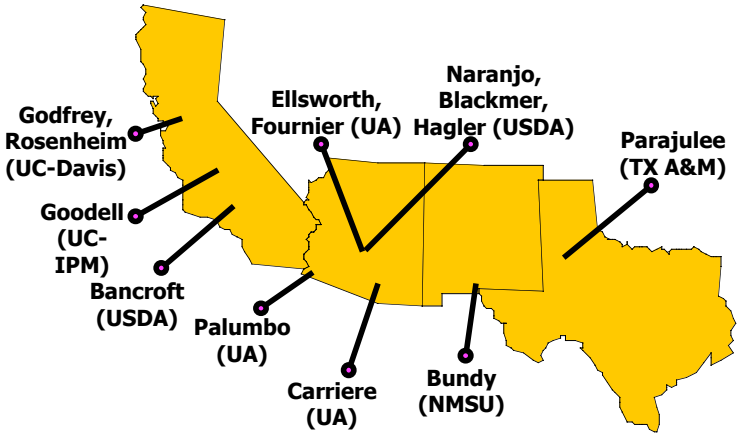
RAMP Team



RAMP Objectives (matrix)

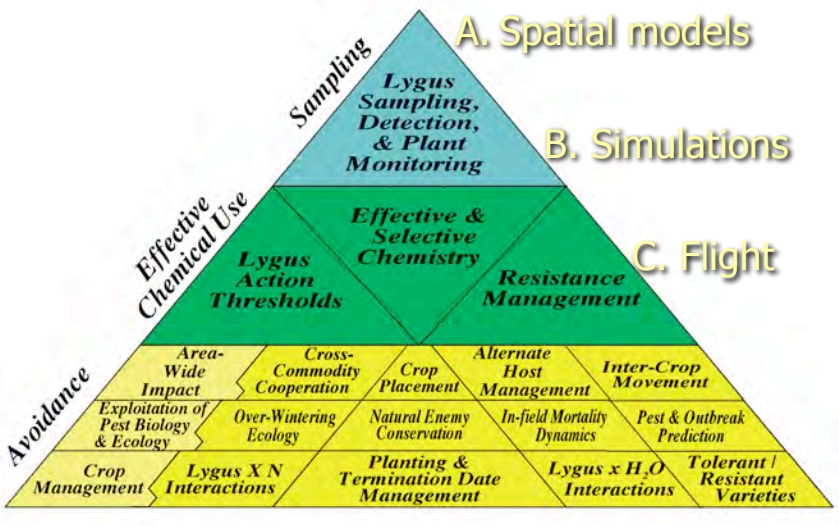
I. Field Level Experimental
- Yield
- Damage
- Thresholds

II. Field Level Experimental
- Insecticide efficiency
- Insecticide selectivity

III. Landscape Level
- Patterns
- Processes
- Mechanisms

IV. Extension, Outreach, Education, Evaluation

Source-Sink Relationships & Movement



Key Components to Objective III

- Influence of biotic/abiotic factors of *Lygus* flight (Naranjo, Blackmer)
  - Flight mill tests
    - Age
    - Gender
    - Mating status
    - Wind speed
    - Temperature/RH
    - Light intensity

Key Components to Objective III

- Intercrop movement of *Lygus* and NEs (Hagler, Naranjo, Blackmer)
  - Small-scale mark-capture studies
    - Cotton
    - Alfalfa
    - Lesquerella
    - Guayule
  - Temporal and Spatial

Key Components to Objective III

- Long-distance movement of *Lygus* and NEs (Rosenheim, Sheller, Hagler)
  - Long-distance mark-capture studies
    - Cotton
    - Alfalfa
  - Spatial (influence of alfalfa as a source of *Lygus* colonizing cotton)

Key Components to Objective III

- Determine the role of alfalfa in mitigating movement of *Lygus* at the landscape level (Goodell)
  - Impact on cotton production in CA

Key Components to Objective III

- Simulation modeling *Lygus* movement (Rosenheim, Corbett [Bancroft])
  - Develop a spatial simulation model for tracking *Lygus* movement

