

Updates on Codling Moth Mating Disruption



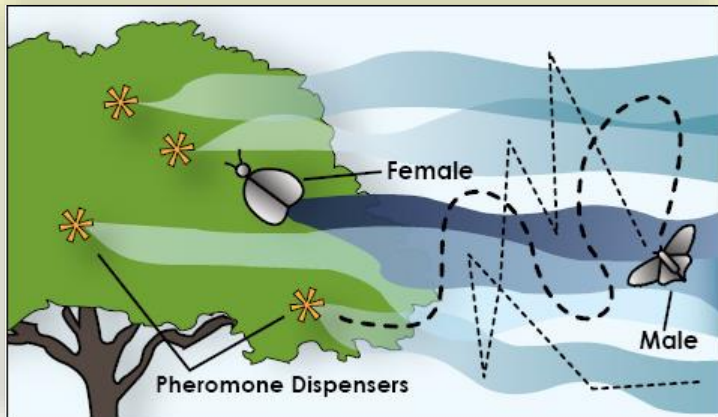
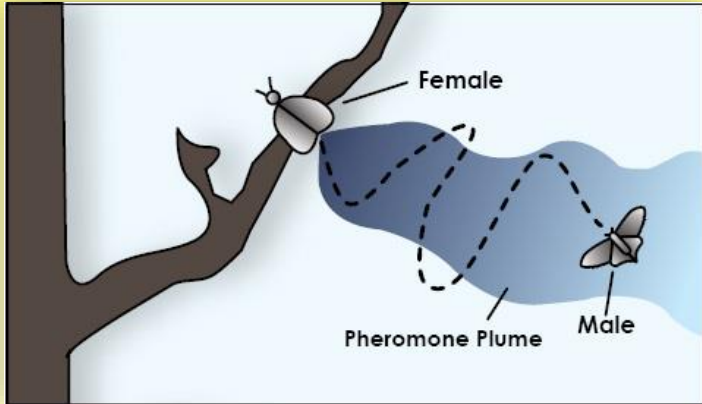
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Mating Disruption



Codling Moth Mating Disruption

A proven technology

•So what's new?

•Aerosols

- **Reduced rates**
- **Reduced emission frequency**
- **More economical**

•Medium-density meso emitters

- **Suitable for smaller blocks**

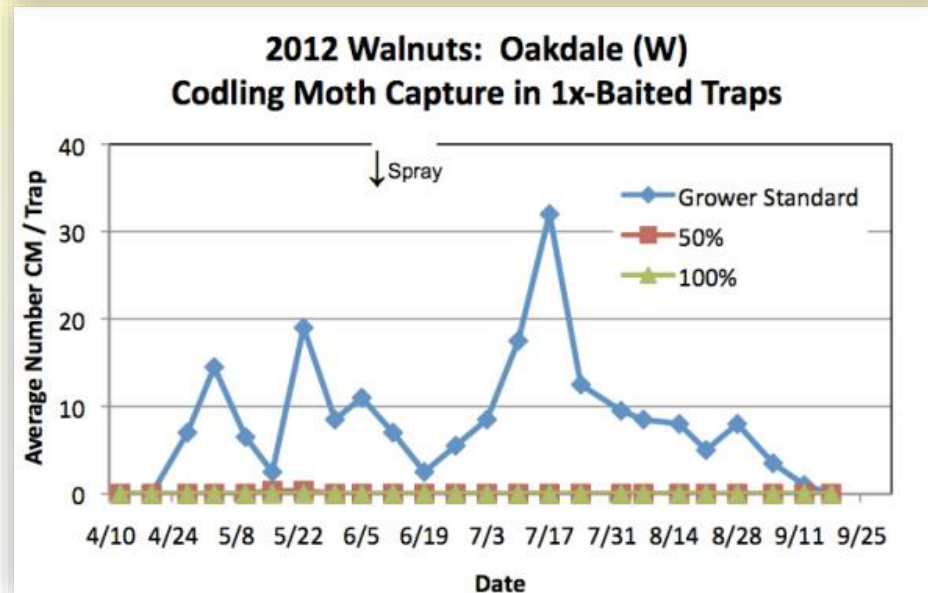
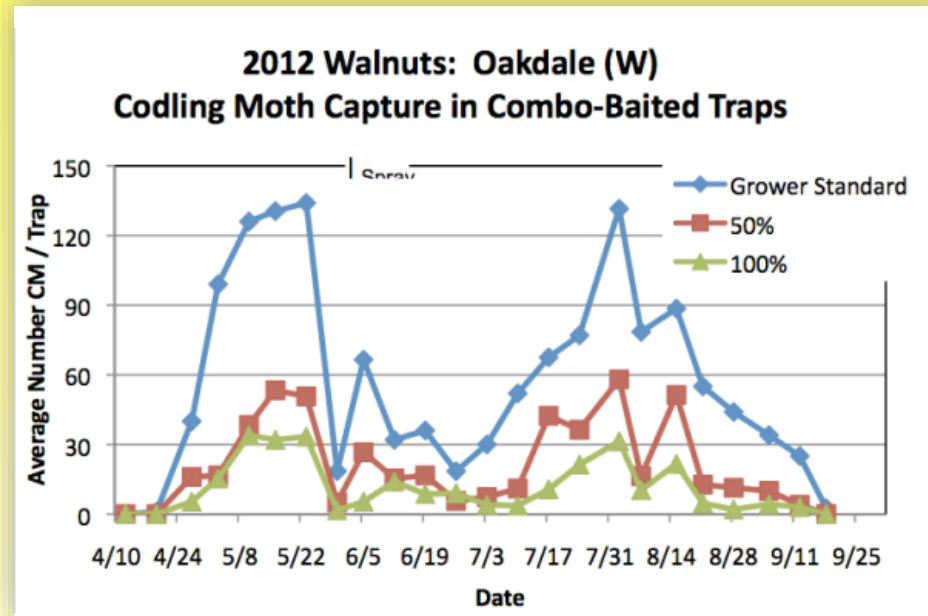


Reduced Rate Aerosols

- **100% load vs. 50% load vs. grower standard (GS)**
 - 15 minute intervals
 - 12 hours (5pm – 5am)
- **Dispenser density – 1 per 2 acres**
- **8 orchards (average treatment plot size 25 A)**
- **2 products**
 - **Suterra CheckMate® Puffer® (4 orchards)**
 - **Pacific Biocontrol Isomate® Mist (4 orchards)**
- **Evaluated:**
 - **Trap catches**
 - **Mid-season damage (July canopy counts)**
 - **Harvest damage**

