# Rice Water Weevil Management Using Current Technology

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LATMC
Alexandria, La
Feb 11-13, 2009

M. Stout

R. Riggio

R. Riggio

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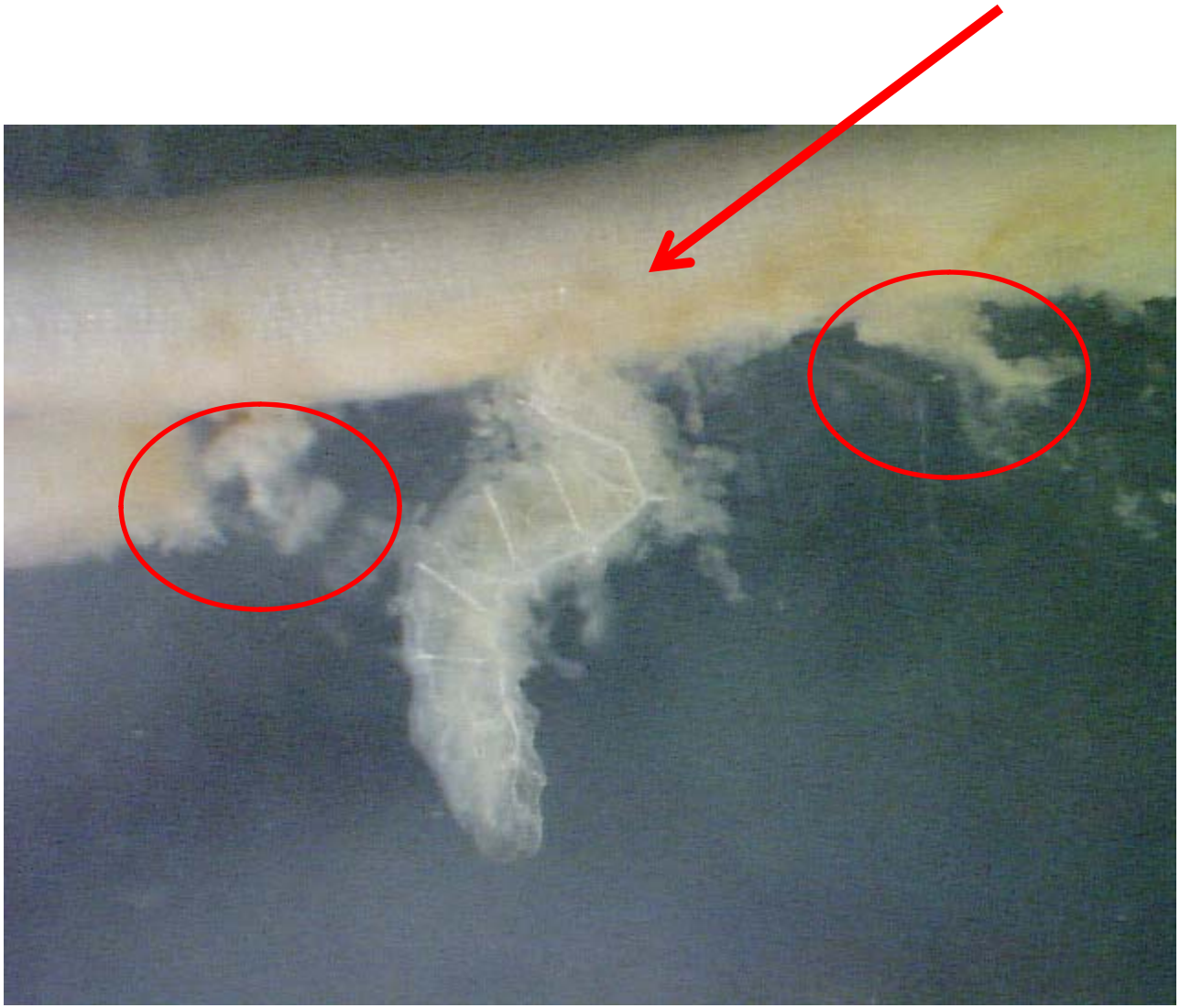
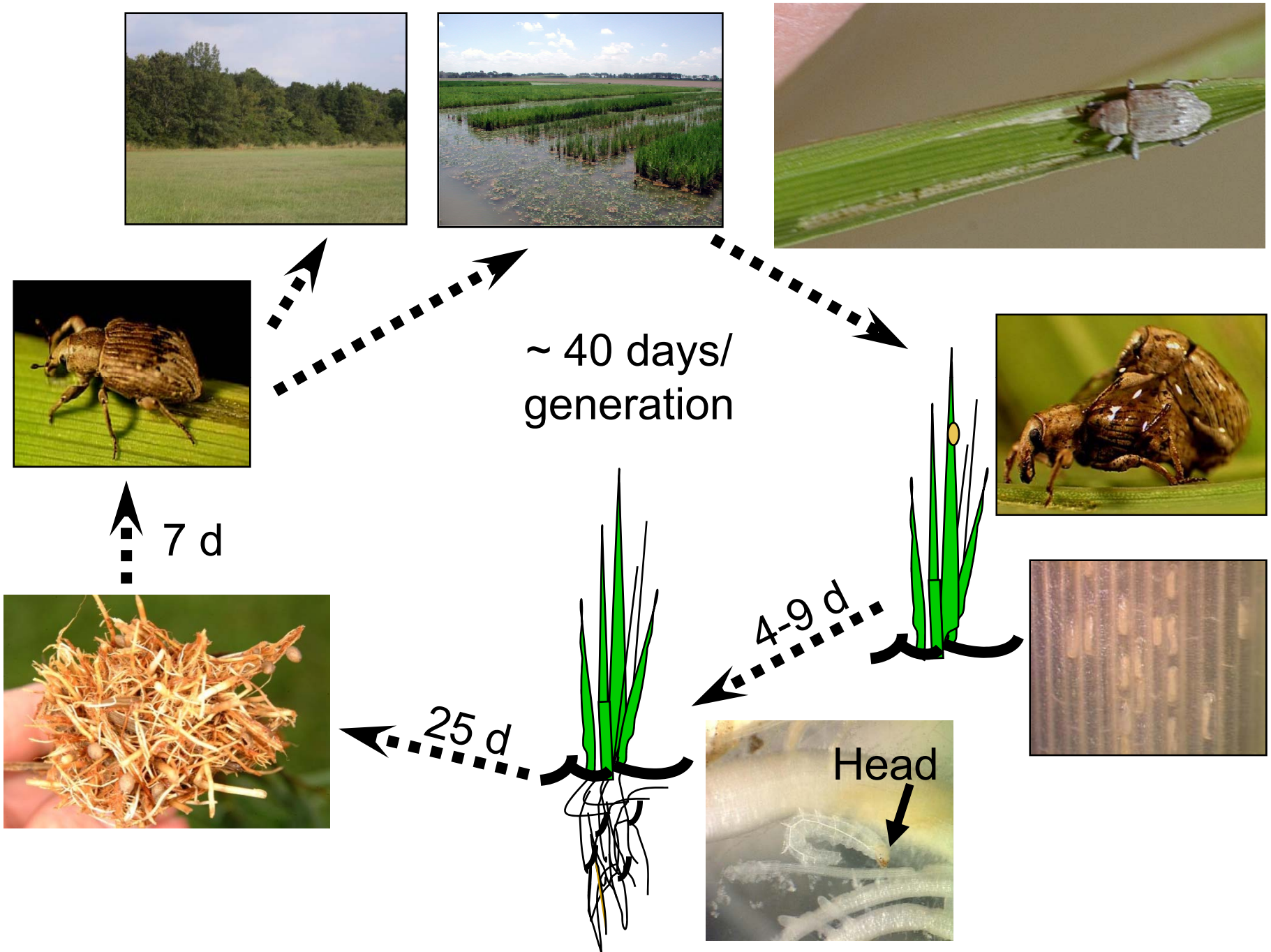
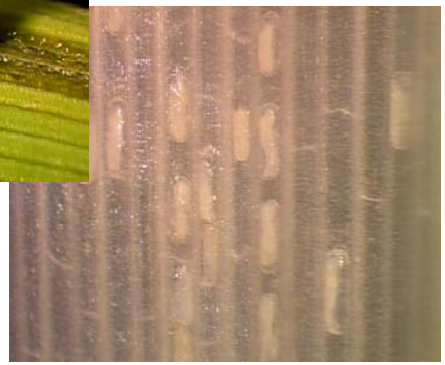


