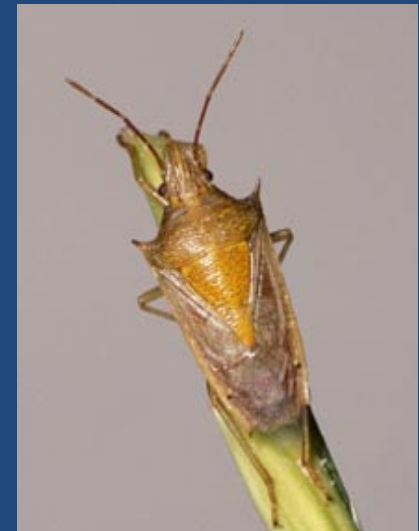
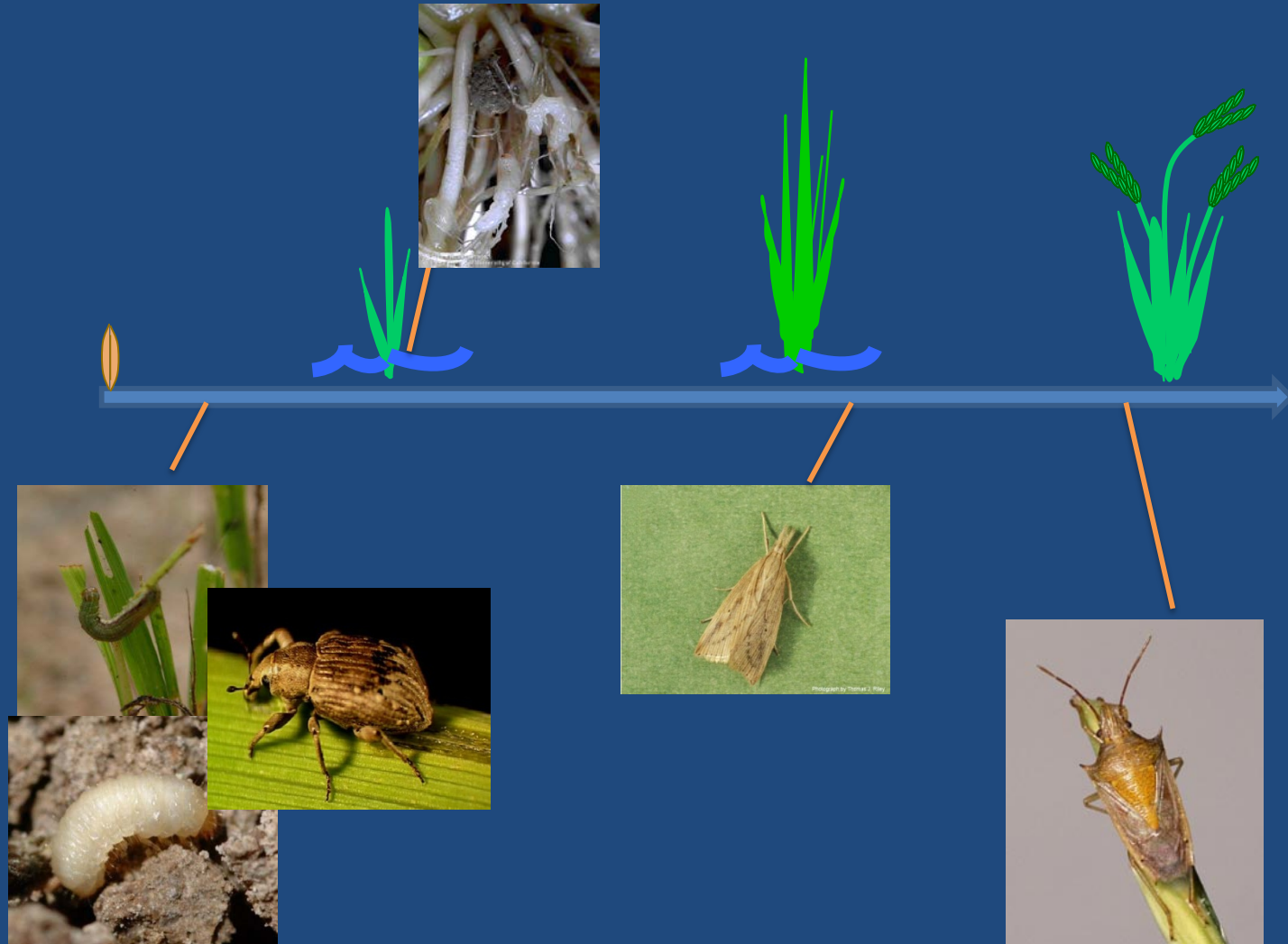


2016 Rice Insect Control Update

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Jeff Gore (Mississippi State University)



Louisiana rice insect pest complex



Update - 2016

- Key changes
- Early season decisions
- Borer update
- Rice stink bug update
- Rice delphacid
- Bees

