New Insecticides

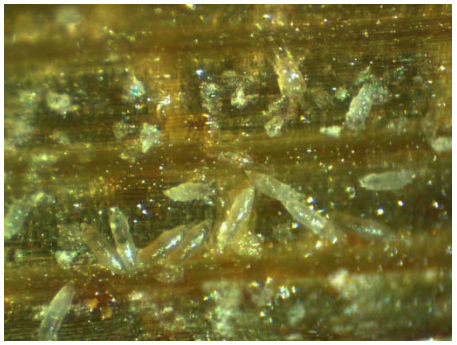
LATMC 2008

Natalie Hummel
Michael Stout

Department of Entomology
Rice Research Station

Insect Problems - 2007

- Early-season pests
  -- Rice water weevil
  -- Fall armyworm
  -- Rice Leaf-miner
- Late-season pests
  -- Rice stink bug
  -- Stem borers
- New pest?
  – Panicle Rice Mite



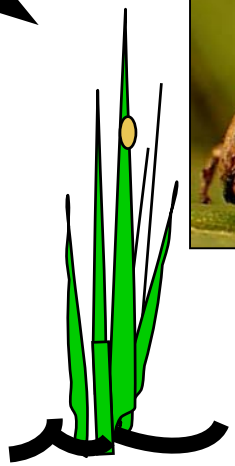
Warning

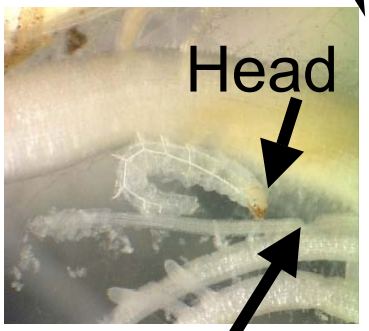
- Be sure to read and follow all chemical label recommendations
- Most chemicals recommended cannot be applied near Crawfish ponds
- Consult county agent for crawfish-rice recommendations.

Adult overwintering

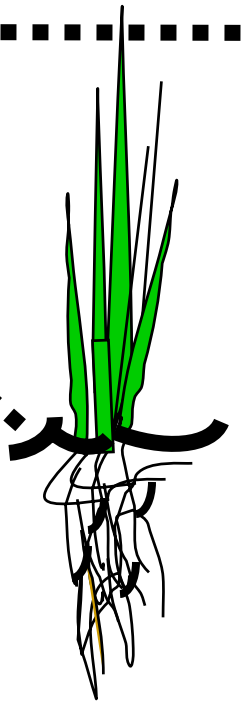
Adult feeding

RWW Life Cycle





Feeding site



Larval feeding

Mating and oviposition

Adult feed + oviposit

Larvae feed, injure roots

Foliar

1 2 3 4 5 6

Flooding

Weeks since flooding

Rice water weevil

Damage

- Pruned roots
- Decreases yield
- 10% yield loss X 6000 lbs/acre X $10/cwt =

  - $60 /acre

Rice water weevil

Management

- Cultural
  - Delayed flooding
    - Rice is at the 5-leaf stage or beyond
  - Early planting → Early March
  - Draining fields → soil must crack
- Chemical
  - Pyrethroids, Dimilin, Trebon

Insecticides for Weevil Control

Insecticide	Class	Formulation/ Use Pattern
Karate, etc.	Pyrethroids	Early Post-flood
Rynaxypyr (Dermacor)	Anthranilic diamide	Seed treatment
Clothianidin	Neonicotinoid	Seed treatment
Thiomethoxam	Neonicotinoid	Seed treatment
Dinotefuran	Neonicotinoid	Granular – pre- or post-flood

Problems with *Pyrethroids*

- Inadequate control
- Environmental damage
- Incompatibility with crawfish production
  1. Pyrethroids extremely toxic to crawfish
     - LC50 < 1 ppb
  2. Co-cultivation of rice and crawfish
     - Rotation - location

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Clothianidin (Cruiser)	Neonicotinoid	Seed treatment
Thiomethoxam	Neonicotinoid	Seed treatment
Dinotefuran	Neonicotinoid	Granular – pre- or post-flood

Pyrethroid Alternatives

- Have exhibited efficacies as good as, or better than, the pyrethroids
- Pesticides in trials & number of years:

1. Thiomethoxam	4+ yrs of testing
2. Rynaxypyr (Dermacor™)	3 yrs of testing
3. Clothianidin	2 yrs of testing
4. Dinotefuran	4 years of testing