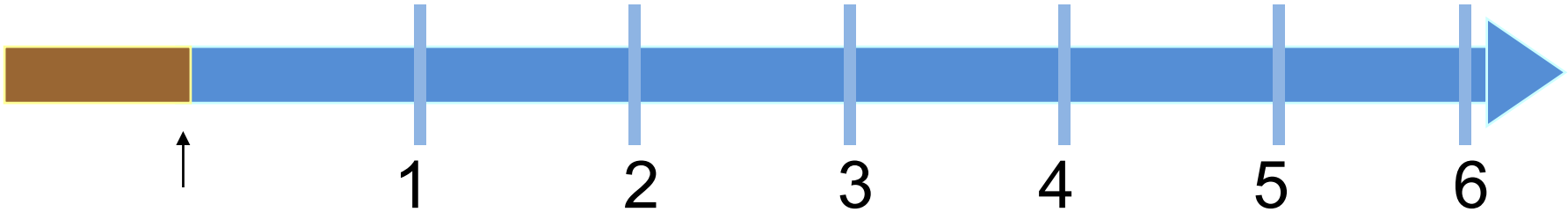
R. Riggio


~ 40 days/
generation
7 d
4-9 d
25 d
Head



Adults feed & oviposit

Larvae feed, injure roots




Flooding

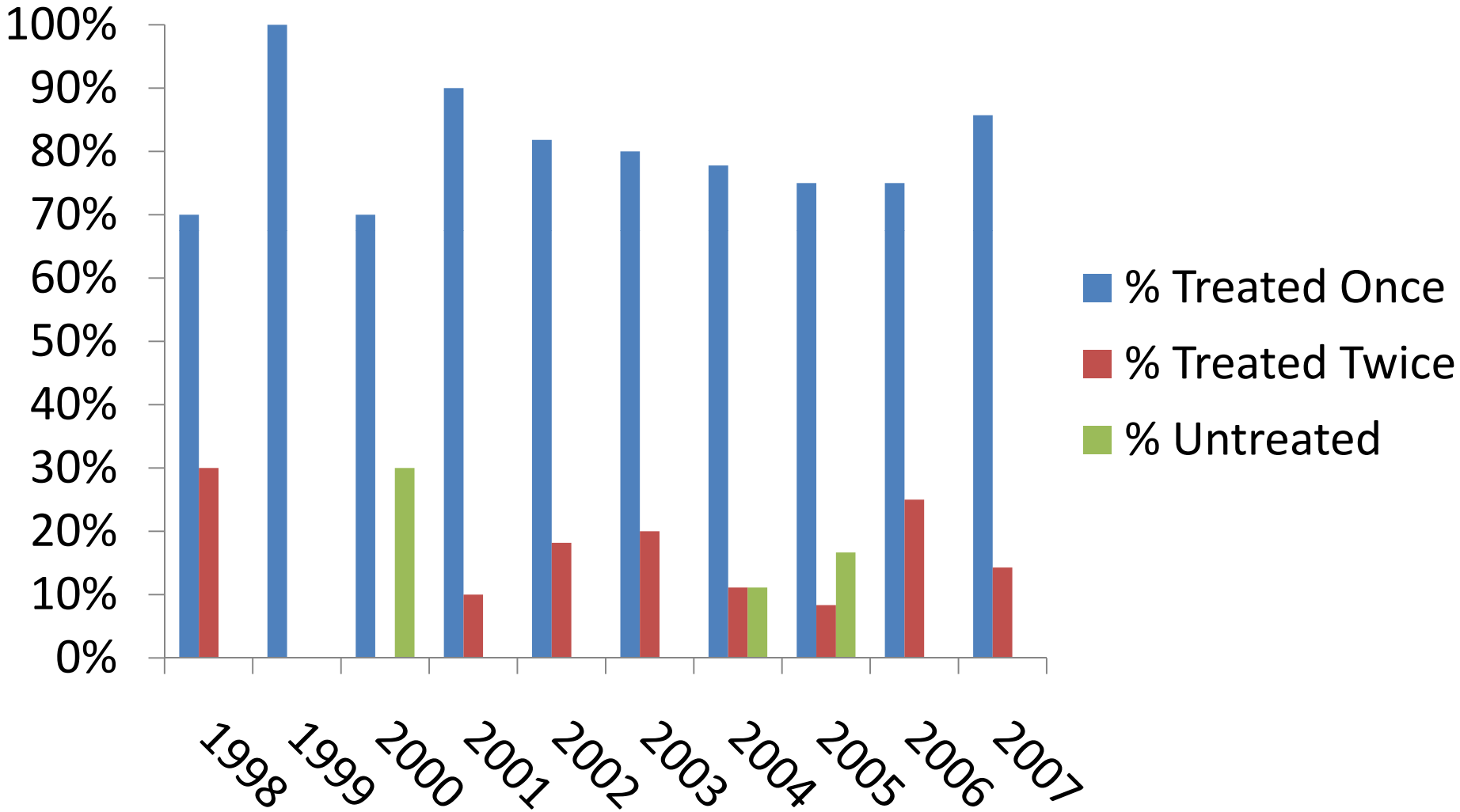
Weeks since flooding

# RWW damage estimate

- If average is 14 RWW larvae per core (2008)
- 1 RWW Larva = 0.5% yield loss
- 14 RWW*0.5% = 7% yield loss

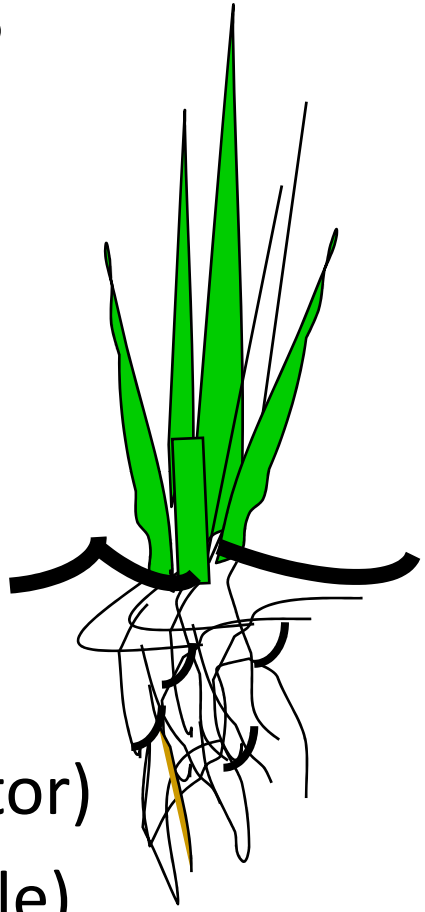
- Average yield in 2008 = 6,100 lbs/acre
- 427 lbs/acre RWW loss
- If $15/hundred-weight
  - $64.05 lost to RWW damage