Key changes for 2016

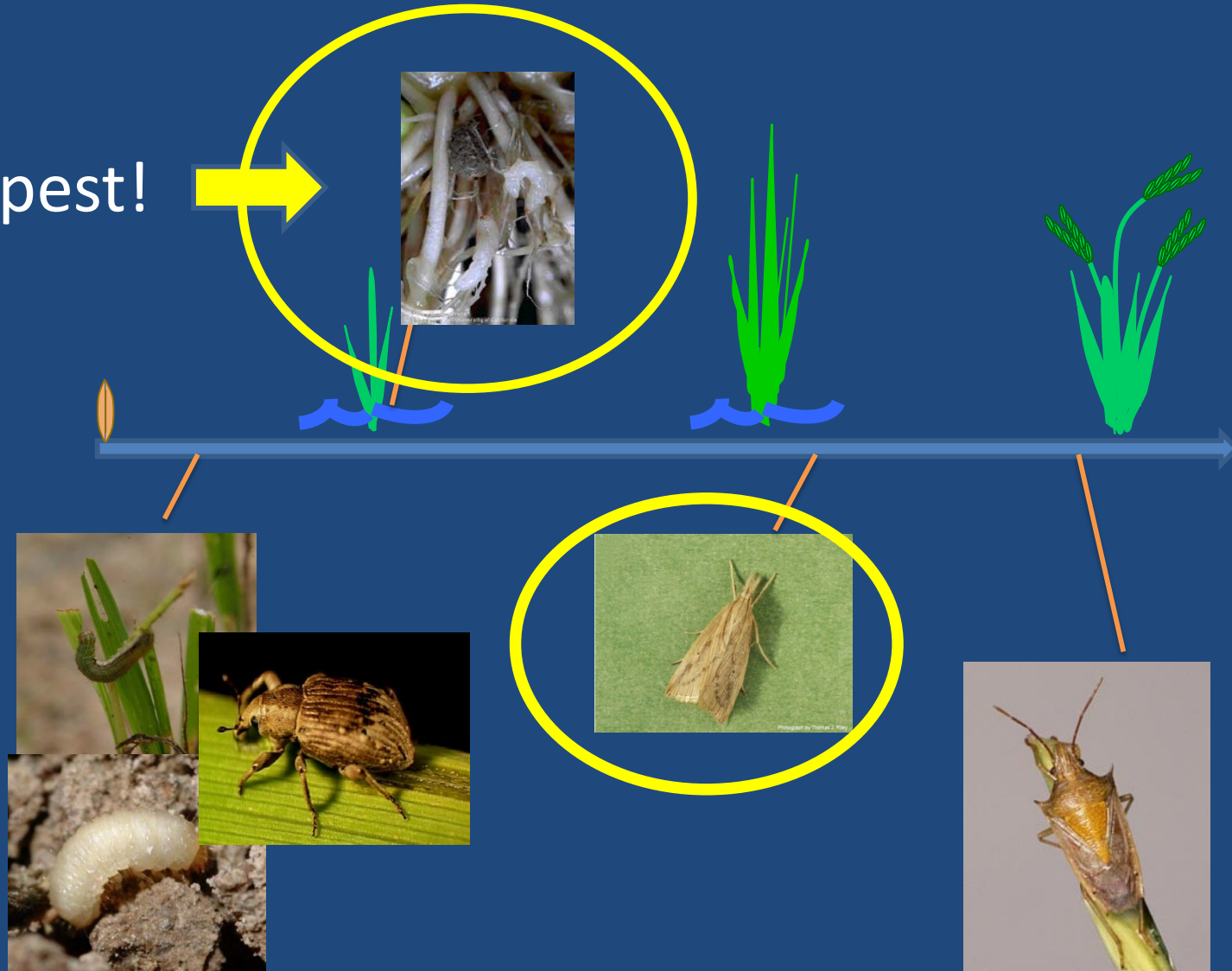
- Continued expansion of Mexican rice borer in Louisiana; development of management program for borers
- No new insecticides, but full range of insecticide options available
- Progress on developing threshold for stink bugs
- Rice delphacid found in Texas

Early-season decisions

Several **early season** decisions -- decisions made before planting or shortly after planting – can have important effects on management of insect pests

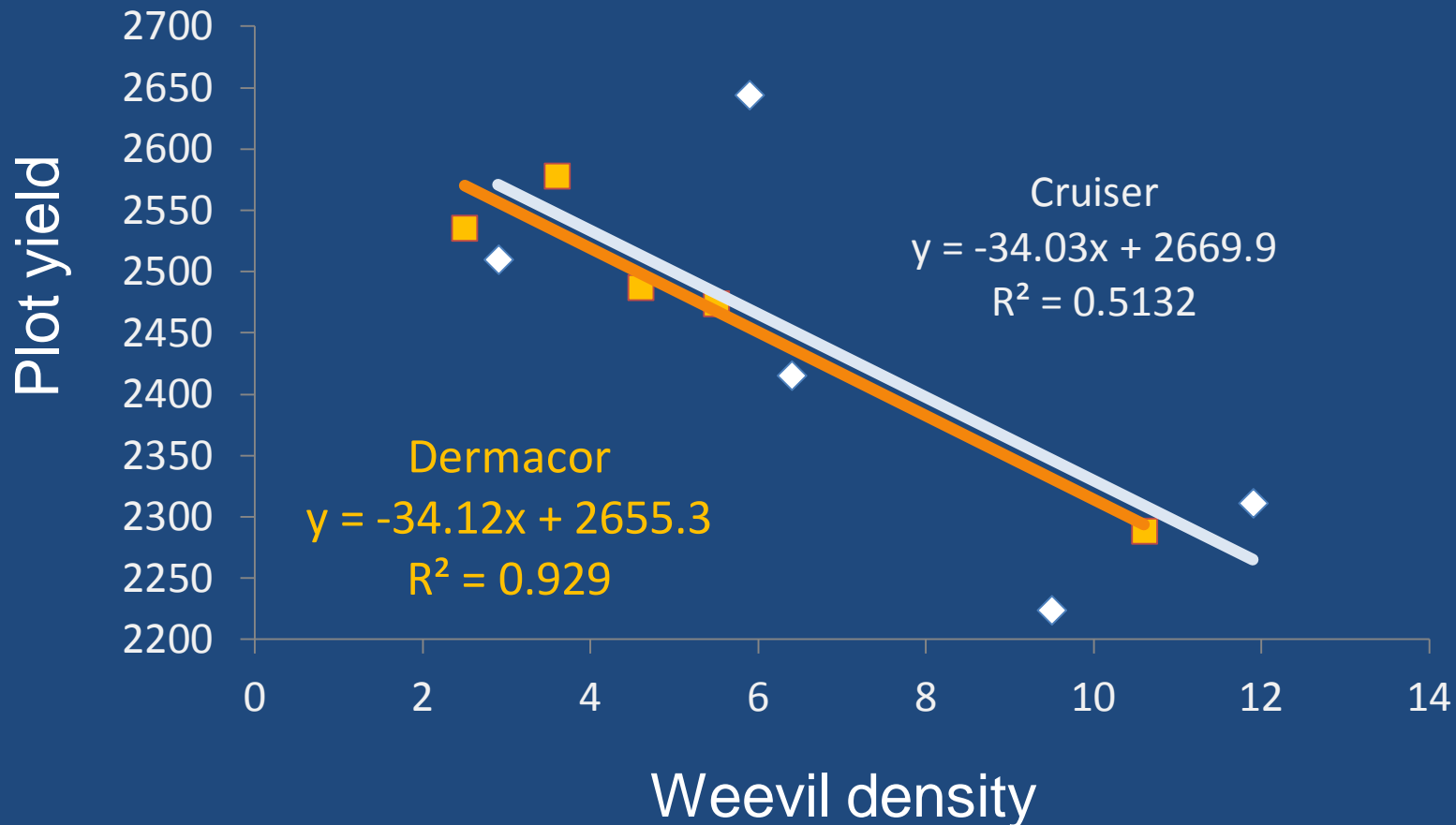
Management of rice water weevil and stem borers is affected by early-season decisions

Key pest!