Seed treatments

Rynaxypyr, Clothianidin & Thiomethoxam

Advantage

1. Ease of use
2. Highly effective
    1. Large larvae died before damaging roots
3. Reduced drift
4. Less release of insecticide into the environment

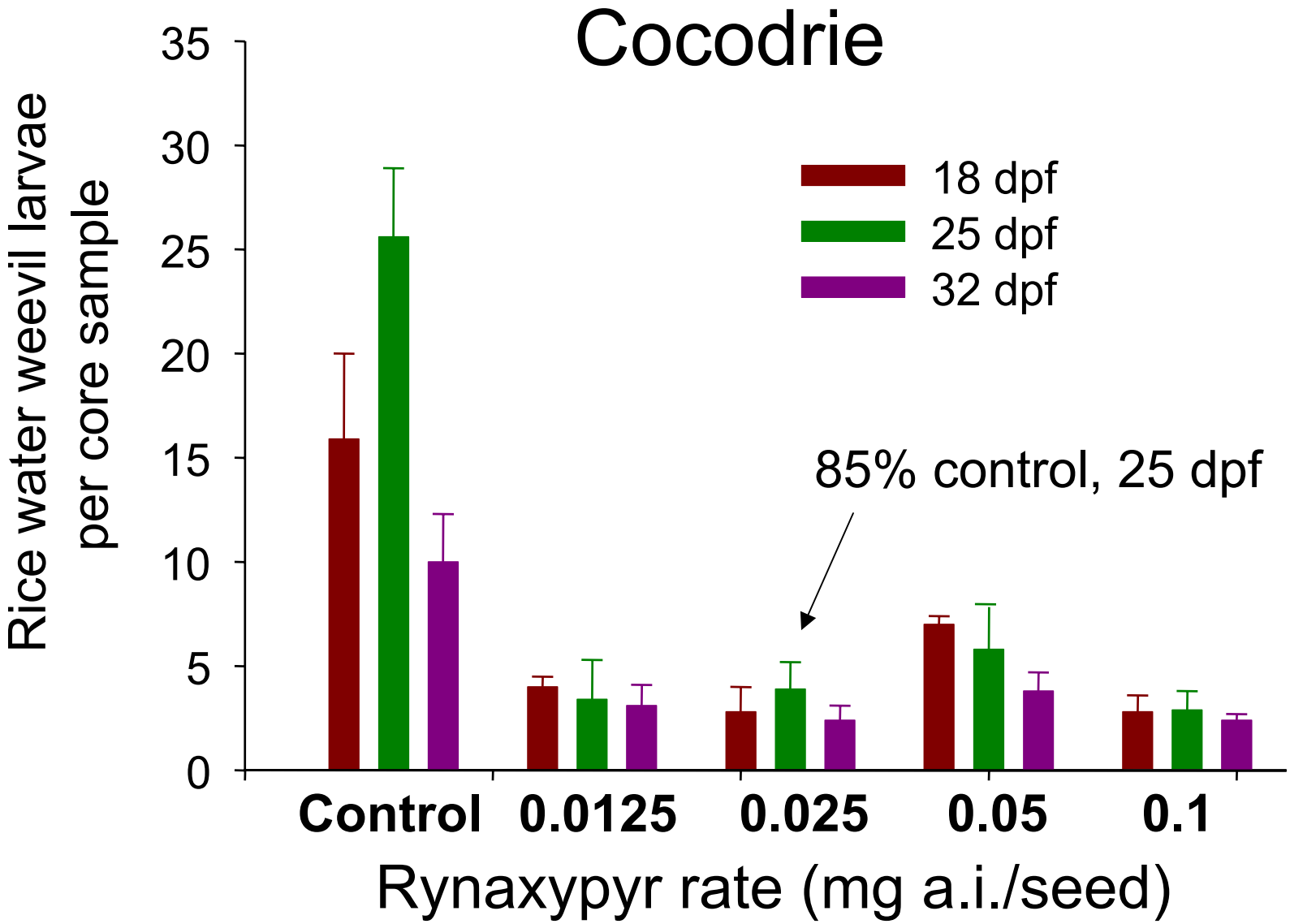
Disadvantage

1. Prophylactic approach
2. Restricted to drill-seeded rice


Dermacor™
Louisiana Field Trials
2005-2007
Untreated
Dermacor™
seed treatment
Crowley, LA
Rice Research Station
72 days after planting