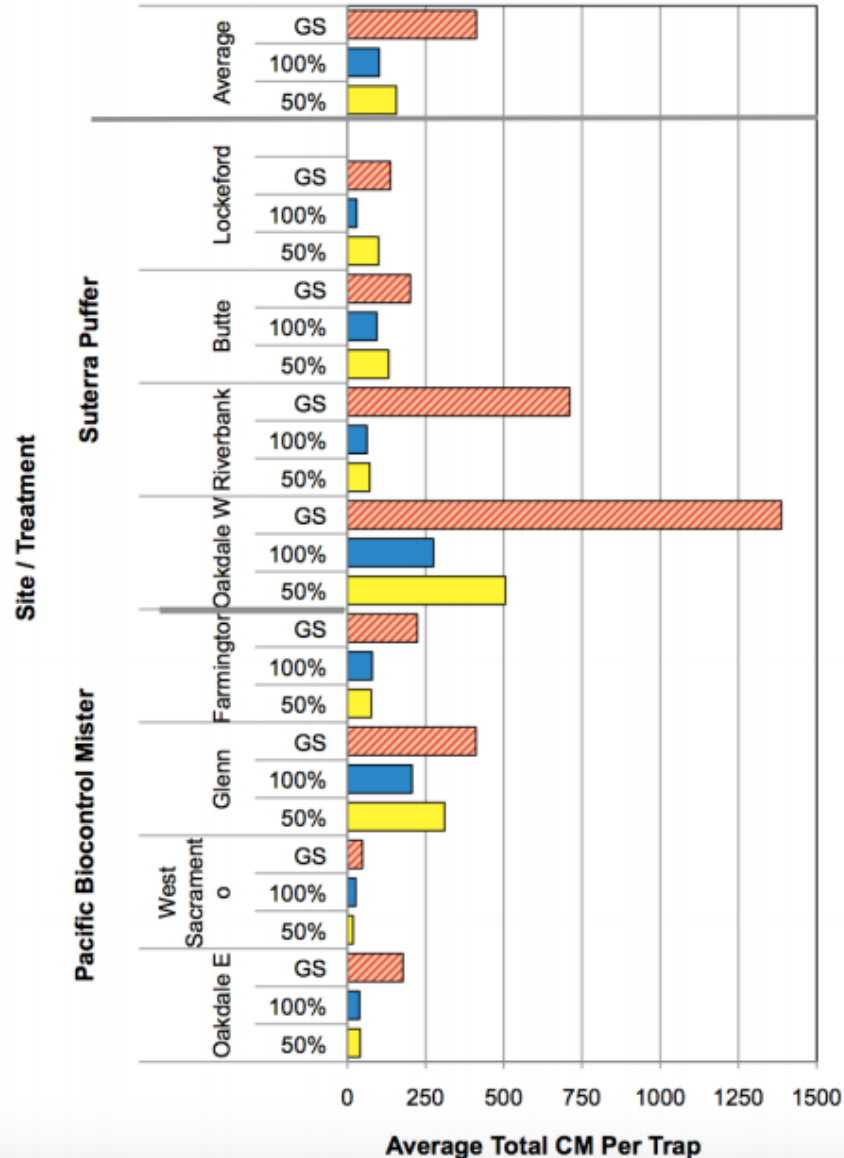


Reduced Rate Aerosols – Trap Catches



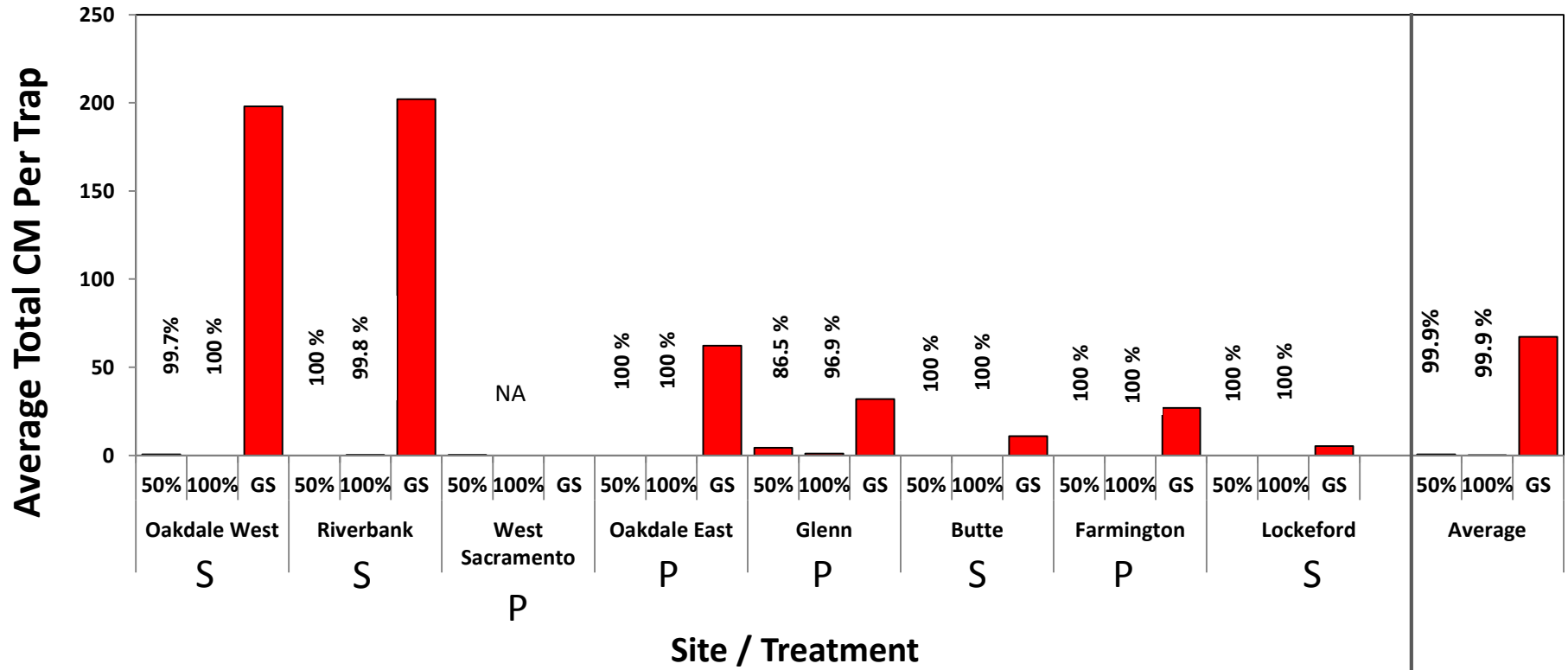
Reduced Rate Aerosols – Trap Catches

2012 Walnuts: Reduced Rate Aerosol Emitter Trial
Season Total CM Capture in COMBO -Baited Traps



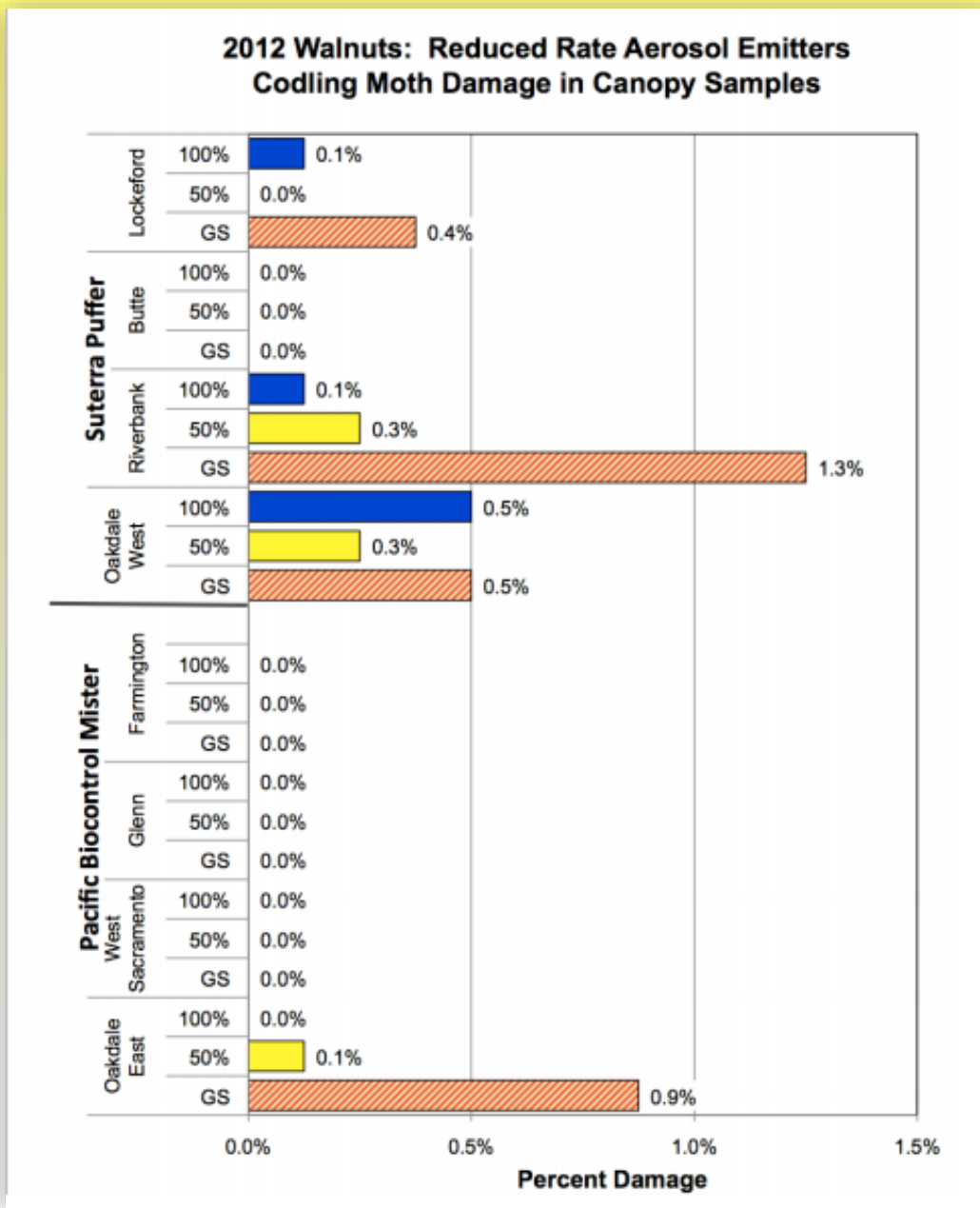
Reduced Rate Aerosols – Trap Catches

Season Total CM Capture and Percent Shutdown for 1X Traps



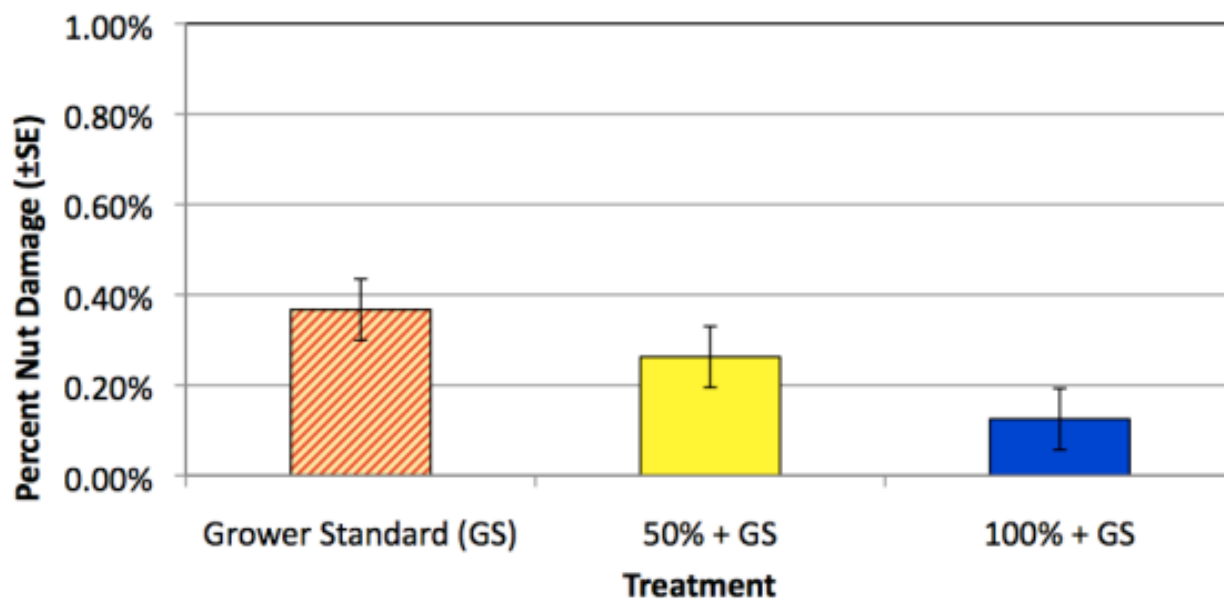
S = Suterra CheckMate® Puffer®
P = Pacific Biocontrol Isomate® Mist

Reduced Rate Aerosols – Canopy Counts