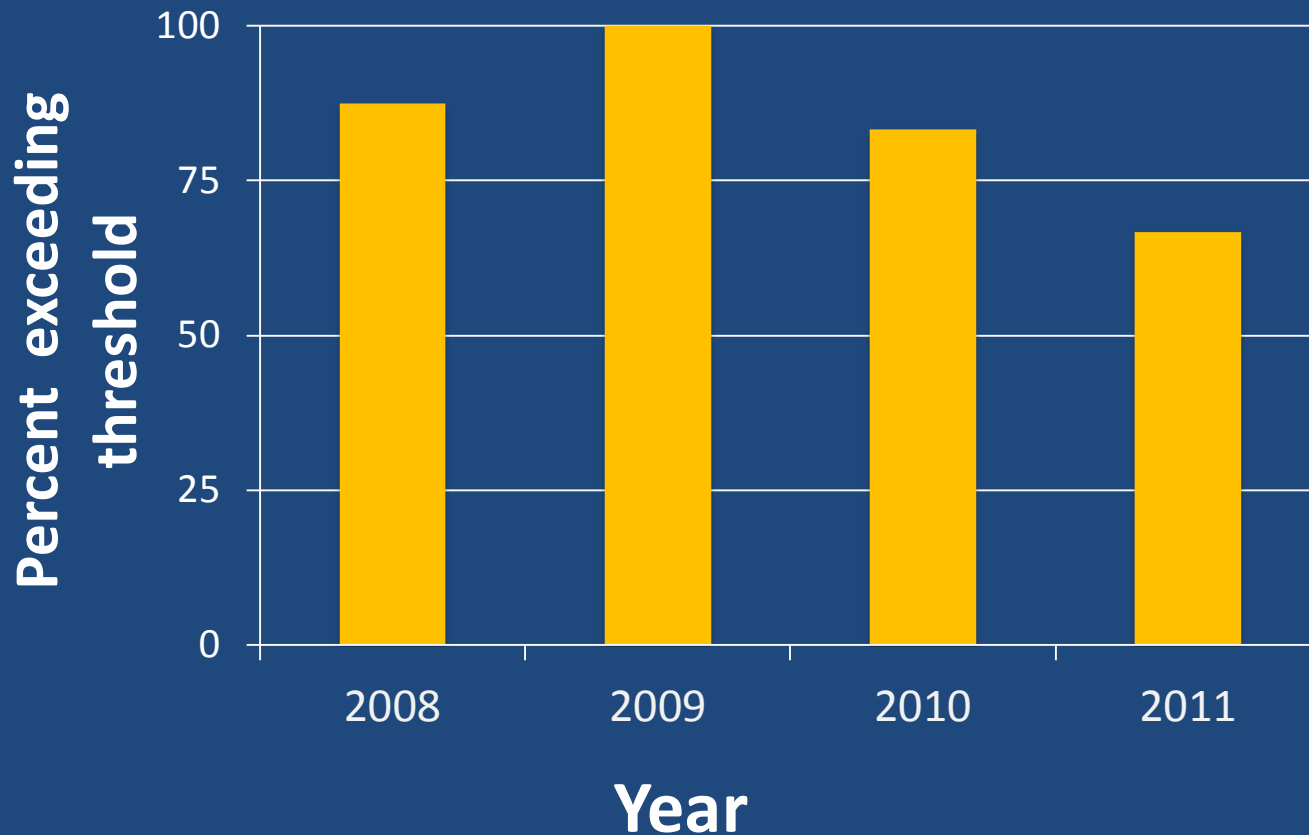
Relationship between rice water weevil population density and rice yield

- Each weevil larva correlated with ~1% loss in yield
- No difference- Cruiser and Dermacor



Proportion of untreated rice with weevil infestations that exceeded threshold, 2008-2011

Threshold = 3 larvae per core, ~\$15-\$20 loss per acre
Average weevil density = ~11 larvae per core sample



Most rice in SW Louisiana will require treatment!

What early-season decisions impact management of borers and weevils?

- **What type of insecticide will I use – seed treatment or foliar?**
- Planting date
- Water management
- Variety
- Seeding rate
- Fertilization rate

What early-season decisions impact management of borers and weevils?

- **What type of insecticide will I use – seed treatment or foliar?**
- Planting date
- Water management
- Variety
- Seeding rate
- Fertilization rate?

What insecticide should I use?

| Foliar insecticides | | Seed treatments | |
|---------------------|--------------|-----------------|---|
| Pyrethroids | Belay | Dermacor | CruiserMaxx NipsitInside |

Should I...

Treat with Dermacor (expensive)?

Treat with Cruiser/Nipsit (cheaper)?

Wait to treat with foliars at/near time of flooding? (potentially cheapest)

Efficacy against rice water weevil (major target)

- Dermacor X-100 is most effective against weevils
- Cruiser/Nipsit less effective than Dermacor, but still good
- Foliars are usually as effective as Cruiser/Nipsit, but timing is critical
- Belay has a longer residual than the other foliars

Spectra of activity

Cruiser/Nipsit

Dermacor X-100



Pyrethroids very broad spectrum, Belay not as broad-spectrum

You might consider Dermacor if...

- History of severe weevil infestations
- Planting late
- Using expensive seed at low seeding rates
- Worried about stem borers or fall armyworms

You might consider Cruiser/Nipsit if...

- Planting early – possibility of cold stress
- History of light weevil infestations
- Price more important than performance against weevils
- Worried about colaspis (e.g., planting after soybeans) or have had problems with sucking insects in the past

You might consider foliar (pyrethroids, Belay) if...

- Planting early
- Sporadic weevil infestations in past
- Belay, at label rate, has longer residual than pyrethroids. Pre-flood applications as effective as Cruiser in small-plot trials.
- DO NOT use pyrethroids around crawfish ponds

What early-season decisions impact management of borers and weevils?

- What type of insecticide will I use – seed treatment or foliar?
- **Planting date:** early planted rice has fewer problems with insect pests
- Water management
- Variety
- Seeding rate
- Fertilization rate?

What early-season decisions impact management of borers and weevils?

- What type of insecticide will I use – seed treatment or foliar?
- Planting date
- **Water management:** delayed and shallow floods reduce problems with rice water weevils
- Variety
- Seeding rate
- Fertilization rate?

What early-season decisions impact management of borers and weevils?

- What type of insecticide will I use – seed treatment or foliar?
- Planting date
- Water management
- **Variety:** Medium grains are more susceptible to weevils, hybrids more resistant to borers
- Seeding rate
- Fertilization rate?