# RWW Control in Verification Fields




Dr. Johnny Saichuk

# RWW Control Options



- Cultural
  - Early planting (avoidance)
  - Delay flood (avoidance) – *NOT TOO LONG*
  - Drain field (rescue)
- Chemical
  - Ovicide – Dimilin 2L (insect growth regulator)
  - Larvicide - Dermacor X-100 (smooth muscle)
  - Adulticide (nerve axon)
    - Pyrethroids (Karate, Mustang Max, Mustang EW)
    - Trebon 3G

# Draining – “Rescue”

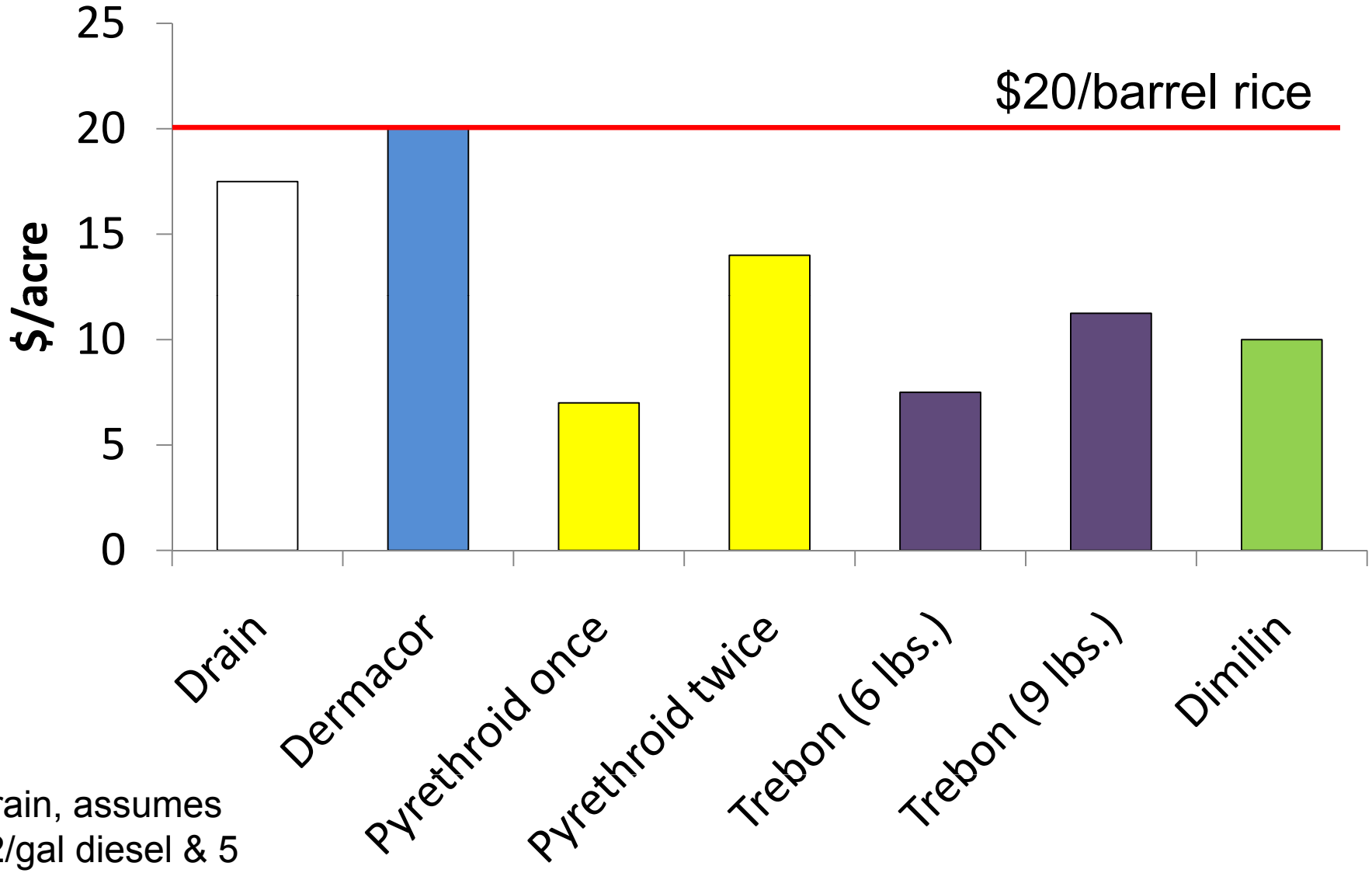
**Pros**

- No insecticide used
- Reduces larval population
  - Not always
  - Don’t know how…
- Inhibits ability to feed
- Reapply flood & fertilizer, gives plants a “boost”

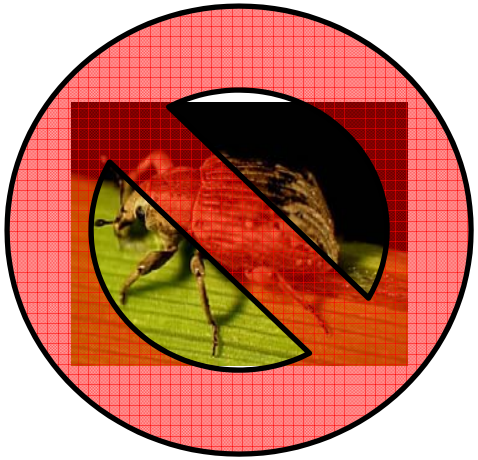
**Cons**

- Unpredictable rain
- Weed control issues
- Loss of fertilizer
- Stresses plants
- Delays maturity
- Favorable habitat for blast
- Hard to time re-flooding
- Increased water use
- Weevil re-infestation