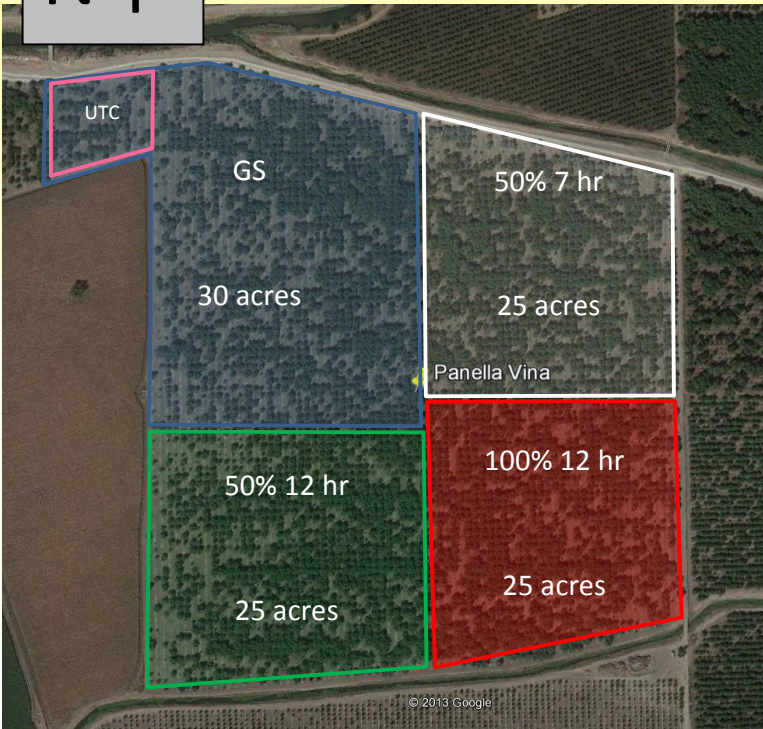
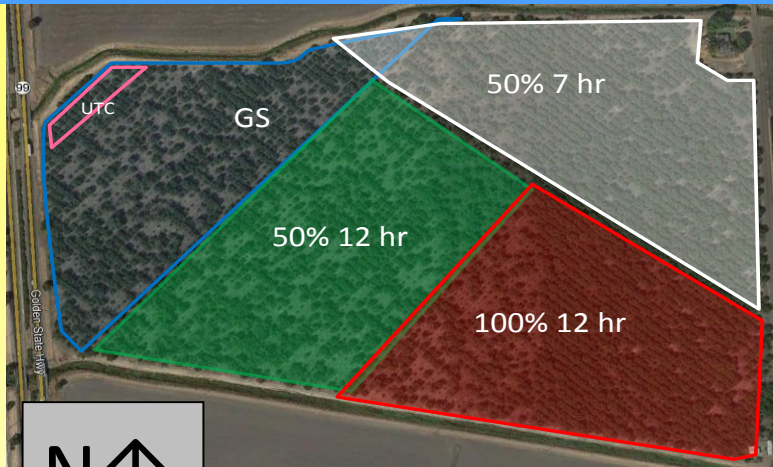


Reduced Rate Aerosols – Harvest Damage

**2012 Walnuts: Reduced Rate Aerosol Emitters
Average Codling Moth Damage at Harvest**



Reduced Emission Frequency



✓ **4 Sites, 2 in Butte County, 2 in San Joaquin County**

2 CHANDLER (Butte)

2 VINA (San Joaquin)

22-25 A treatment plots

✓ **5 treatments, replicated across sites:**

“Grower Standard”

GS + 50% load, 7 hr ON

GS + 50% load, 12 hr ON

GS + 100% load, 12 hr ON

UNTREATED (1-2 acres)