What early-season decisions impact management of borers and weevils?

- What type of insecticide will I use – seed treatment or foliar?
- Planting date
- Water management
- Variety
- **Seeding rate** : Low seeding rates sometimes compromise weevil management
- Fertilization rate?

What early-season decisions impact management of borers and weevils?

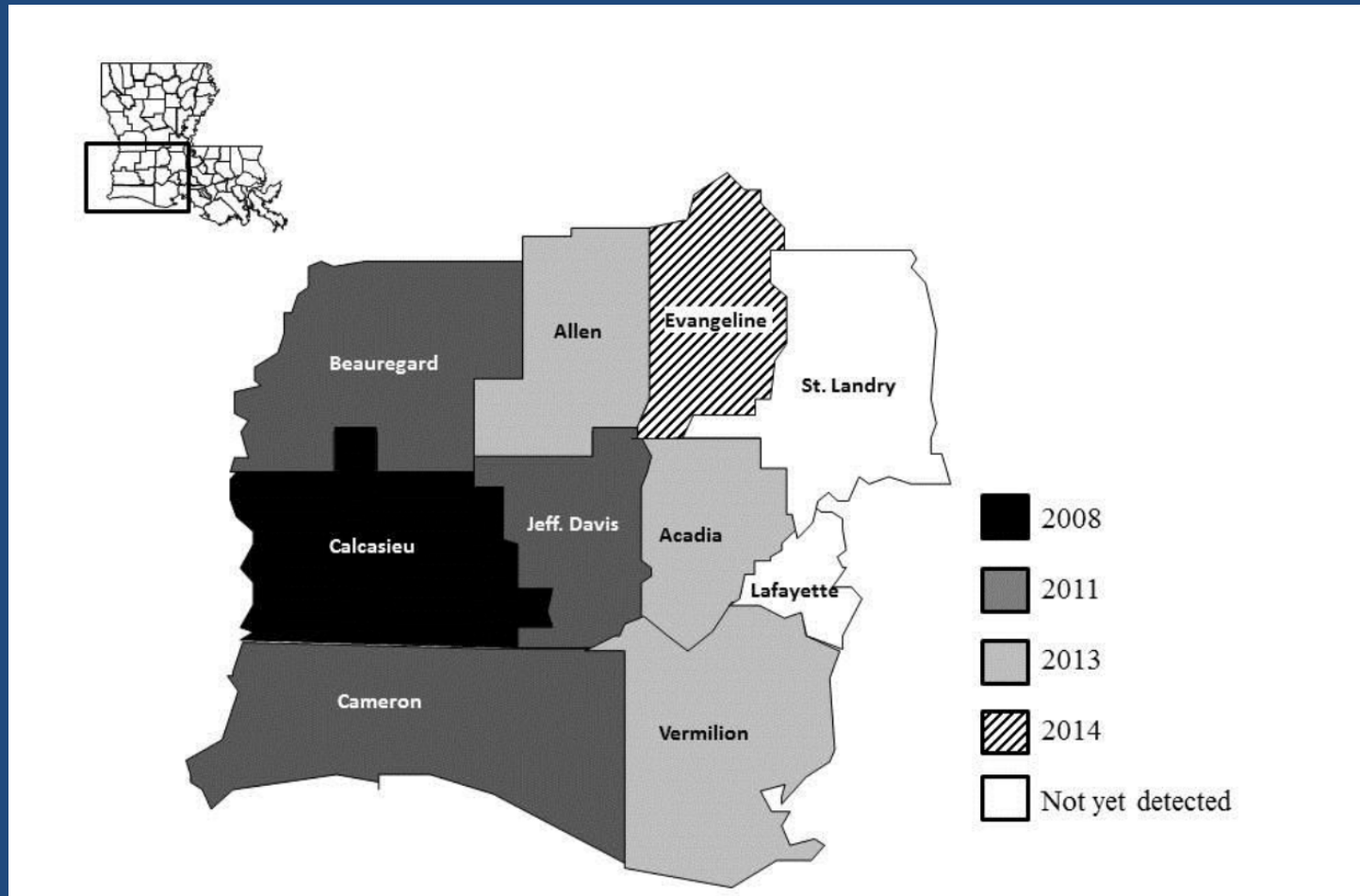
- What type of insecticide will I use – seed treatment or foliar?
- Planting date
- Water management
- Variety
- Seeding rate
- **Fertilization rate:** High N fertilization leads to higher insect populations