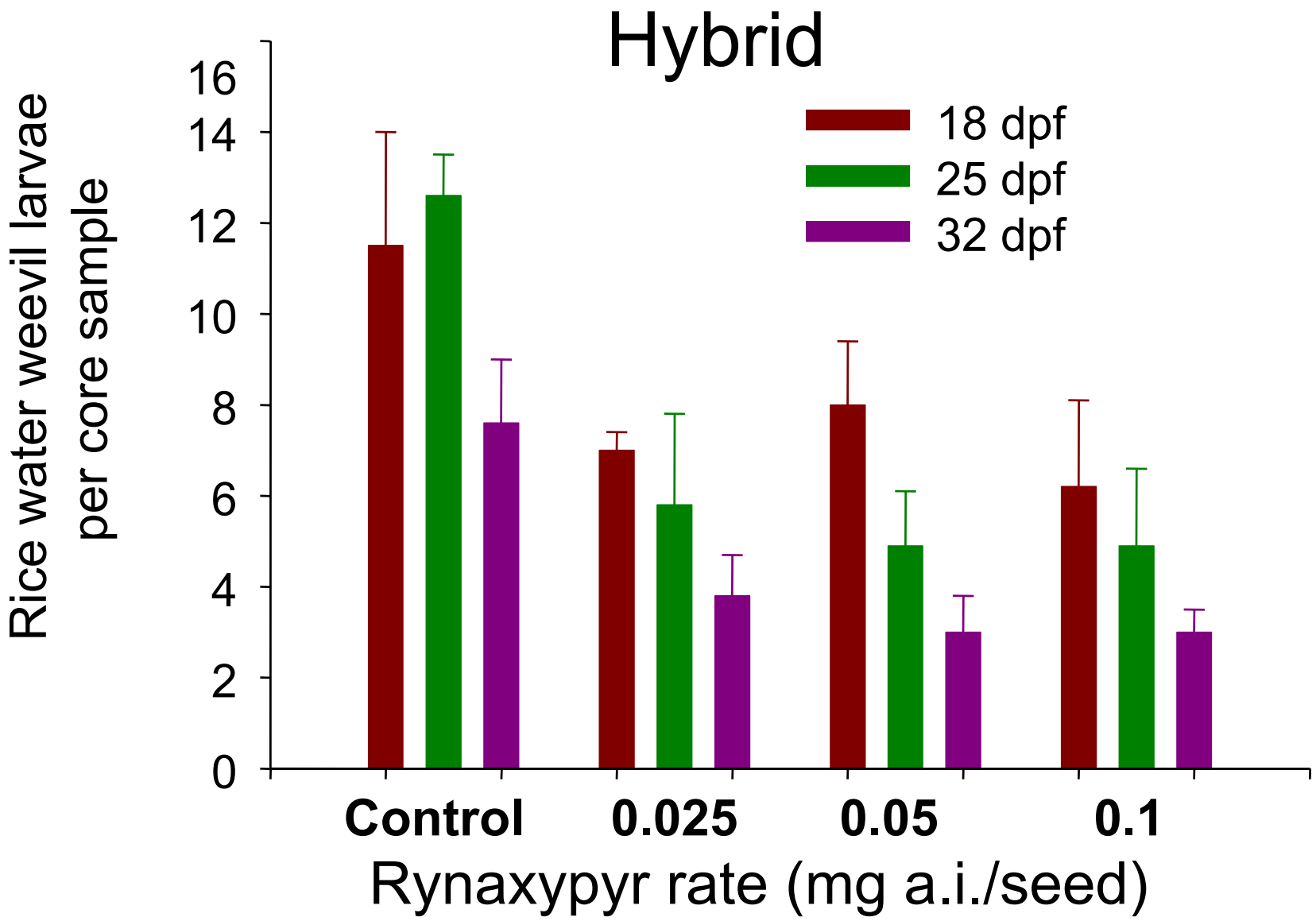
2007 Dermacor™ Trial

LSU AgCenter Rice Research Station