Suterra Puffers & Isomate MIST dispensers @ 1 per 2 acres

✓ **25-30 acre plots**

✓ **Orange Pherocon wing traps**

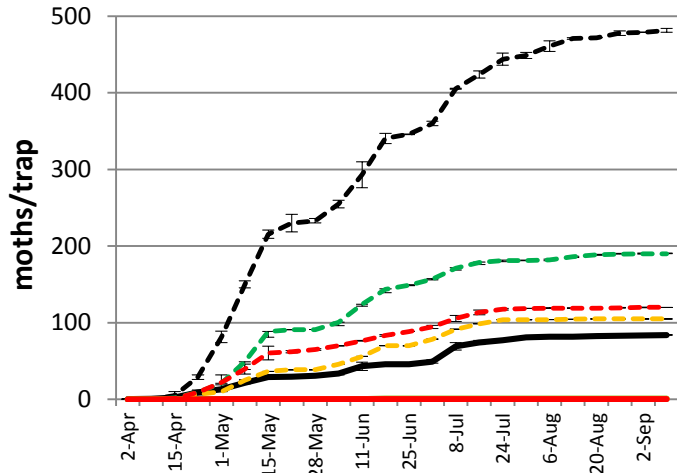
6 w/ L2 lure

2 w/ Trece CM-DA Combo lure

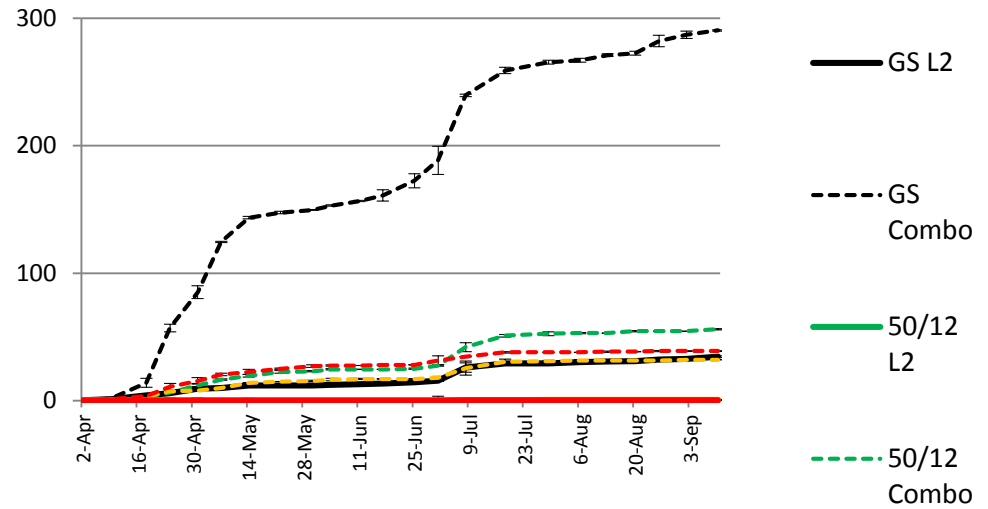
✓ **In-season & harvest damage**

Reduced Emission Frequency – Trap Catches

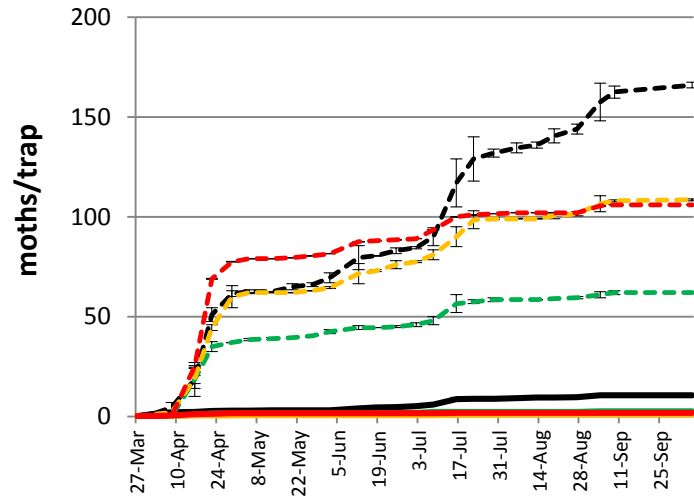
San Joaquin County Site P – VINA



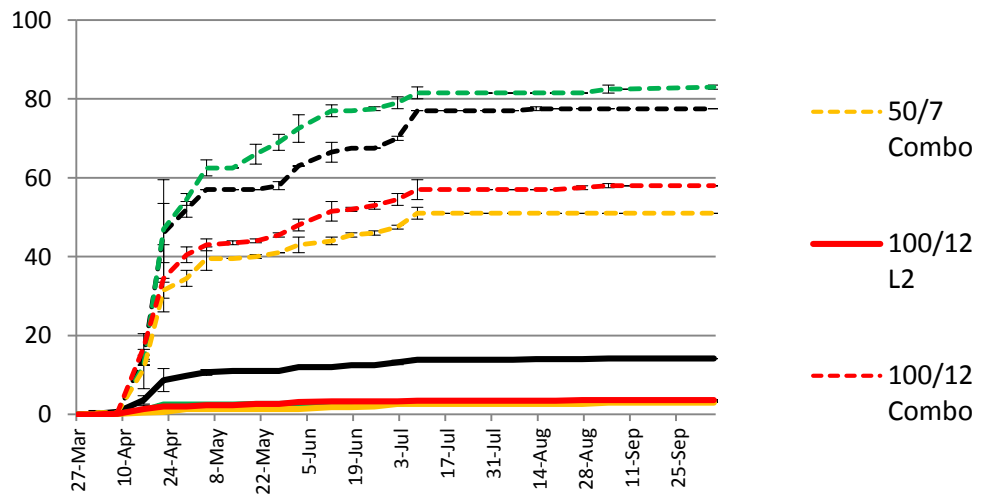