Borer update: Management of stem borers in Louisiana rice

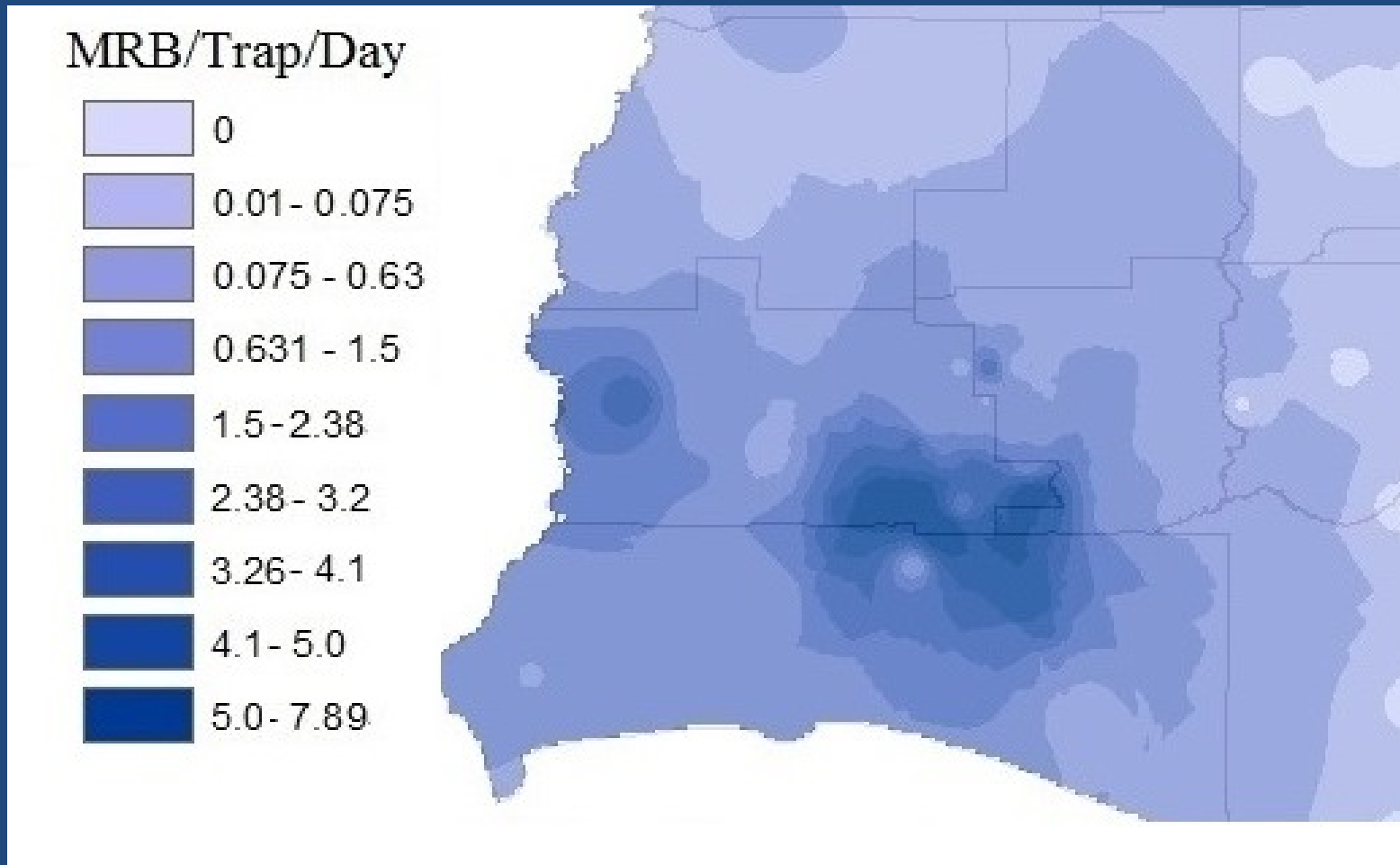


Mexican rice borer continues to establish in Louisiana

Fall 2015: specimens caught in St. Landry Parish



MRB populations are higher where it has been established longer

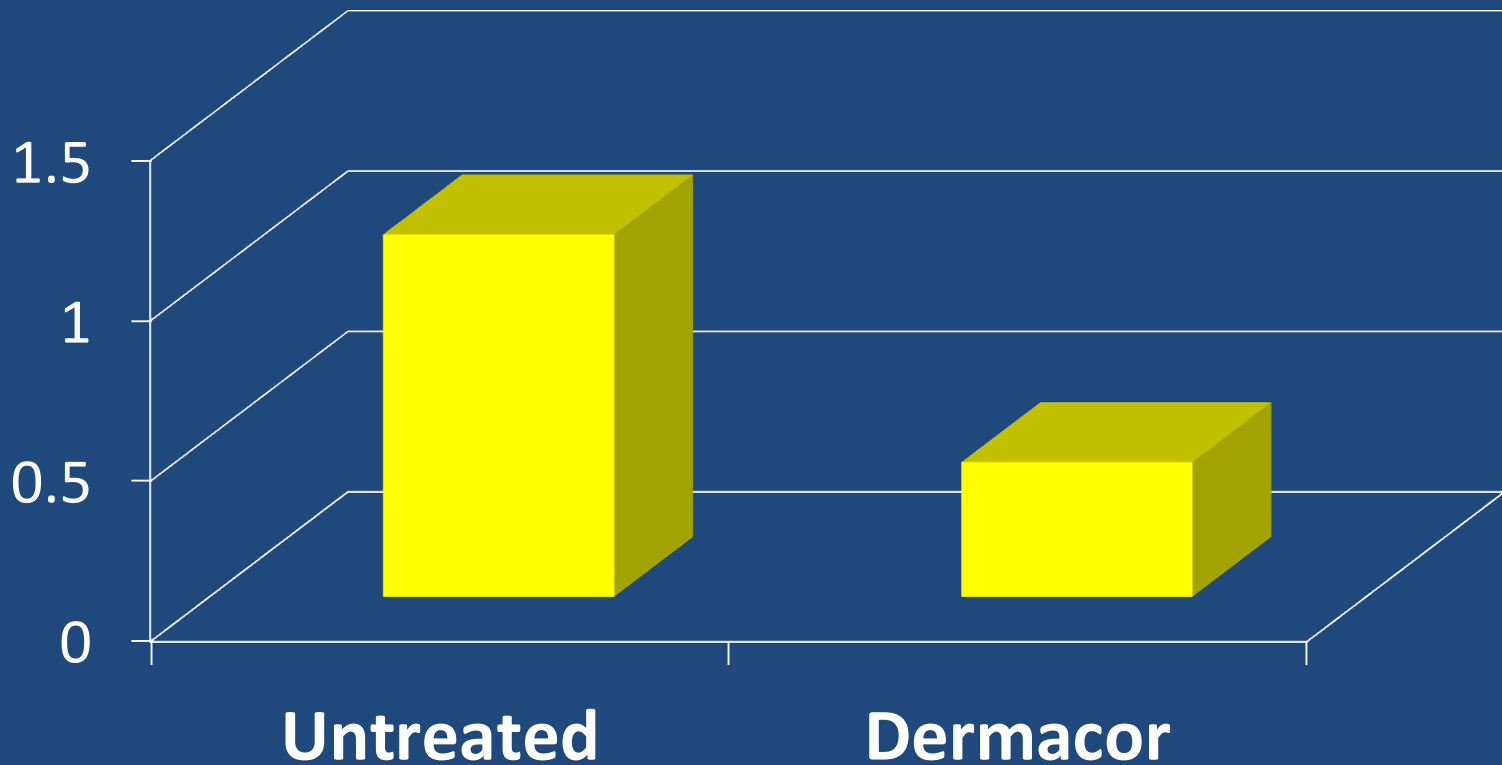


Stem borer management program

- **Use Dermacor X-100** to control weevils and suppress stem borers
- **Plant early** to avoid severe infestations of borers
- **Plow fields** in fall/winter to eliminate overwintering habitat
- **Use less susceptible varieties**
- **Scout and use pheromone traps; foliar insecticides if needed**
- **Silicon soil amendment** may reduce borer densities