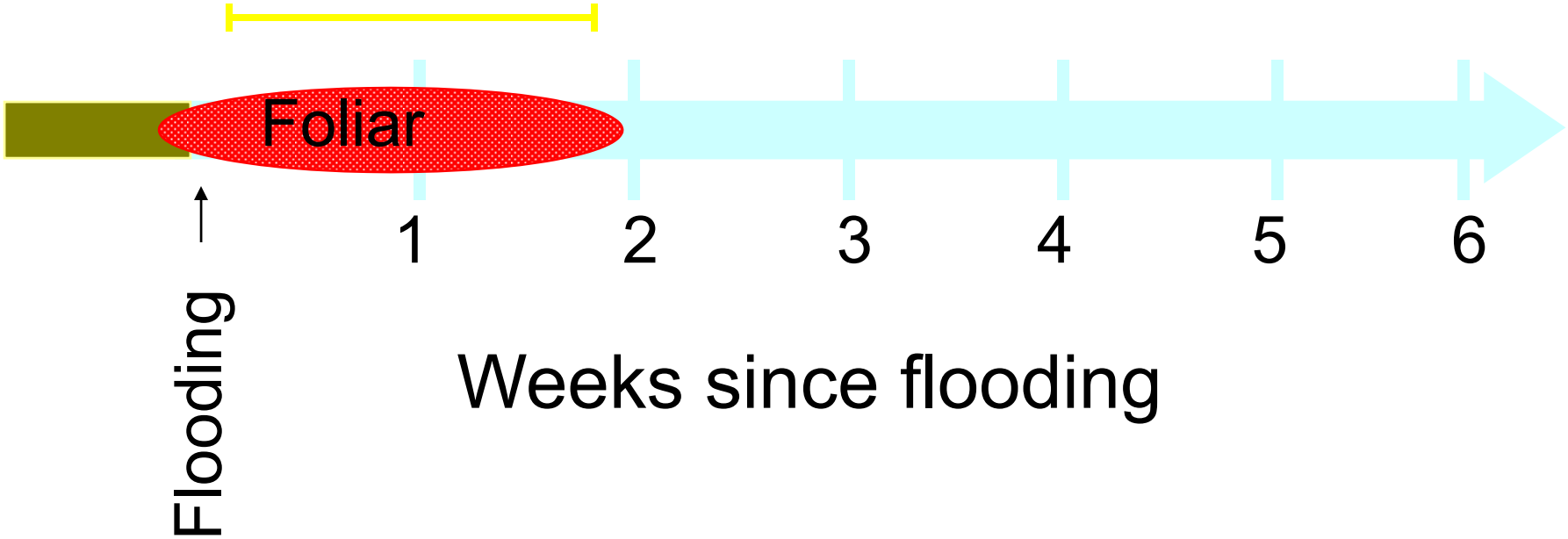
# RWW Control Costs




Drain, assumes $2/gal diesel & 5 inch flood

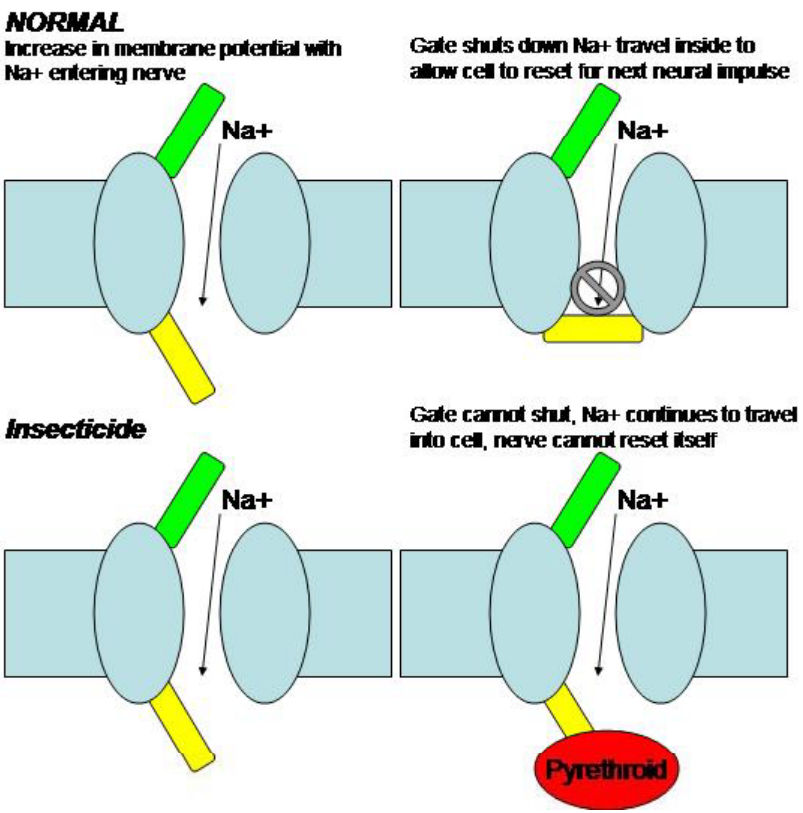


Adults feed + oviposit



# Pyrethroids &Trebon

- Contact & stomach poison
  - Foliar (Karate or Mustang)
    - Pre-flood
    - Post-flood
    - Pre & post-flood
  - On fertilizer (Mustang)
    - Pre or post-flood
  - Granule (Trebon)
    - Pre or post-flood
    - Near crawfish pond