Key Components to Objective III

- Influence of surrounding crops on *Lygus* infestation in cotton (Goodell, Rosenheim, Godfrey, [Bancroft])
  - Develop a web-based GIS mapping program

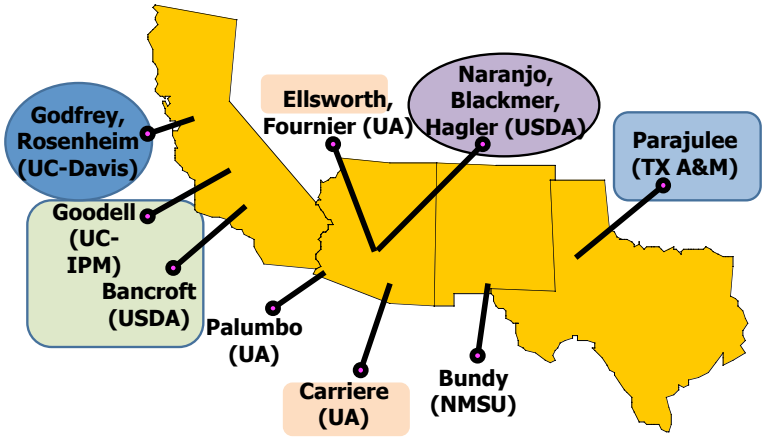
Key Components to Objective III

- Intercrop movement of *Lygus* (Parajulee)
  - Landscape level mark-capture studies
    - Cotton
    - Alfalfa (roadside)→cotton
  - Host preference studies

Key Components to Objective III

- Landscape (very large landscape) level management guidelines to reduce *Lygus* infestation in cotton (Carriere, Ellsworth, Dutilleul, Goodell, Parajulee)
  - Multi-state analysis
    - AZ, CA, TX
  - Very large spatial (sample area > 875 mi) and temporal (several year) survey

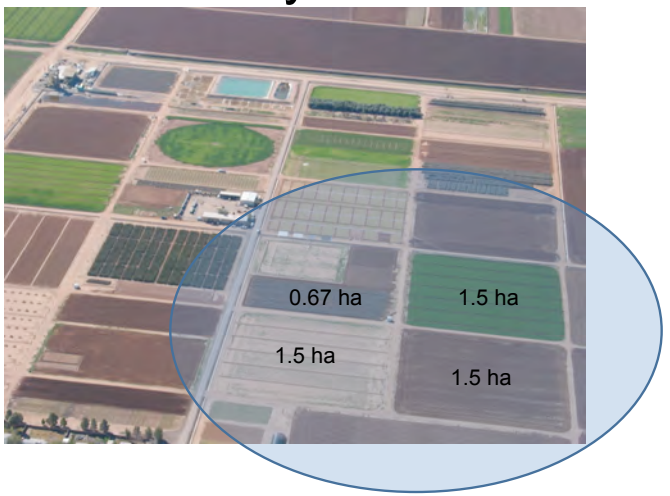
RAMP Team



Brief Overview/Status of Project

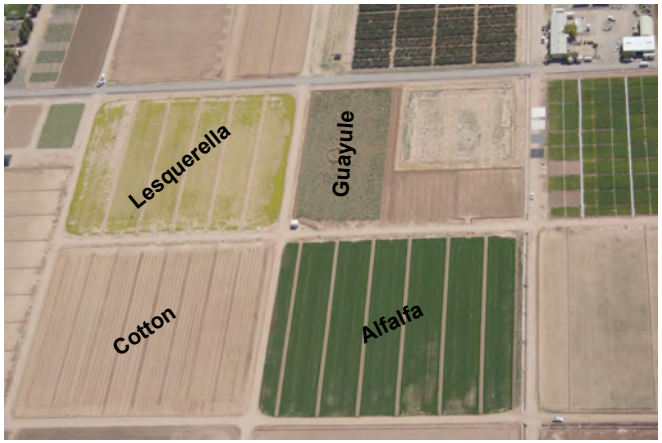
- **Intercrop movement of *Lygus* and NEs** (Hagler, Naranjo, Blackmer)
  - Small-scale mark-capture studies
    - Cotton
    - Alfalfa
    - Lesquerella
    - Guayule
  - Temporal and Spatial