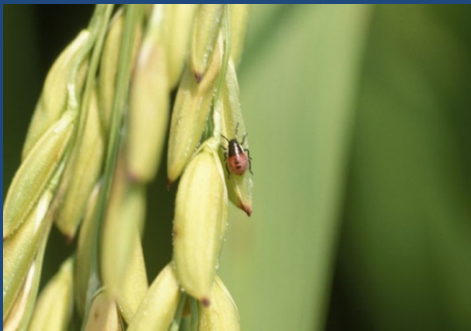
Whiteheads: Crowley 2015, 3 varieties, late-planted (rice stalk borer)

Whiteheads per plot



Rice stink bug

Weeds



Rice Stink Bug Damage



Feeding on flowers (non-filled seed)



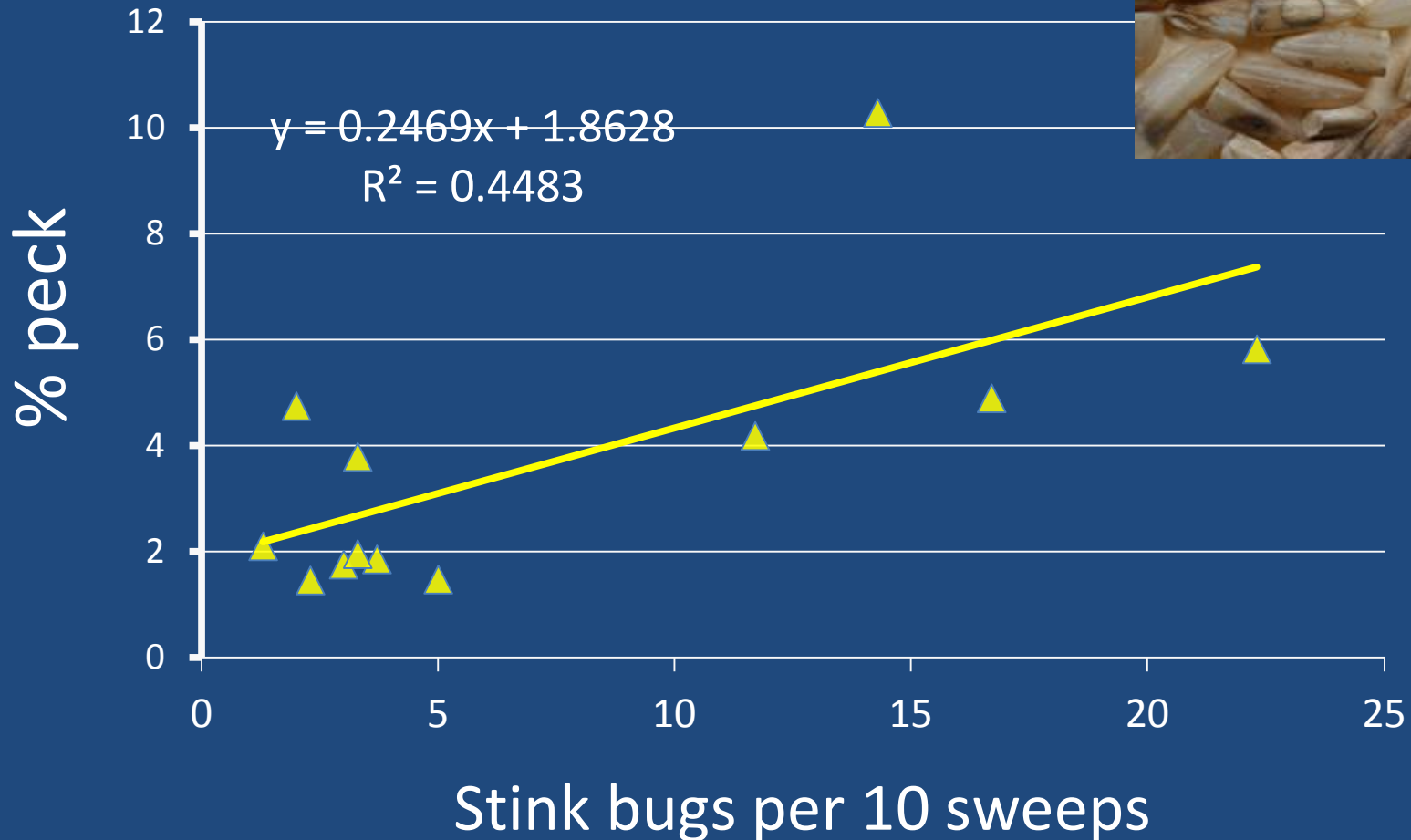
Remove contents of developing kernels (partially-filled seed)



Pecky rice and broken kernels

Stink bug density vs. % peck, 2015

Each bug: 0.25% peck



Rice delphacid (planthopper) in Texas







Planthopper damage (ratoon rice)