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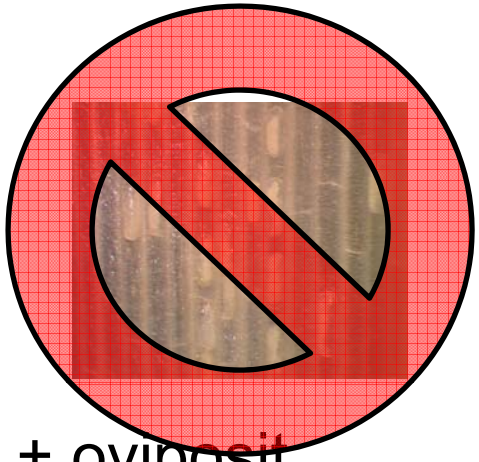
Trebon is an adulticidal compound.

Trebon will not be effective for 3 weeks after application to field.

Trebon cannot be used as a “rescue” treatment if you miss your pyrethroid spray.

# Dimilin 2L - Diflubenzuron



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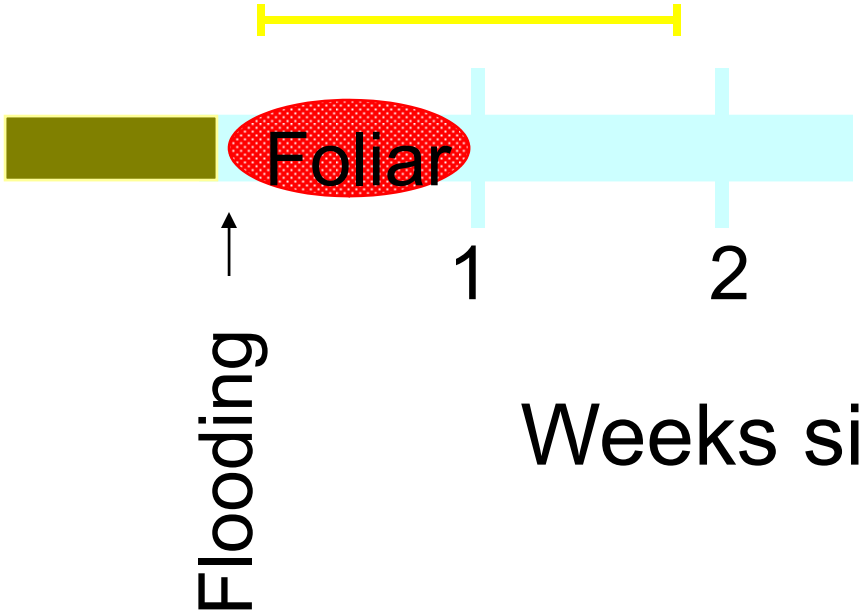
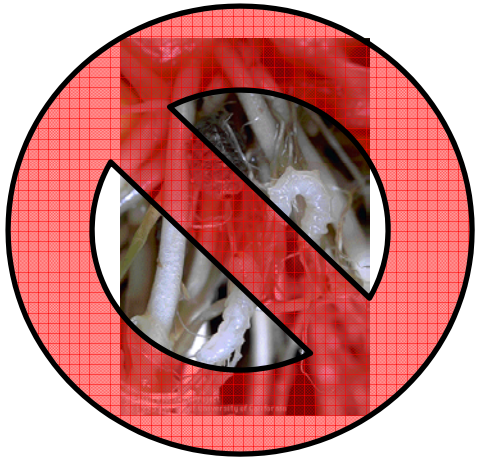
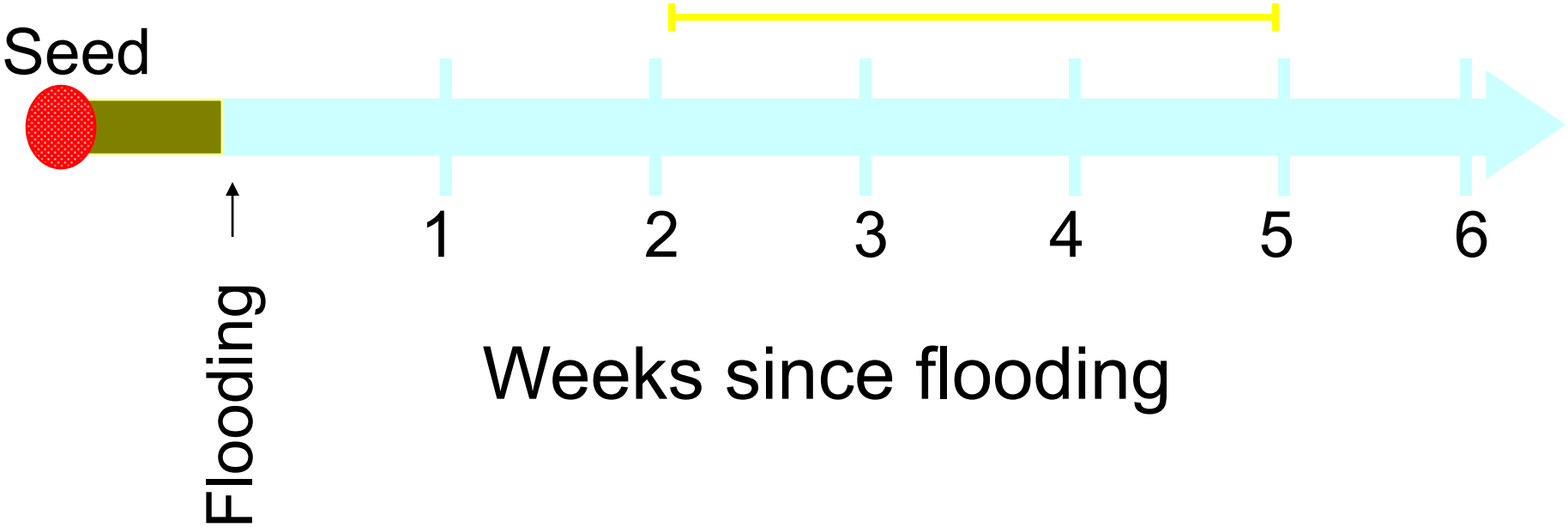