San Joaquin County Site T - Vina



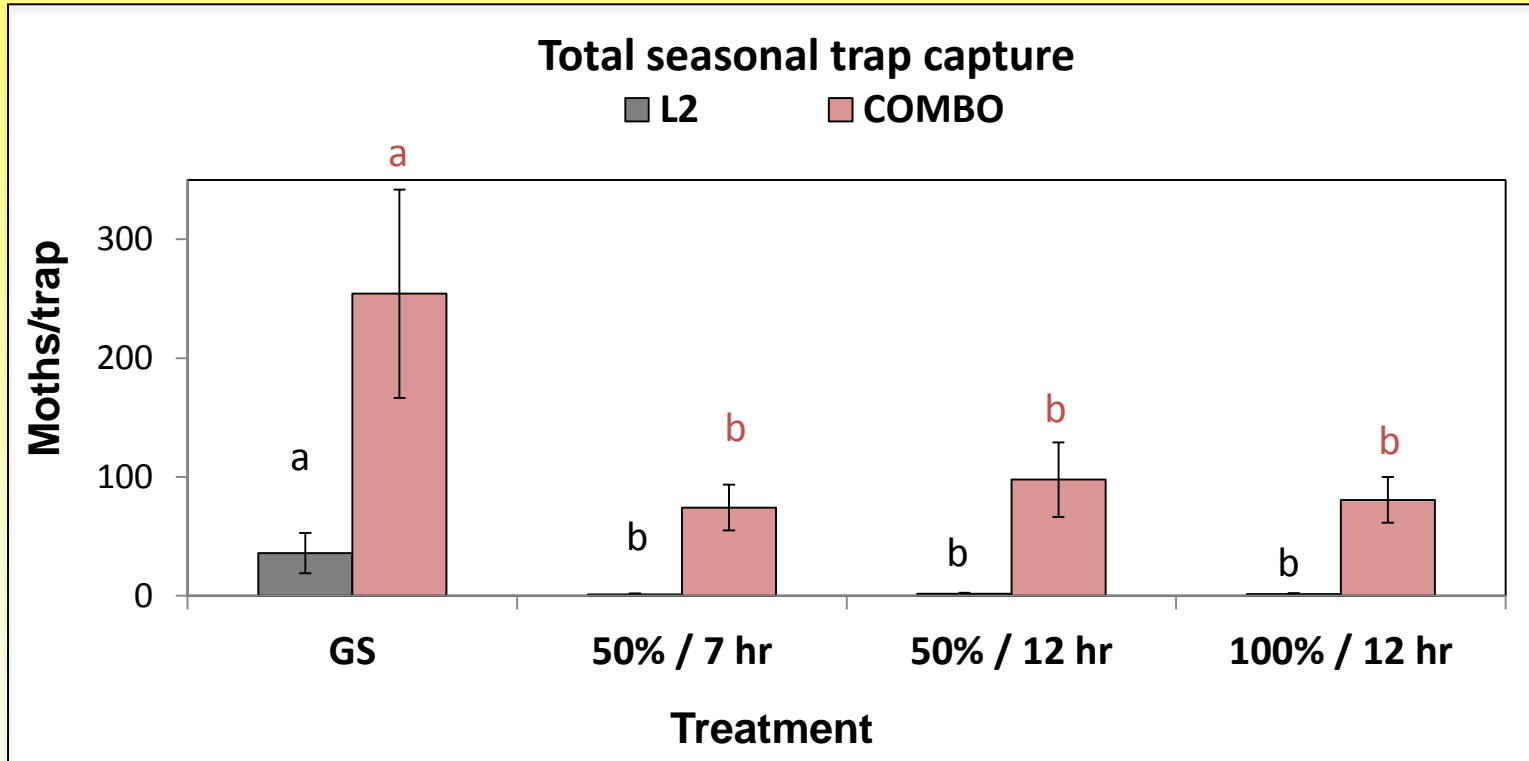
Butte County Site B15 - Chandler



Butte County Site B1 - Chandler



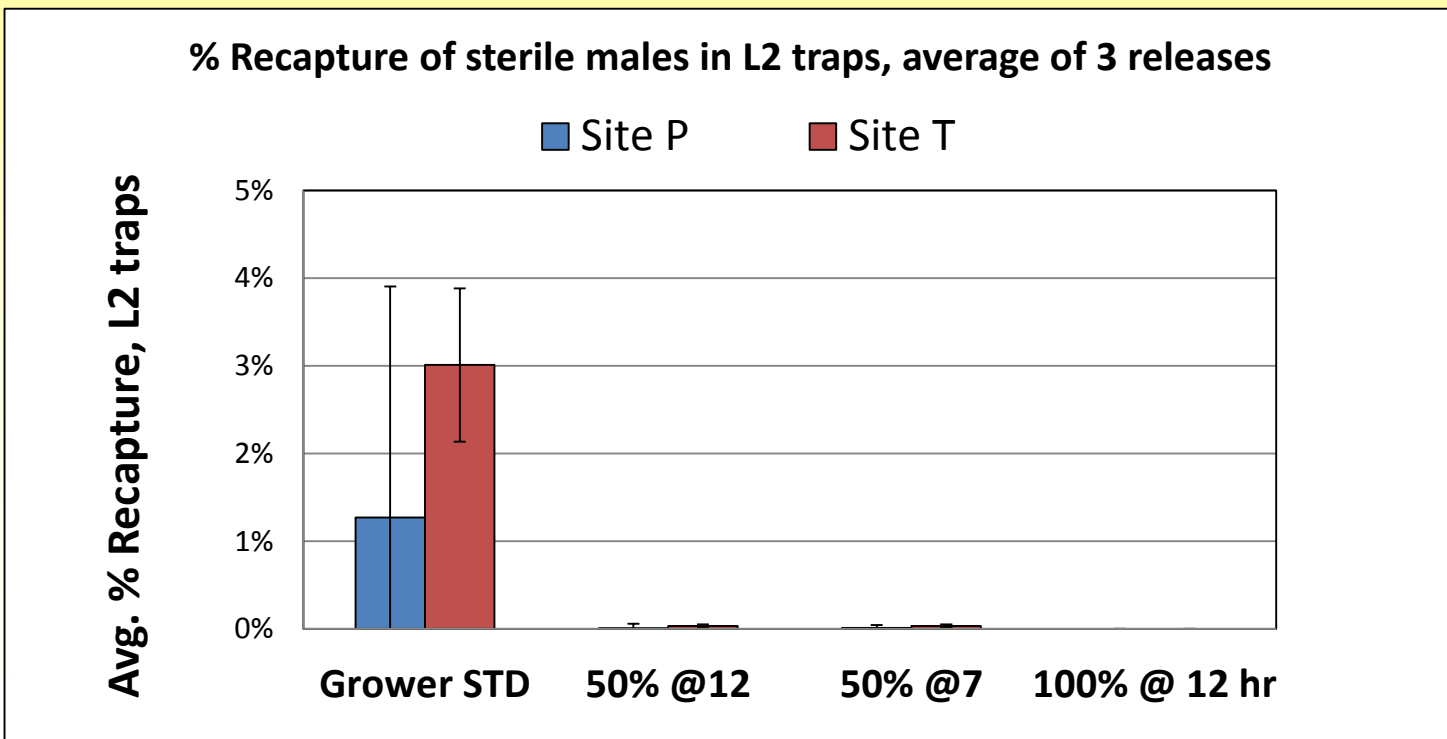
Reduced Emission Frequency – Trap Catches



Reduced Emission Frequency – Trap Catches

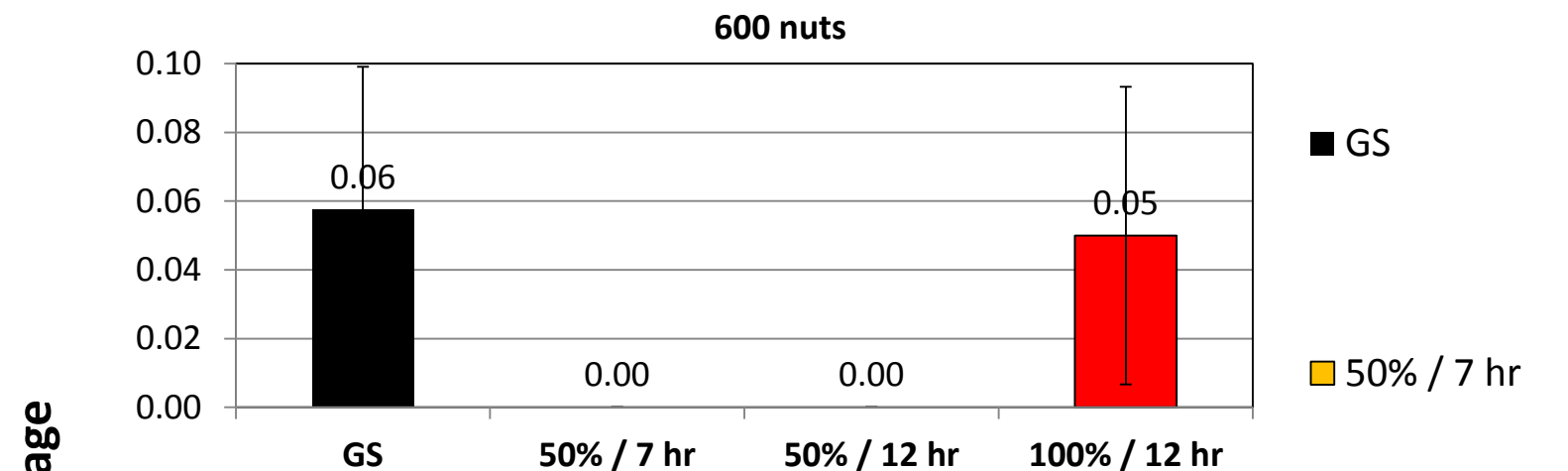
Sterile male moth releases at San Joaquin County sites confirm suppression of native field captures