Honeydew

Hoja Blanca



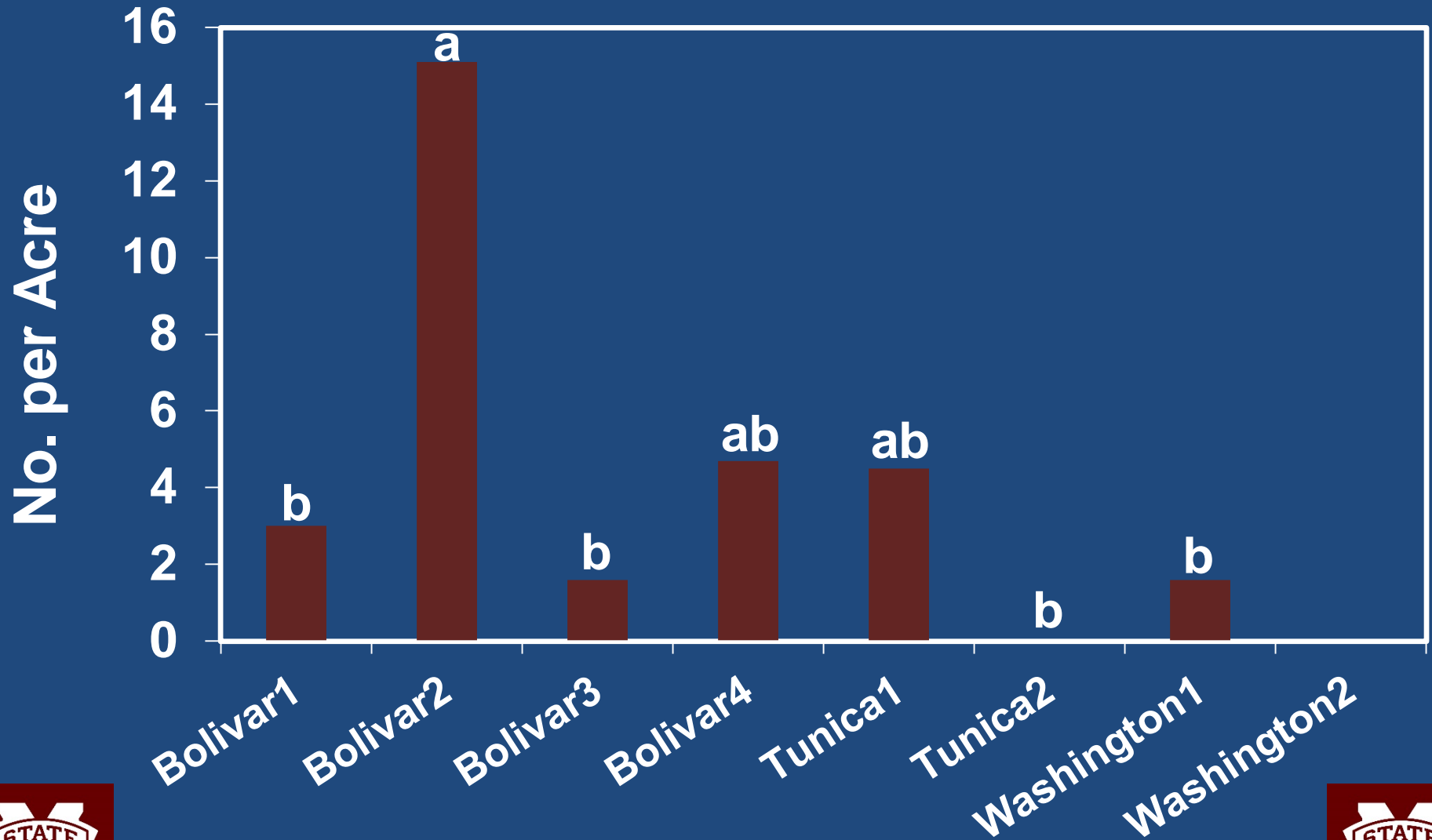
Do honey bees visit rice?

- Sampled rice across the MS Delta
- Only sampled during bloom
- Morning, Mid-Day, and Evening
- Slowly walked 100 ft at 4 distances
 - 0, 20, 50, and 100 ft. into the field

Do honey bees visit rice?

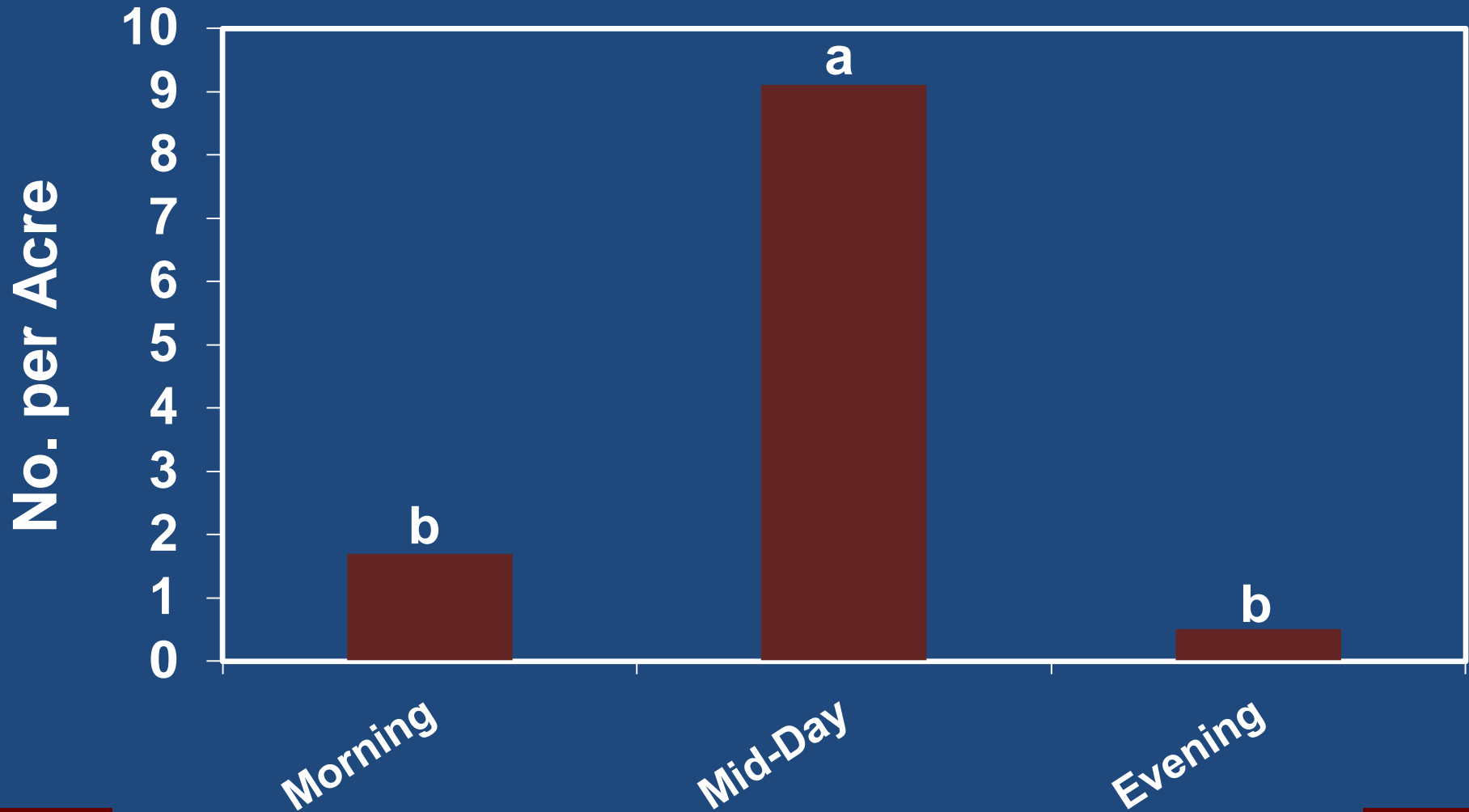
- A total of 8 fields sampled
- 284 observations
- Honey bees were observed at 12 observations (4%)
- 20 Honey Bees observed in all