- Insect growth regulator
  - Inhibits chitin synthesis
  - Eggs do not hatch
- Optimally → plant early, delay flood
- Use patterns – see insect control guide

Dermacor™ X-100



Larvae feed, injure roots

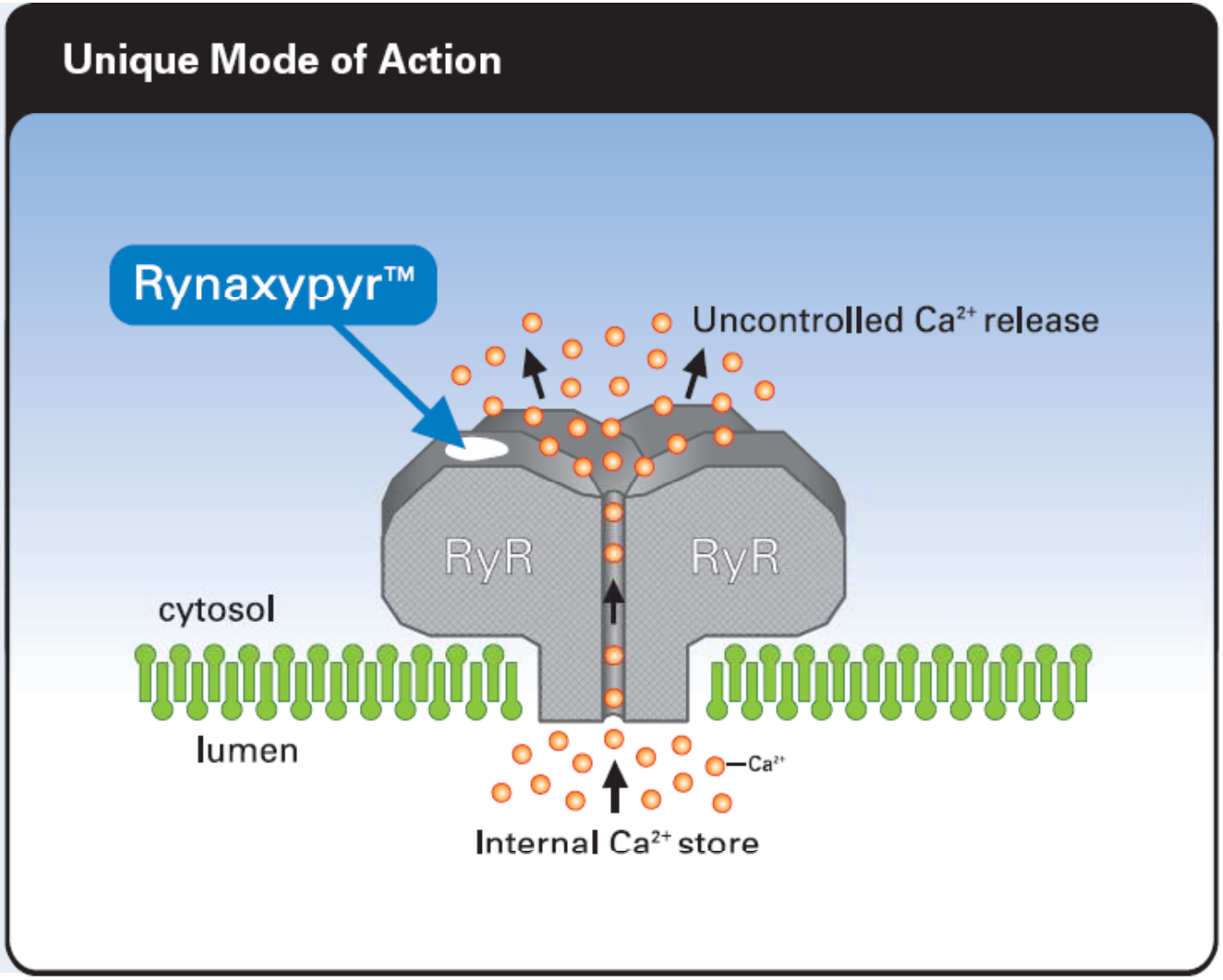


# Dermacor™ X-100 Seed Treatment

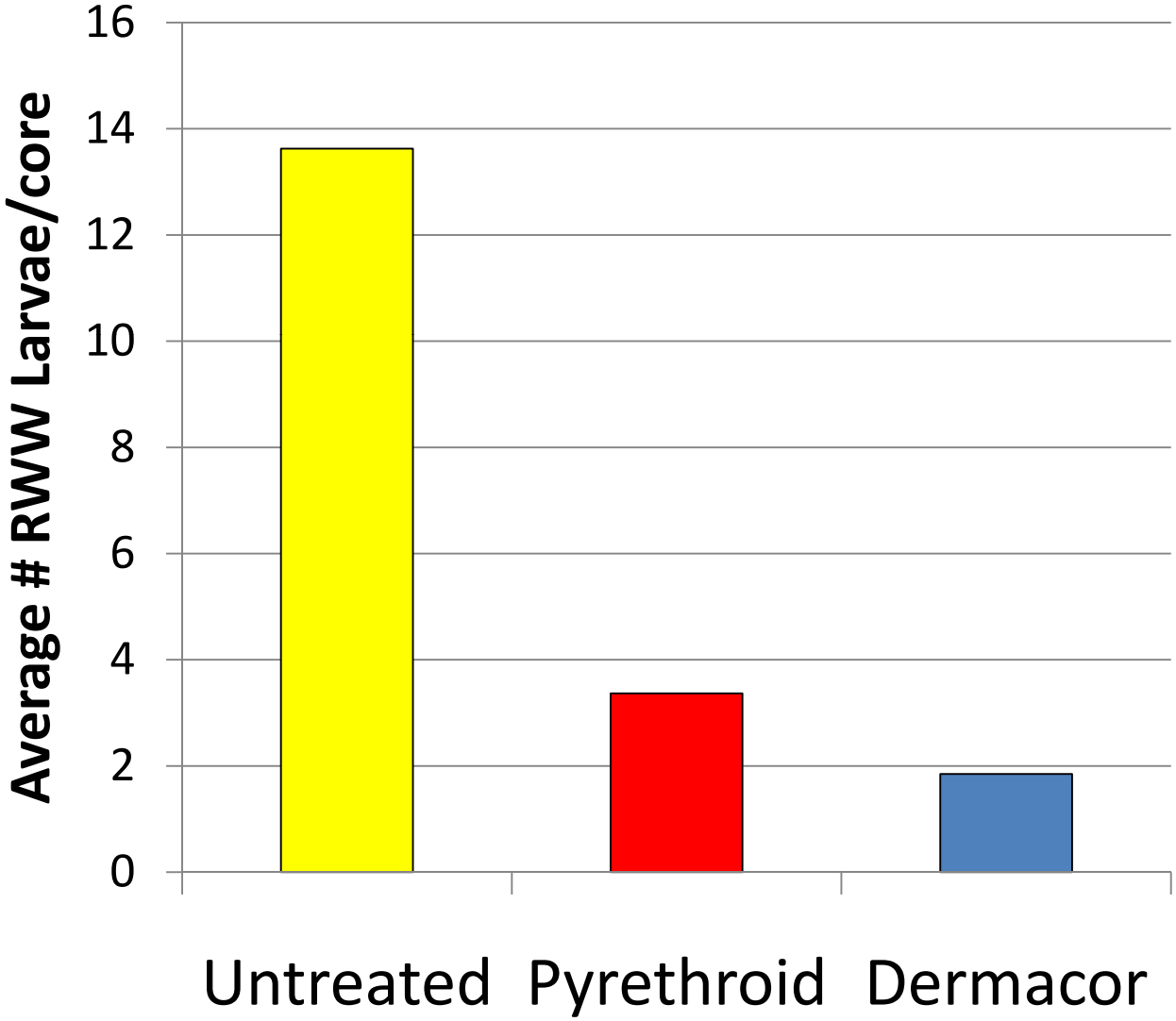
- Section 18
- Certified treaters
  - Crowley Grain
  - G&H Seed Company
  - Angelina Seed Company
- Pending Processors
  - Jimmy Sanders Inc., Tallulah, LA
  - Kennedy Rice Drier, Mer Rouge, LA (Helena)
  - Agro Distribution, LLC, Jones, LA
- Rate of insecticide determined by seeding rate

# Dermacor X-100 mode of action

Rynaxypyr™ binds to insect ryanodine receptors in muscle cells causing the channel to open and release calcium ions ($Ca^{2+}$) from internal stores into the cytoplasm. Depletion of $Ca^{2+}$ stores results in paralysis and death.