3200 moths released per plot July 10, 18, and Aug. 18
Recapture after 7 days

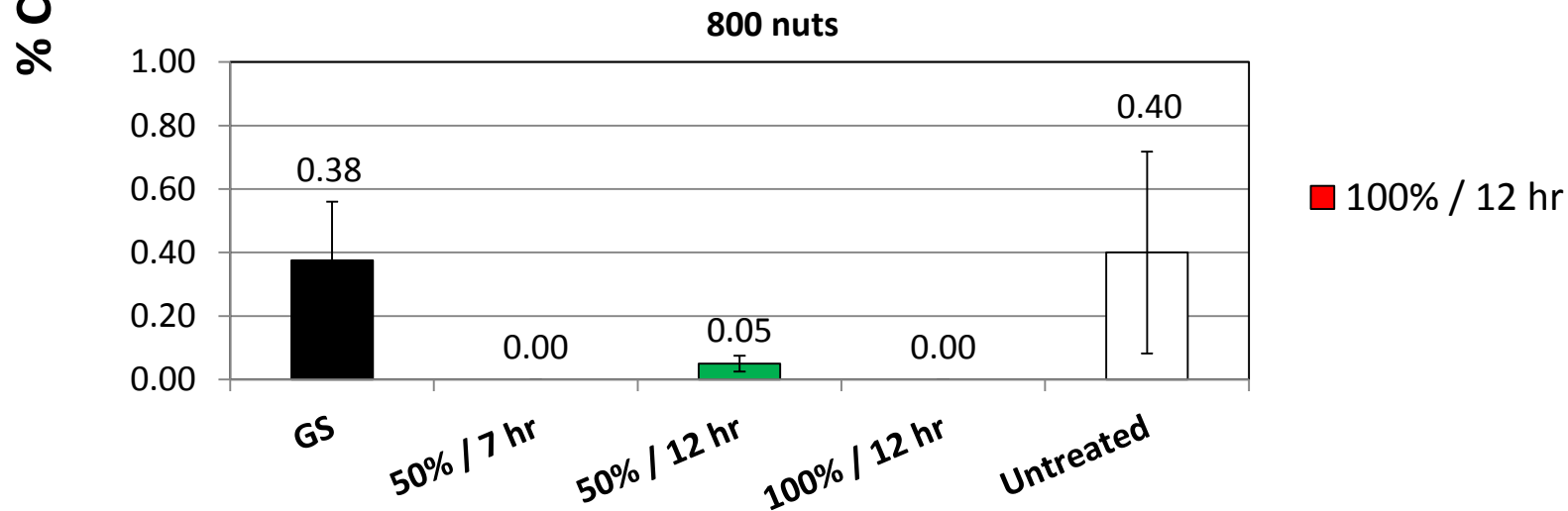


Reduced Emission Frequency – Damage

Mid-season Canopy Counts



Harvest



Reduced Rate-Reduced Emission Frequency Aerosols

- **Effective suppression at reduced loads & shorter operating times = more economical options 😊**

Medium-density Meso Emitters – 2012

- **5 sites (San Joaquin & Stanislaus Co.)**
 - **5-8A treatment plots**
- **Pacific Biocontrol Isomate® CM Ring (20/A)**
- **Trece CideTrak® CM (20/A)**
- **Trece CideTrak® CMDA high & low rate (20/A)**
- **Grower standard**