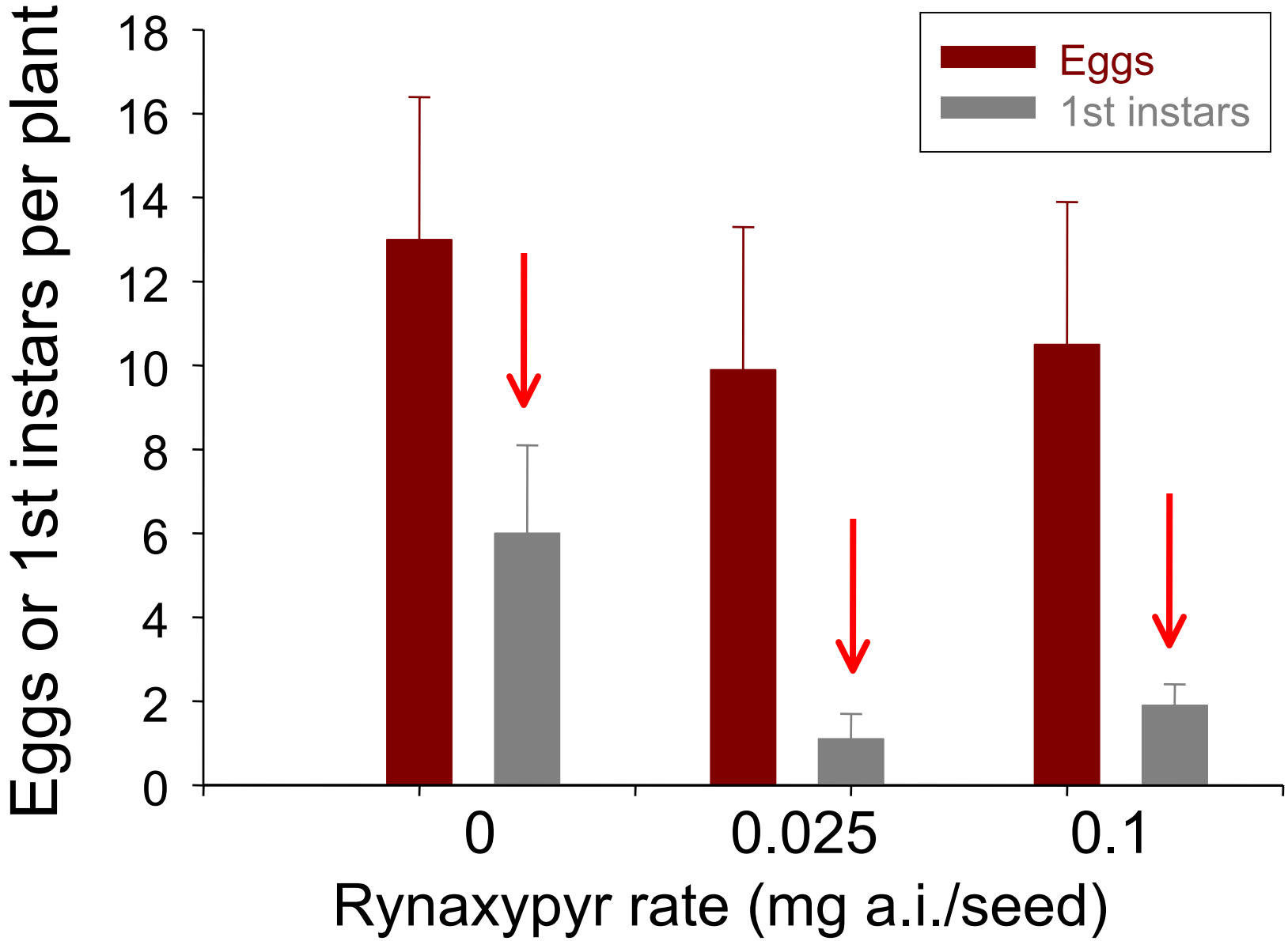


2007 Dermacor™ Trial

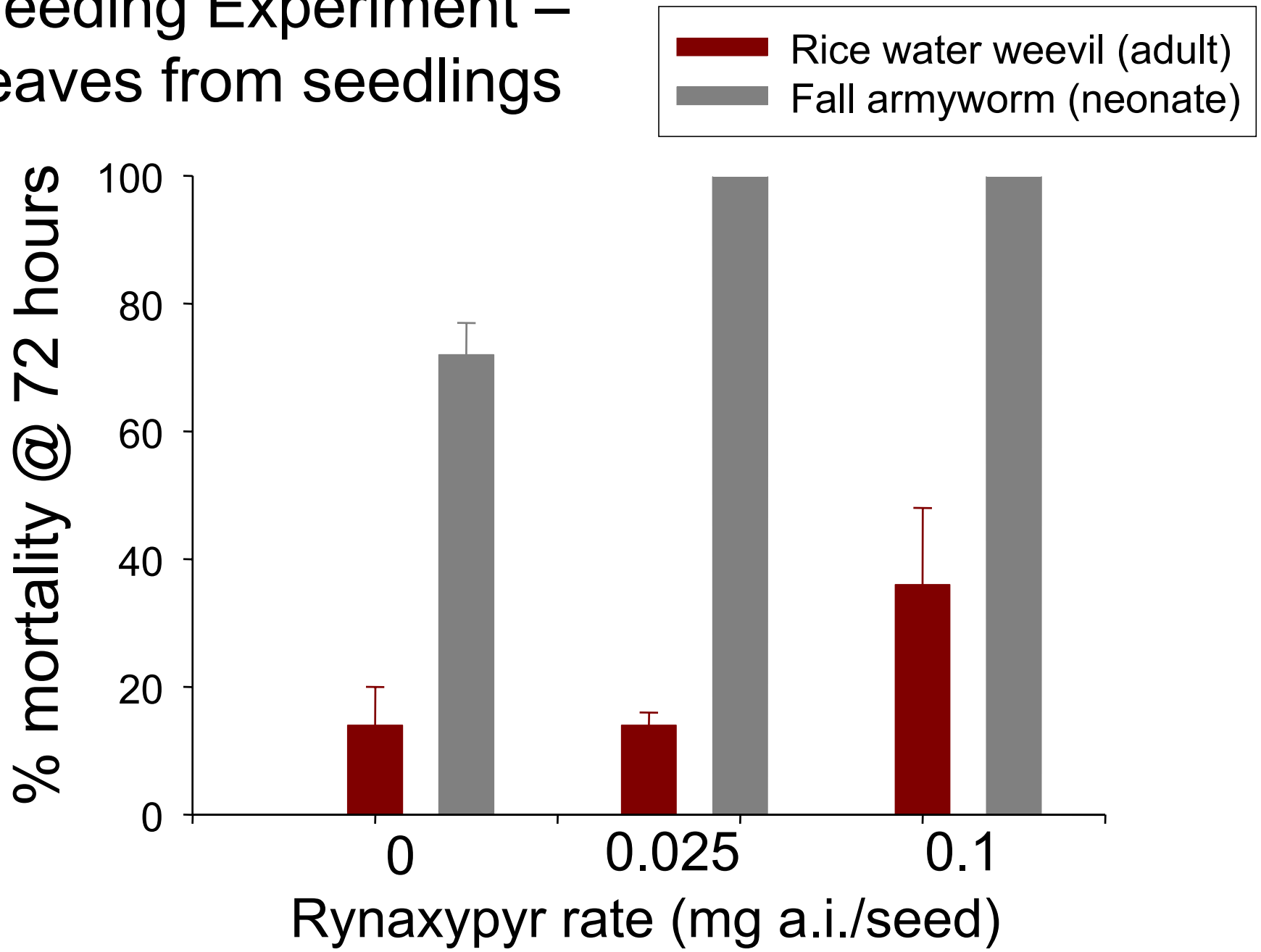
LSU AgCenter Rice Research Station



Question: Does Dermacor kill eggs or larvae?