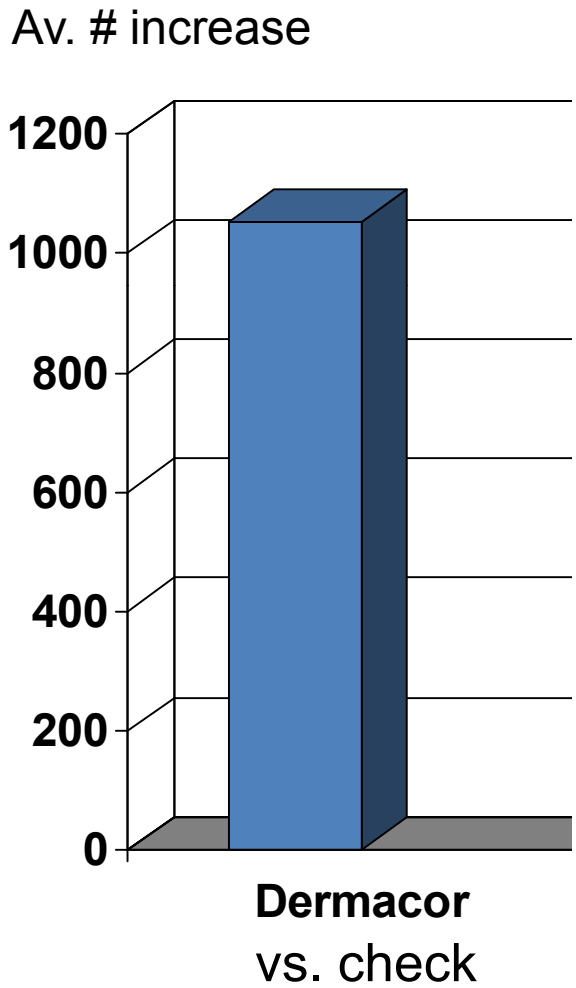


# Dermacor X-100 Demonstration Trial, 2008



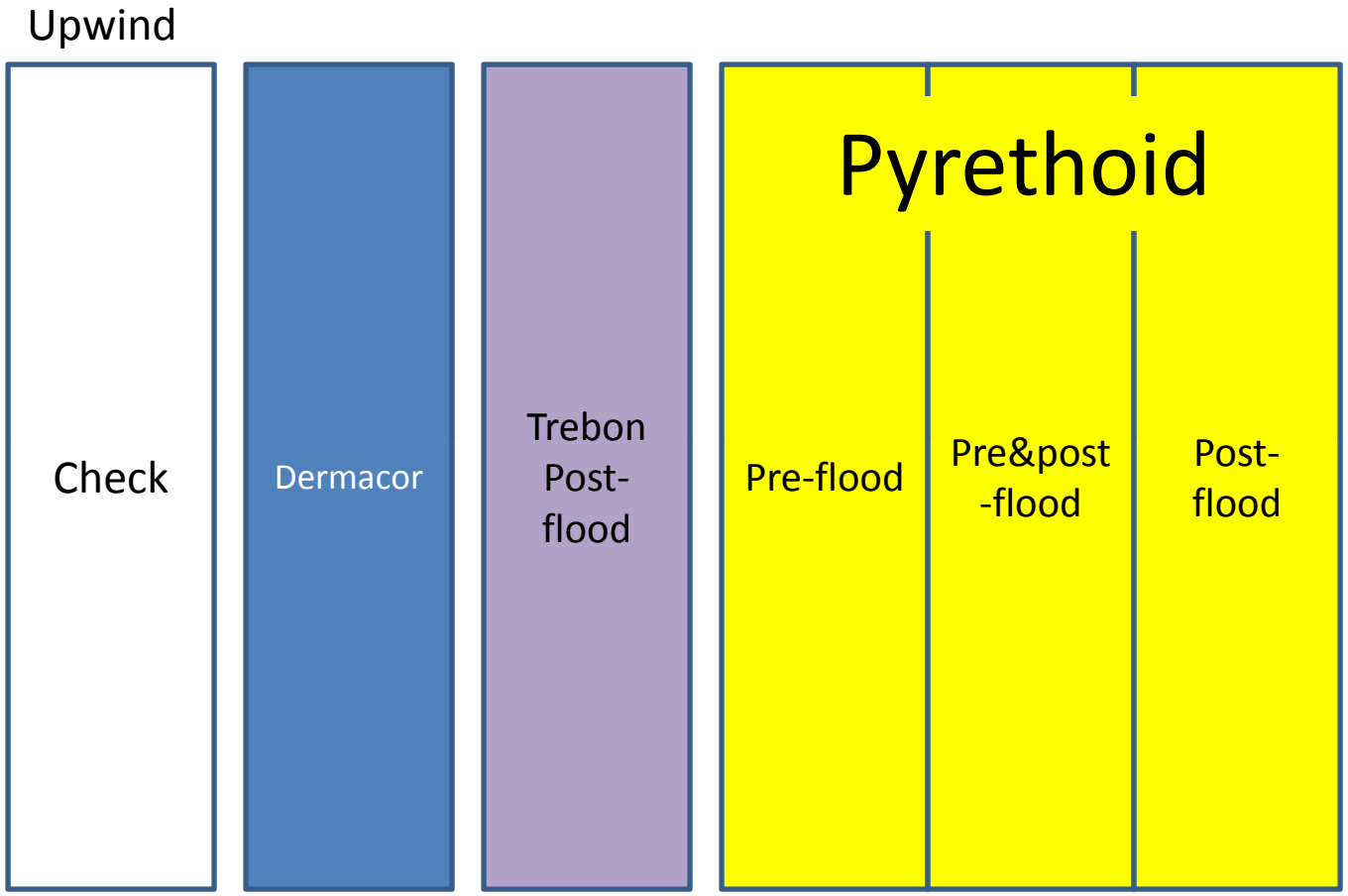

9 Untreated
2 Pyrethroid
8 Dermacor

# 2008 DuPont™ Dermacor™ X-100 Seed Treatment for Control of Rice Water Weevil – Large Plot Demo. LA.
## Plant Health Study




- $180/acre profit
- Based on 18.5 cents per lb for rough rice.
- Minus $20/acre Dermacor™ X-100

# RWW Insecticide Demonstration Trial, 2009




All same variety, at one location
10-20 acre blocks if possible
Same planting date, or as close as possible
Pre-flood (24hr before flood)
Post-flood (if alone, 2-3d post-flood)
Post-flood following pre (7-10d post-flood)

**Locations:**
Acadia
Concordia
Evangeline
Vermillion

# Mexican Rice Borer – in La 12/2008



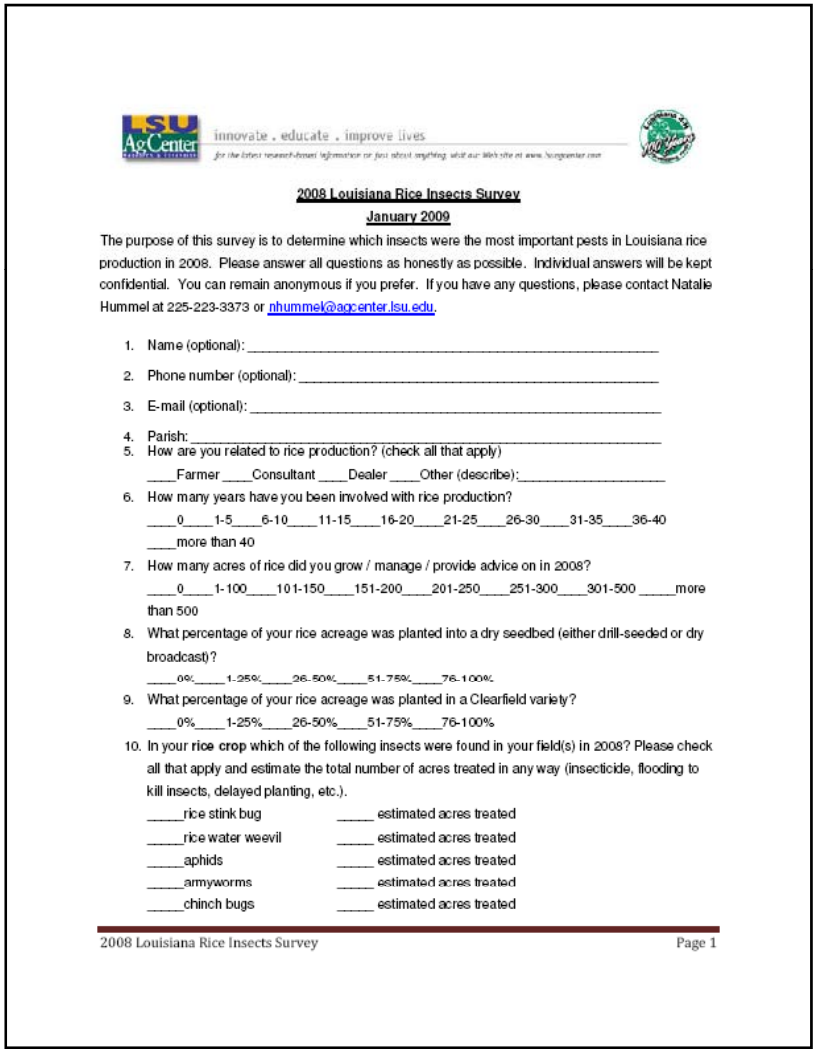

Mexican Rice Borer



Sugarcane Borer

# 2008 Louisiana Rice Insects Survey

- Please complete both sides of page
- **Your input is greatly needed**
- *<u>One lucky person will win a hand-lens</u>*



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**2008 Louisiana Rice Insects Survey**

**January 2009**

The purpose of this survey is to determine which insects were the most important pests in Louisiana rice production in 2008. Please answer all questions as honestly as possible. Individual answers will be kept confidential. You can remain anonymous if you prefer. If you have any questions, please contact Natalie Hummel at 225-223-3373 or nhummel@agcenter.lsu.edu.

1. Name (optional): _____
2. Phone number (optional): _____
3. E-mail (optional): _____
4. Parish: _____
5. How are you related to rice production? (check all that apply)
   ____Farmer ____Consultant ____Dealer ____Other (describe):_____
6. How many years have you been involved with rice production?
   ____0____1-5____6-10____11-15____16-20____21-25____26-30____31-35____36-40
   ____more than 40
7. How many acres of rice did you grow / manage / provide advice on in 2008?
   ____0____1-100____101-150____151-200____201-250____251-300____301-500 _____more than 500
8. What percentage of your rice acreage was planted into a dry seedbed (either drill-seeded or dry broadcast)?
   ____0%____1-25%____26-50%____51-75%____76-100%
9. What percentage of your rice acreage was planted in a Clearfield variety?
   ____0%____1-25%____26-50%____51-75%____76-100%
10. In your **rice crop** which of the following insects were found in your field(s) in 2008? Please check all that apply and estimate the total number of acres treated in any way (insecticide, flooding to kill insects, delayed planting, etc.).
    _____rice stink bug _____ estimated acres treated
    _____rice water weevil _____ estimated acres treated
    _____aphids _____ estimated acres treated
    _____armyworms _____ estimated acres treated
    _____chinch bugs _____ estimated acres treated

2008 Louisiana Rice Insects Survey Page 1

# Acknowledgements


Louisiana Rice Research Board

DuPont (Toby McCown)