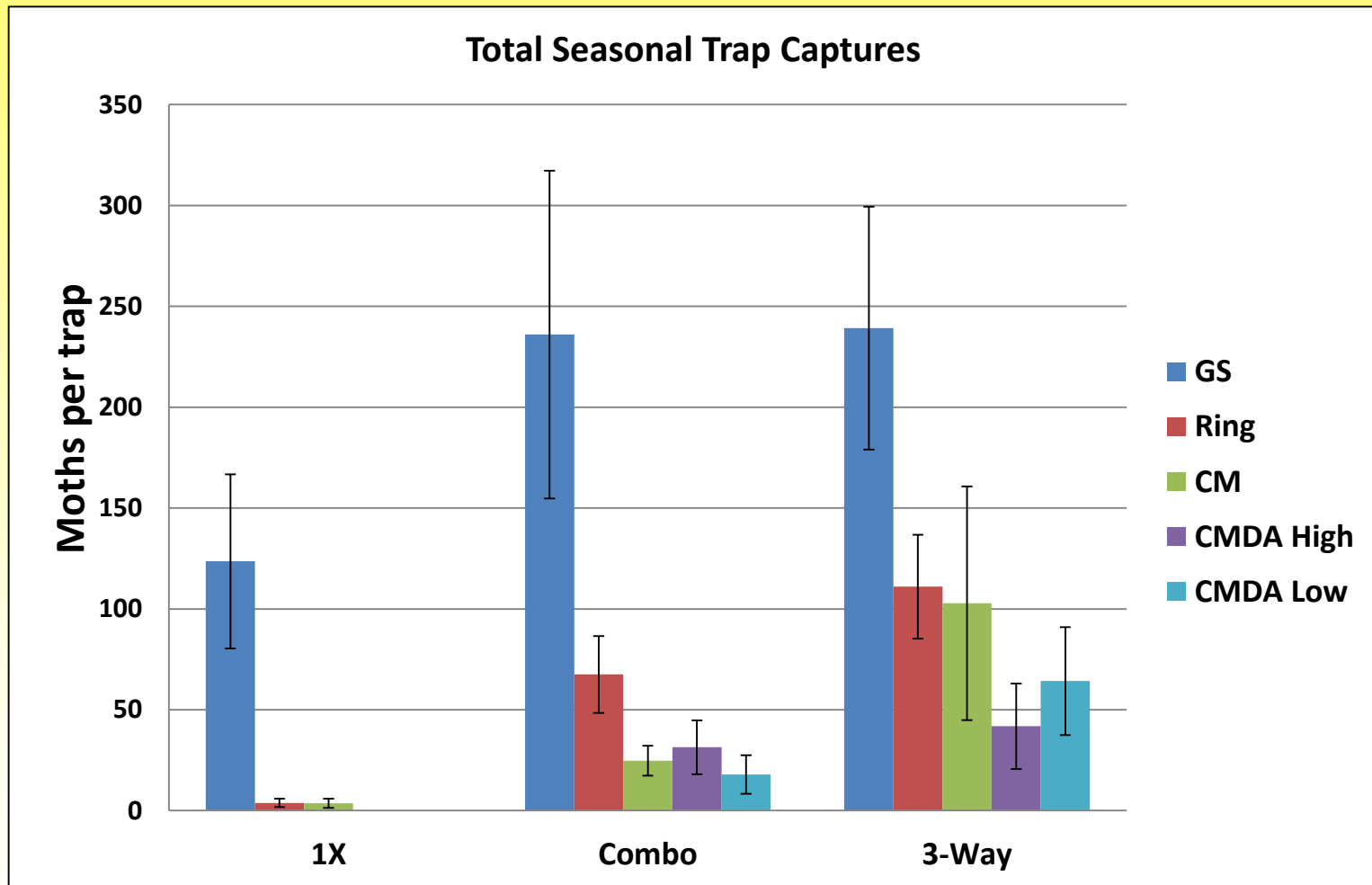
**Pacific
BioControl**



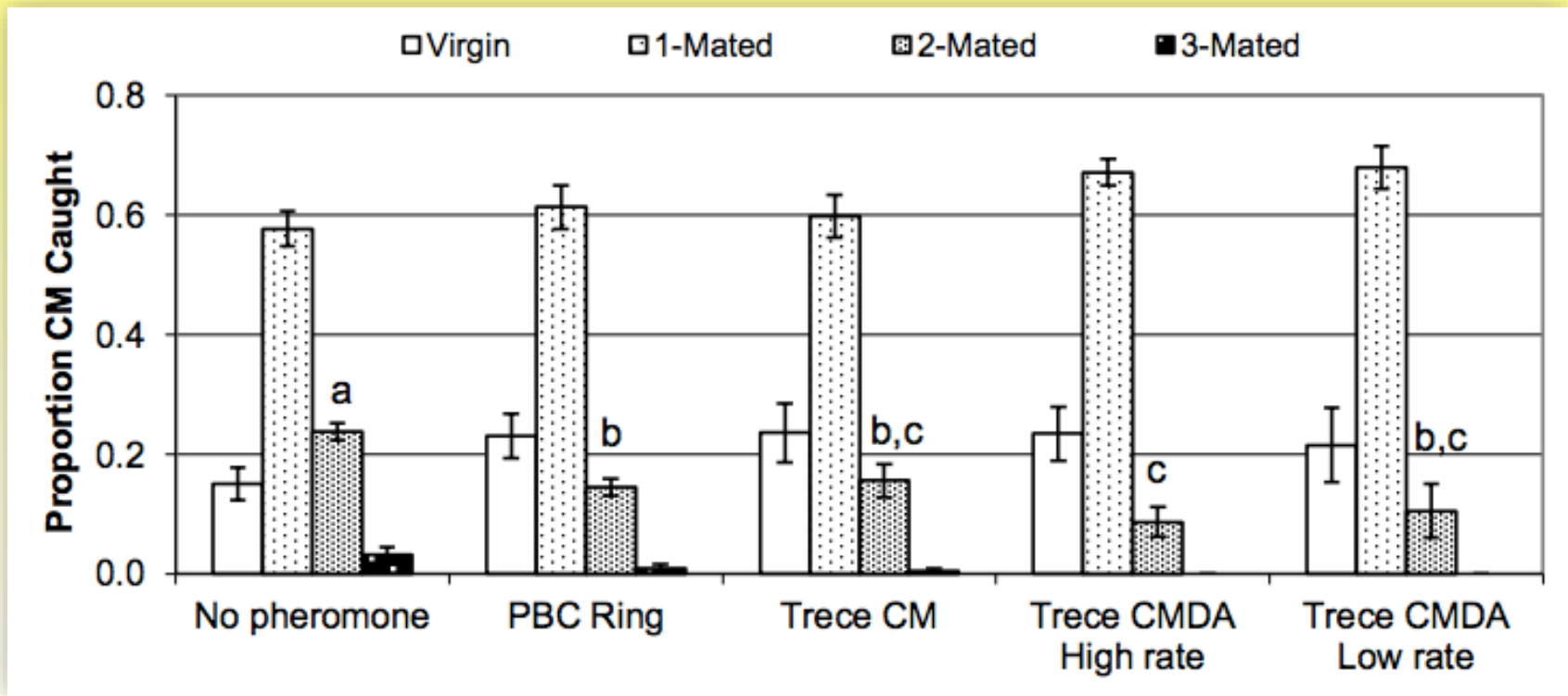
Trece



Meso Emitters – Trap Catches 2012

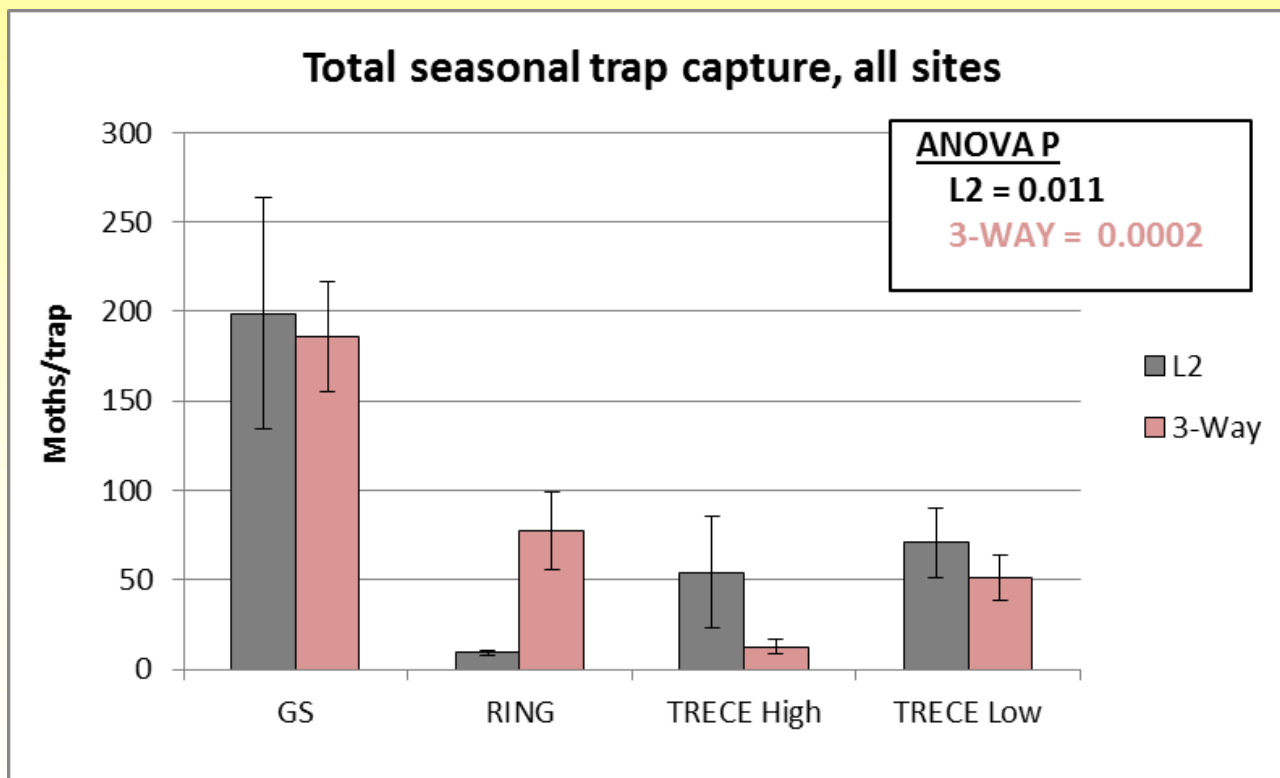


Meso Emitters – Female Mating Status 2012

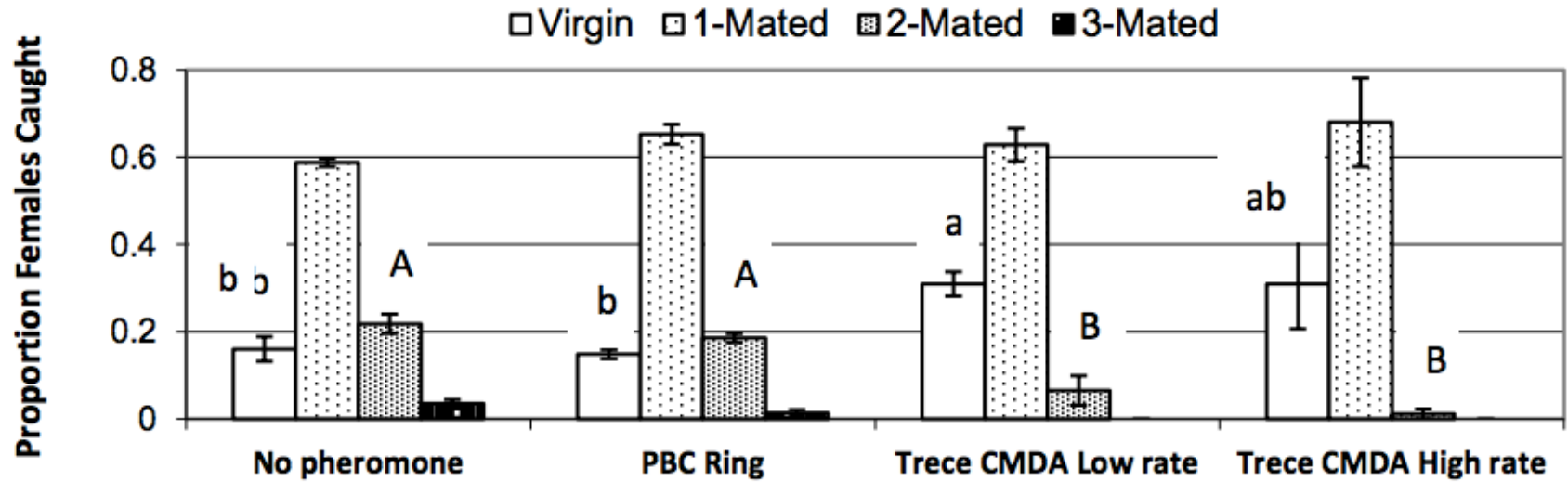


Medium-density Meso Emitters – 2013

- 4 sites (Butte City & Stockton)
 - 8-10A treatment plots
- Pacific Biocontrol Isomate® CM Ring (40/A)
- Trece CideTrak® CMDA high & low rate (20/A)
- Grower standard