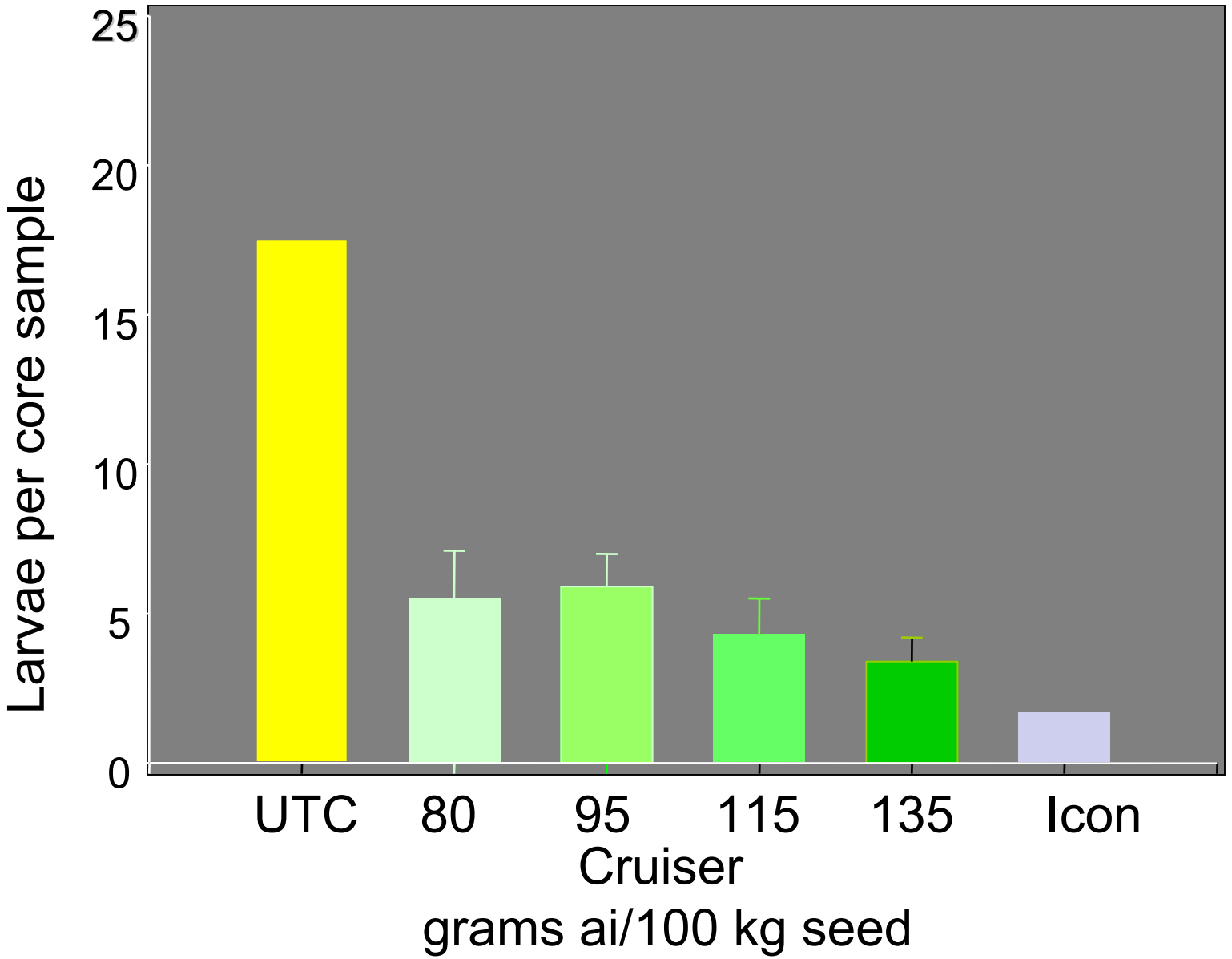
Feeding Experiment – leaves from seedlings



Neonicotinoids: systemic activity

Insecticide	Rate (grams ai/100kg seed)	RWW mortality, 72 hrs	FAW mortality, 72 hrs
Clothianidin	0	13%	8%
	250	97%	36%
Thiomethoxam	0	17%	10%
	115	90%	20%

Thiomethoxam seed treatment, 2007



Post-flood granule (Dinotefuran)

Advantage

1. More compatible with water-seeded rice?
   - By comparison to seed treatment
2. "**Rescue**" treatment
   - Use only when larvae present on roots