Occurrence of Honey Bees in Rice Locations



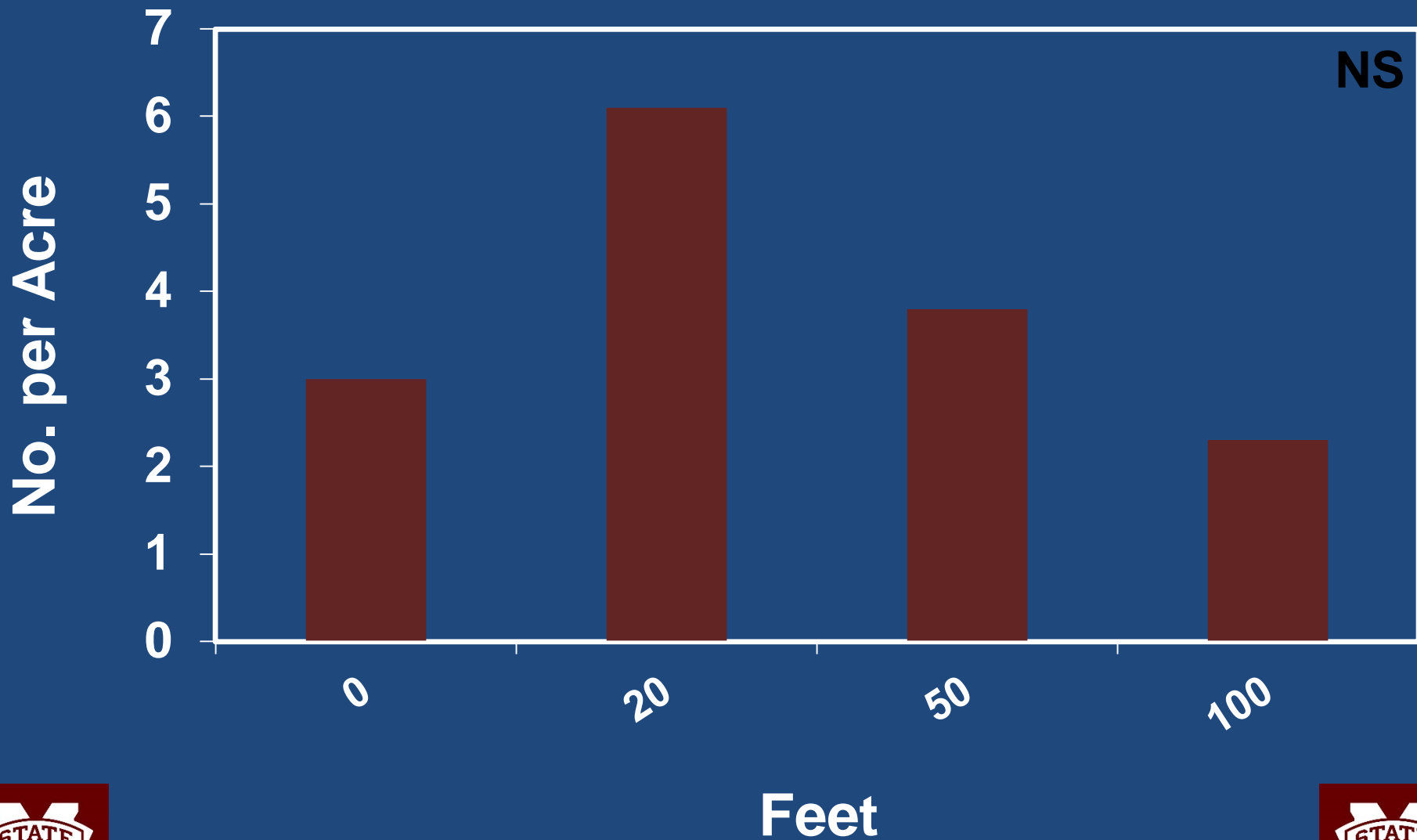
Occurrence of Honey Bees in Rice

Time of Day



Occurrence of Honey Bees in Rice

Distance from Edge of Field



Restrictions on neonicotinoids in rice

- Tenchu is the only neonicotinoid that can legally be applied (for rice stink bug) when bees are active in rice (at anthesis/flowering)
- The EPA has issued restrictions intended to protect bees from the effects of neonicotinoids

THE NEW EPA BEE ADVISORY BOX

On EPA's new and strengthened pesticide label to protect pollinators

PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.



Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at:

<http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx>

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state/tribe, go to: www.aapco.org. Pesticide incidents can also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.



The new bee icon helps signal the pesticide's potential hazard to bees.

Makes clear that pesticide products can kill bees and pollinators.

Bees are often present and foraging when plants and trees flower. EPA's new label makes it clear that pesticides cannot be applied until all petals have fallen.

Warns users that direct contact and ingestion could harm pollinators. EPA is working with beekeepers, growers, pesticide companies, and others to advance pesticide management practices.

Highlights the importance of avoiding drift. Sometimes, wind can cause pesticides to drift to new areas and can cause bee kills.

The science says that there are many causes for a decline in pollinator health, including pesticide exposure. EPA's new label will help protect pollinators.



Read EPA's new and strengthened label requirements: <http://go.usa.gov/jHH4>

“Rice Insects Information” website & Rice Scout App

www.lsuagcenter.com/riceinsects

<http://ricescout.lsuagcenter.com/>

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

Questions or feedback?

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Office: (225) 578-1837

Belay has superior residual activity

| | % mortality of weevils on rice leaves collected: | |
|--------------------------------|--|-------------------------|
| | 2 hours after spraying | 24 hours after spraying |
| Untreated | 4.8% | 0% |
| Karate (label rate) | 77.5% | 12.5% |
| Belay 4.5 fl oz (label) | 84% | 72.9% |
| | | |

What about combinations (of Dermacor + neonicotinoid , seed treatments and foliar)?

- No evidence so far that these will help with weevil management (if Dermacor is used, weevil control is almost always satisfactory)
- Will increase spectrum of pests controlled

Rice stink bug management

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

Scouting and thresholds

- 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

Rice Stink Bug Insecticides

- Pyrethroids: Karate Z, Mustang Max, Declare, Prolex/Proaxis, Fastac
- Tenchu shows some minor advantages over pyrethroids, but more expensive
- Test with malathion showed label rate was ineffective-no longer recommended
- Methyl parathion no longer legal

Insecticides and crawfish

- There are crawfish restrictions on all rice insecticide labels:
 - “Do not use Belay insecticide-treated rice fields for the aquaculture of edible ...crustaceans”
- This has been interpreted in different ways in the past
- I am not a lawyer
- The relevant science:
 - all insecticides toxic to crawfish
 - pyrethroids more toxic than neonicitoids & anthranilic diamides
 - pyrethroids must come in contact with crawfish to kill them