 5 Plots of Cocodrie
Install Cages at First Sign of Emergence
Infest with 0,2,5,10, or 20 RSB Adults
Remove Cages After 14 Days
Spray Twice Weekly Until Grain Hardening
Harvest Entire Cage
Count Panicles Harvested
Hand Thresh and Weigh Rough Rice
Separate Blank Hulls and Weigh
Shell 100 gm and Calculate % Pecky Rice due to RSB
Result: Correlate % Pecky Rice with RSB per 10 Sweeps



% peck in unpolished rice, broken and whole grains

Threshold development

- Statistical analysis
- Relate damage (peck, blanks) to economic losses (yield loss, penalties for peck)
- Adjust for rice prices, insecticide costs, etc. to obtain economic threshold
- Verification
- Expect preliminary answers by June (training session?)

Rice stink bug management program

- Loss/efficacy of older insecticides
- Introduction of new insecticides
- Reevaluation of damage and thresholds
- Other management tactics

Adult movement – weedy hosts to heading rice

Nymphs develop on ripening grains

Unanswered questions – rice stink bug biology

- What causes adult stink bugs to move in and out of fields (nymphs cannot fly)?
- How much damage do nymphs cause?

  --do immature stink bugs develop rapidly enough to cause economic injury to developing rice grains?
- How much impact do natural enemies have?

Questions or feedback?

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