Disadvantage

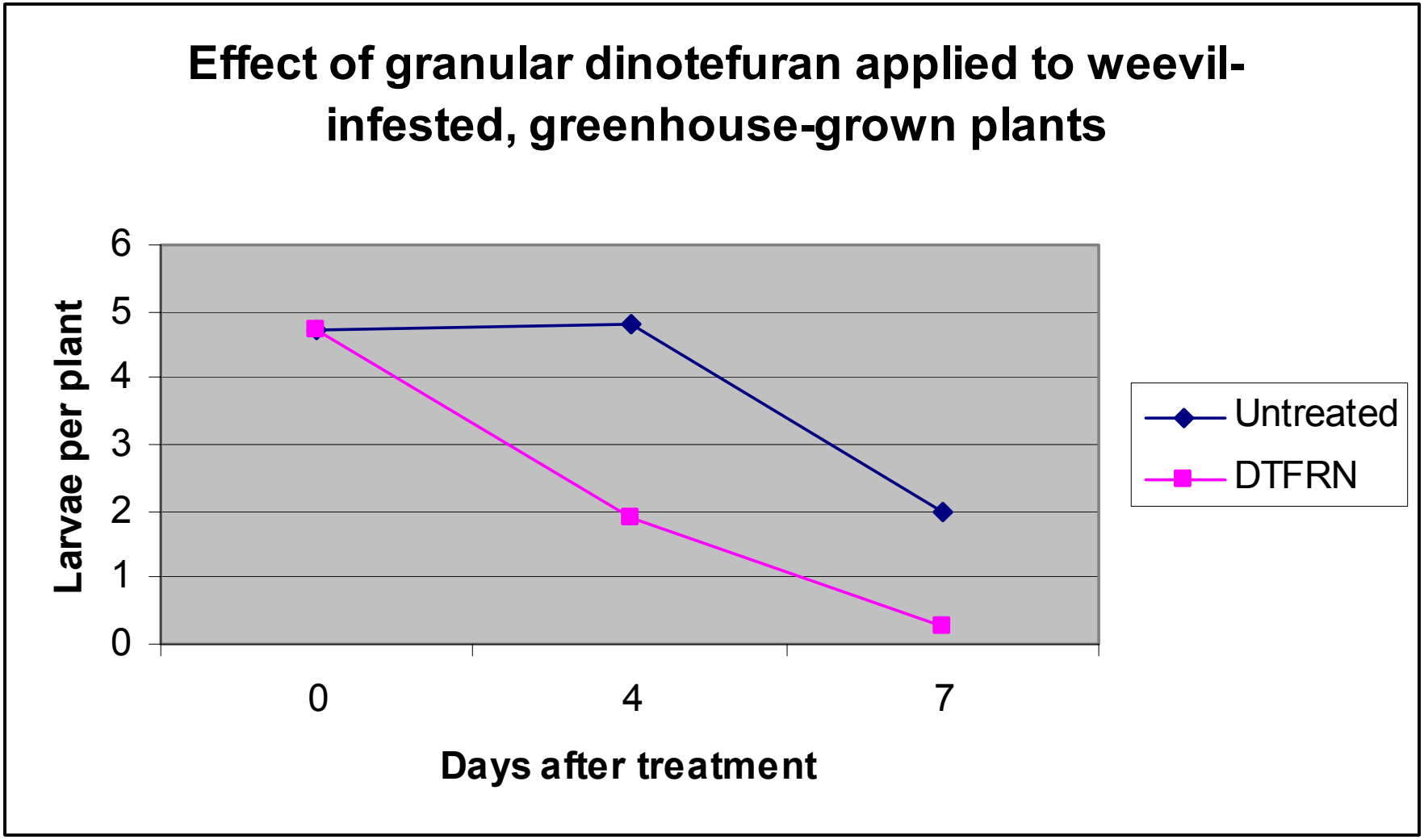
1. May not be as effective as seed treatments
2. Not as easy to use as seed treatment

Dinotefuran, pre/post split and post-flood, 2006

Treatment	Larvae per core sample ± s.e. on:		
	May 30	June 7	June 14
Untreated control	19.9 ± 2.1	23.8 ± 5.0	19.3 ± 7.0
Karate Z, 0.03 lbs ai/acre, 1 d post-flood	0.3 ± 0.2 *	2.4 ± 0.8 *	6.1 ± 2.2
Dinotefuran, 240 gm ai/acre, pre + post split	0.8 ± 0.3 *	0.6 ± 0.3 *	2.6 ± 1.0 *
Dinotefuran, 360 gm ai/acre, post treatment	17.4 ± 2.0 (before)	4.9 ± 0.8 *	1.2 ± 0.3 *

An * denotes a mean significantly different from control mean (Tukey, $P < 0.05$) in the same column.

Dinotefuran - greenhouse experiment



New Insecticides - Summary

1. 4 insecticides
   - Multiple years of testing for efficacy against the rice water weevil
   - Seed treatments provide excellent control
     - Drill-seeded rice
   - May be much more compatible with crawfish production than pyrethroids – *Mike will discuss in later presentation*
   - Granular Dinotefuran
     - may be “rescue” or curative treatment
     - may be suitable in water-seeded rice

Acknowledgments

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Natalie A. Hummel, Ph.D.
Rice Extension Entomologist
LSU AgCenter
nhummel@agcenter.lsu.edu
Cell: 225-223-3373
Office: 225-578-7386