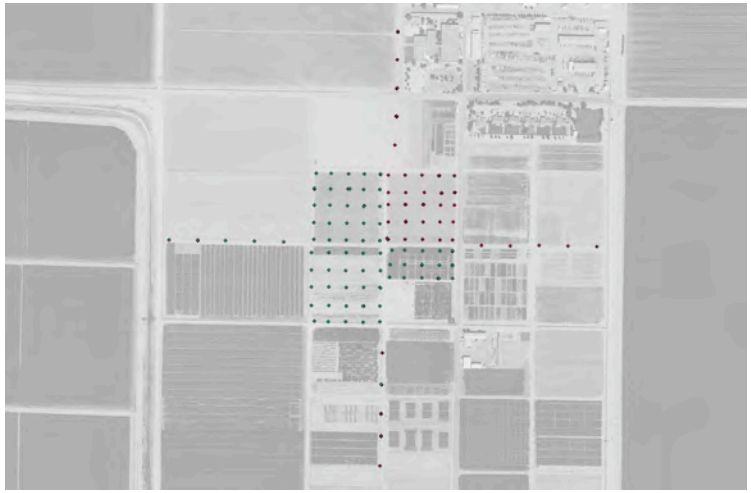
Study Site



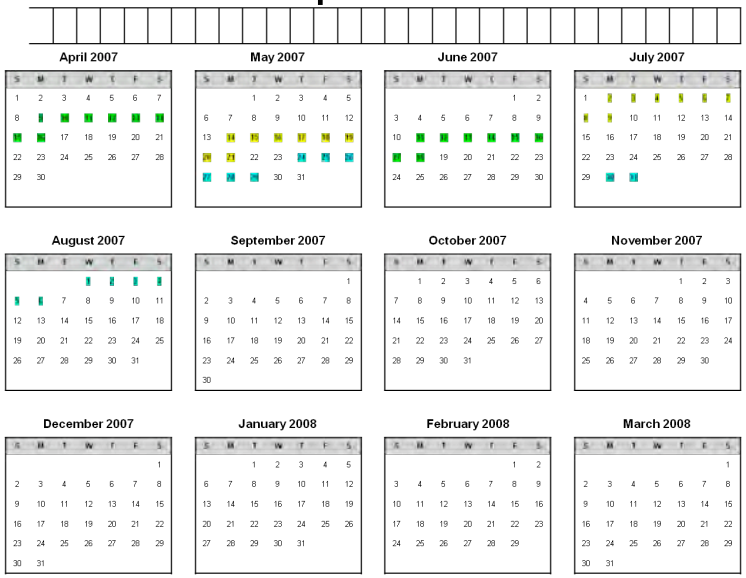
x

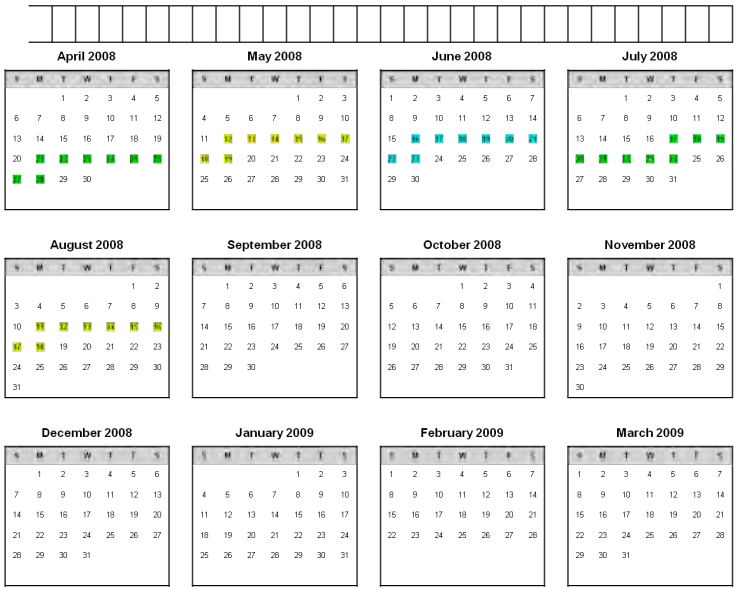
←Spatial Scale→