Johnny Saichuk

Dale Denais

Mike Stout, Marty Frey,

Rita Riggio

Student Workers

Richard Hardee

Marty Pousson

B.D. Fontenot

Frugé Farm

David Lacour, Mike Edwards, Buck Leonards, Chuck Greene

**County Agents**

Glen Daniels

Eddie Eskew

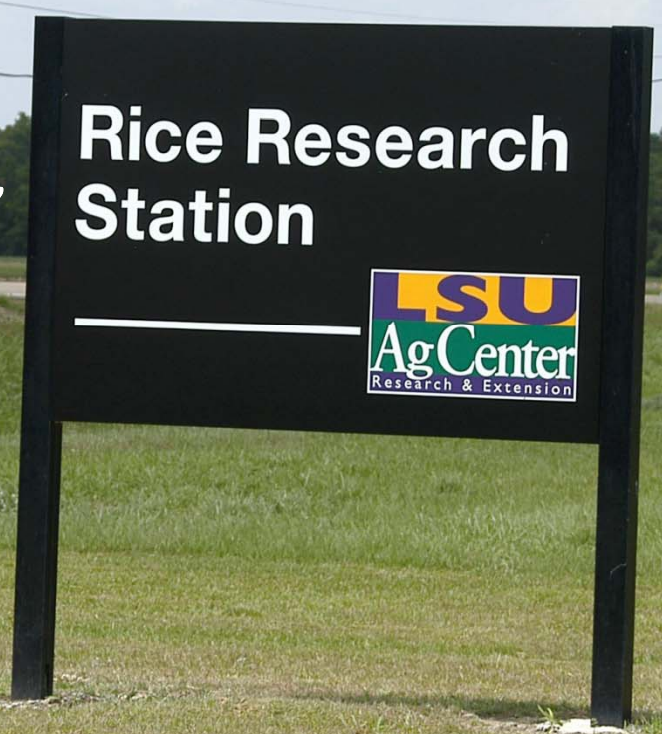
Keith Fontenot

Stuart Gauthier

Ronnie Levy

Keith Normand

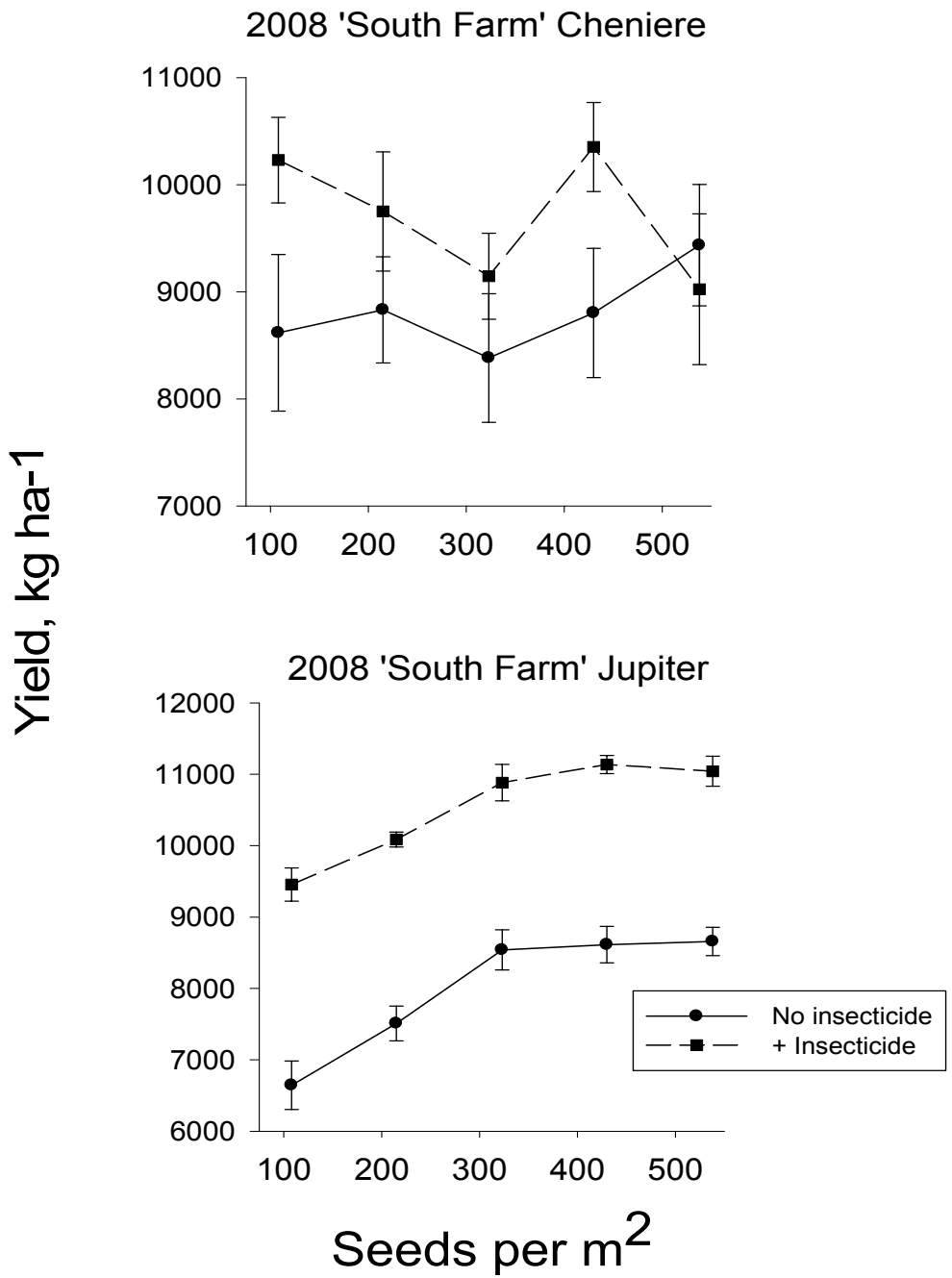
Keith Collins

# Seeding rate

| | **Number of larvae/pupae per core sample ± s.e.** | | | |
|---|---|---|---|---|
| Seeding rate (seeds per $m^2$) | 'Jupiter' experiment | | 'Cheniere' experiment | |
| | 30 d post-flood | | 30 d post-flood | |
| | - Ins. | + Ins. | - Ins. | + Ins. |
| 108 – 31% | 50.4 ±6.8 | 11.5±2.2 | 37.1±5.1 | 12.6±2.7 |
| 215 – 67% | 45.1±5.6 | 8.0±1.6 | 30.9±6.0 | 5.1±1.7 |
| 323 – 100% | 46.4±5.0 | 4.0±0.5 | 27.9±3.3 | 9.5±7.7 |
| 430 – 133% | 55.8±5.1 | 3.5±1.1 | 32.5±3.0 | 2.8±0.9 |
| 538 – 167% | 45.1±7.1 | 2.0±0.6 | 25.6±5.1 | 1.6±0.7 |

- Jupiter & Cheniere



# Delayed Flood – “Avoidance”

- *2 weeks after 4 to 5 leaf stage*
- Cost is a reduction in optimal fertilizer application and herbicide timing.
- More susceptible to blast
- Flooding causes
  - Enhanced plant growth
  - Increases in foliar nutrients
  - Adults attracted for oviposition

# Early Planting – “Avoidance”

- Within range of recommended dates
- Head-start
- Younger plants more susceptible to damage
- Tillering most attractive for oviposition

R. Riggio

R. Riggio

R. Riggio

# Factors that increase susceptibility to RWW

- Cultural
  - Late planting
  - Low seeding rate
  - High fertilizer rate
- Water management
  - Water seeding
  - Early flooding of young rice
  - Deep flood
  - Maintaining flood with no insecticide

R. Riggio

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