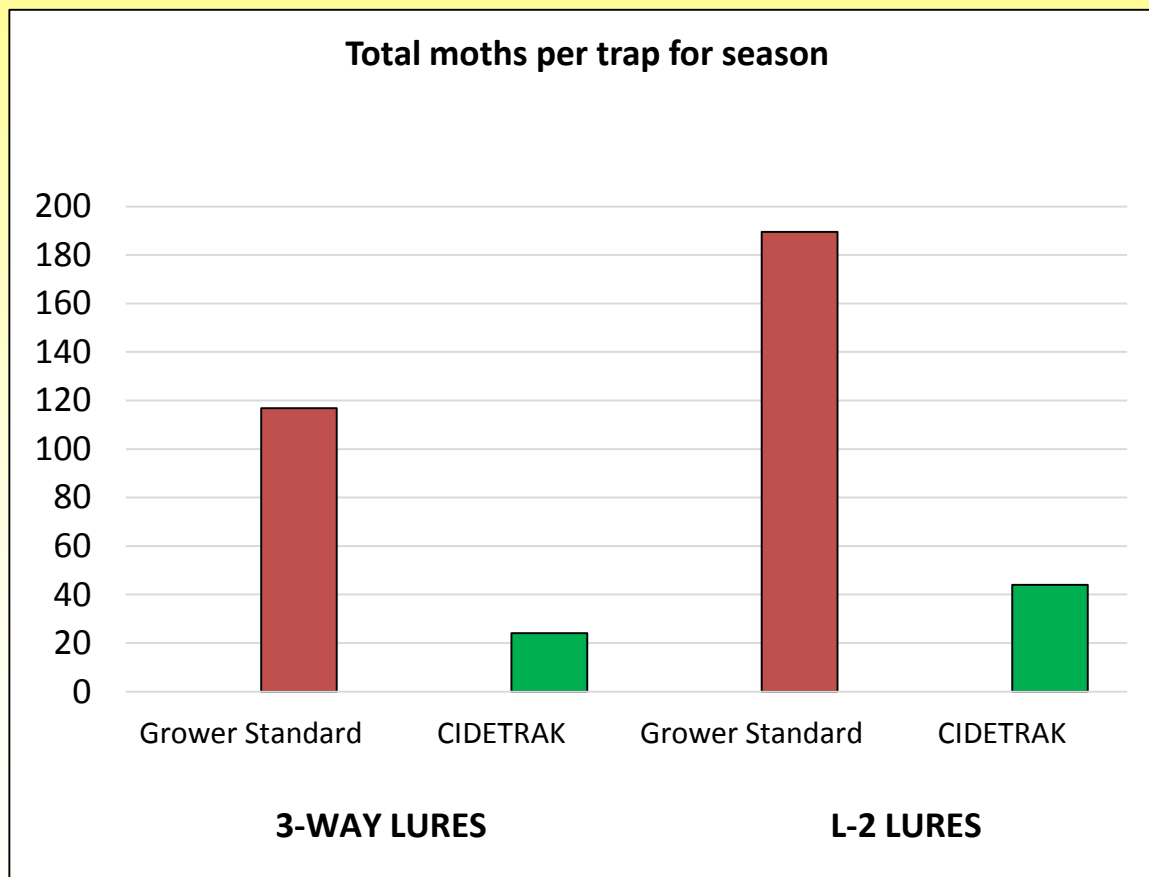


Meso Emitters – Female Mating Status 2013

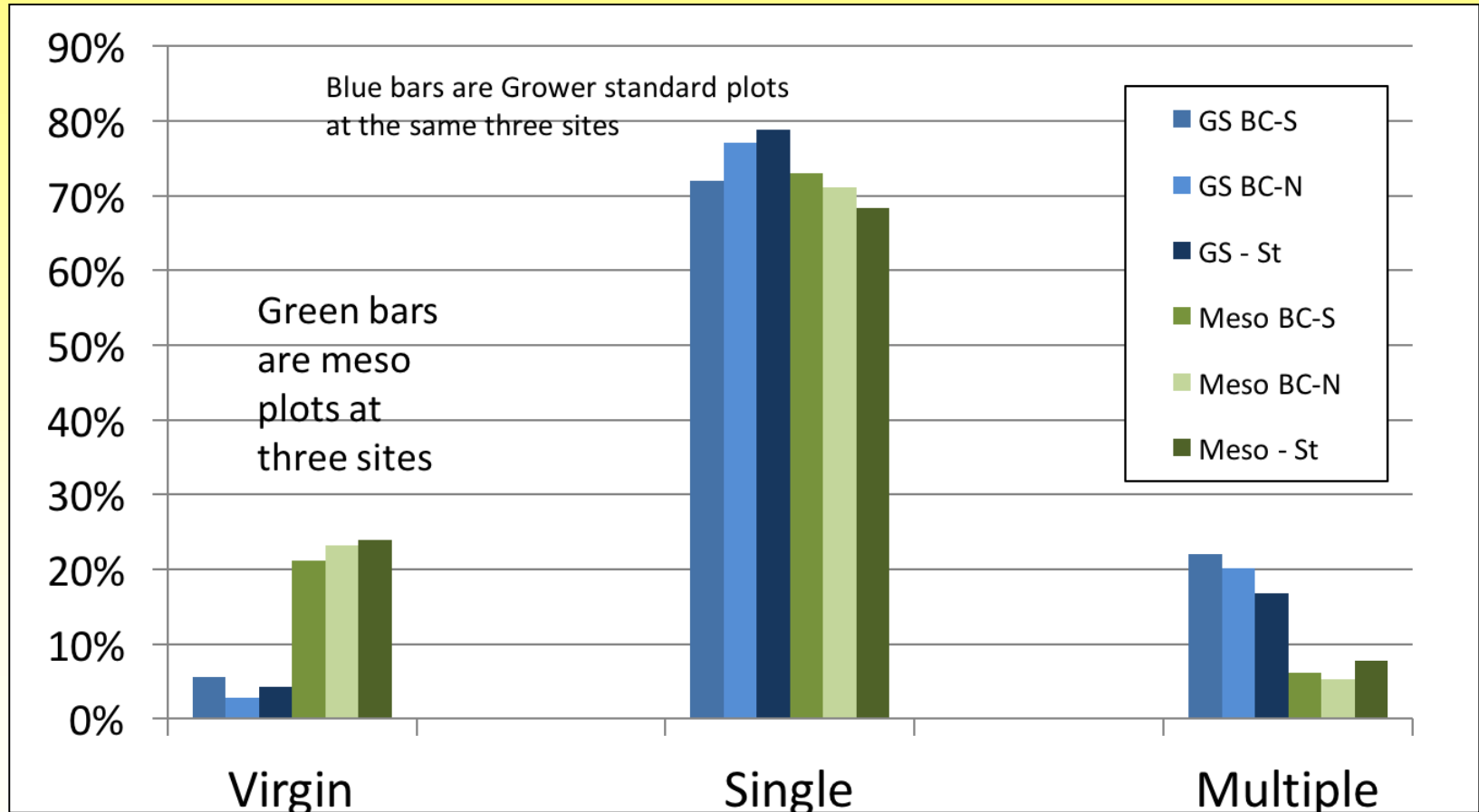


Medium-density Meso Emitters – 2014

- 3 sites (San Joaquin & Stanislaus Co.)
- Trece CideTrak® CMDA high rate (20/A)
- Grower standard



Meso Emitters – Female Mating Status 2014



Medium-density Meso Emitters

- **Effective trap catch suppression and multiple mating reduction**
- **An option for smaller orchards**

Codling Moth Mating Disruption – Why?

- **Flexibility in spray programs targeting other pests**
 - **Timing for each pest more critical with increasingly selective pesticides**



- **Good early CM control can reduce navel orangeworm damage**



University of California

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