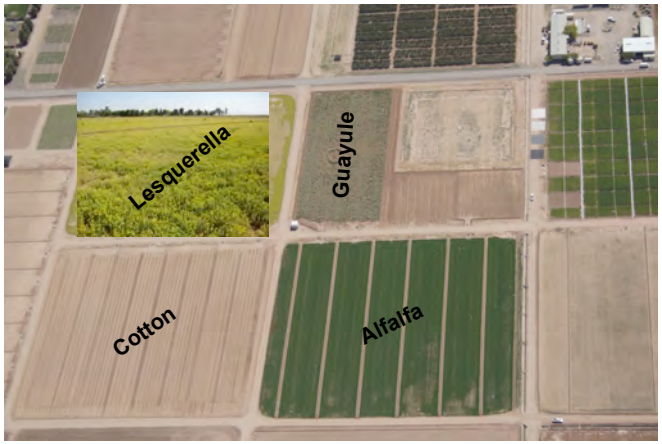


←Temporal Scale→





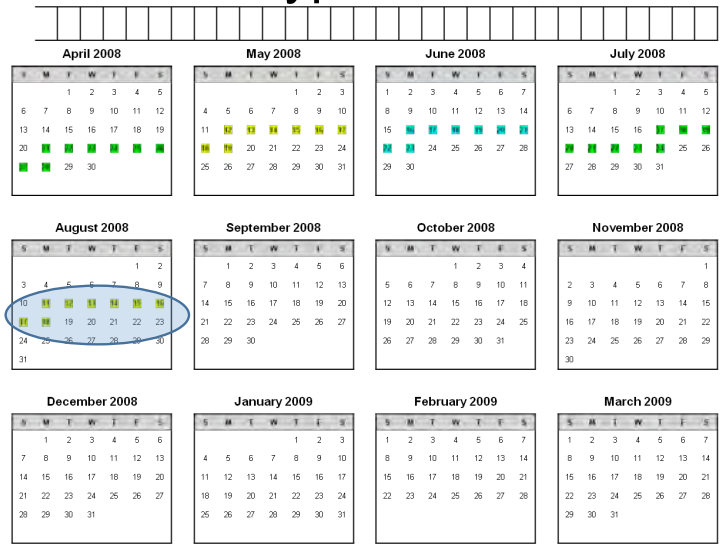
←Temporal Scale→
April/May



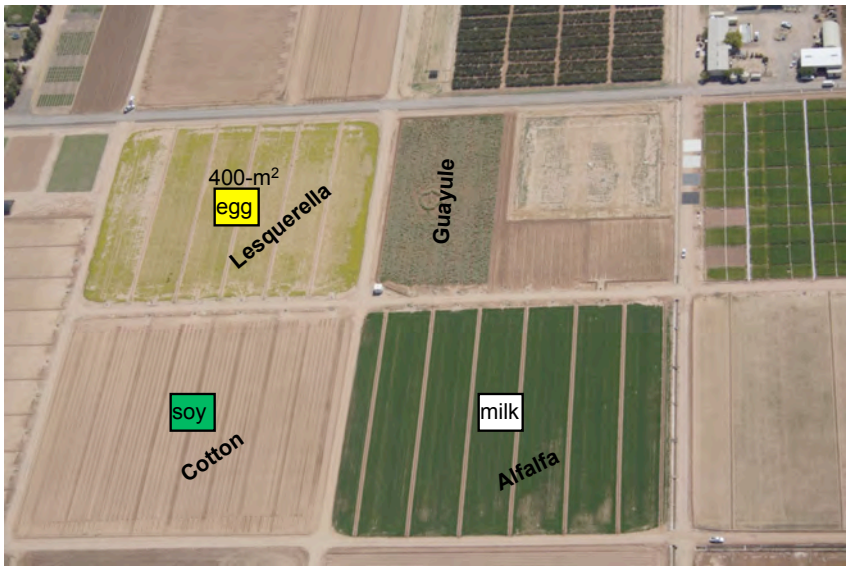
←Temporal Scale→
June

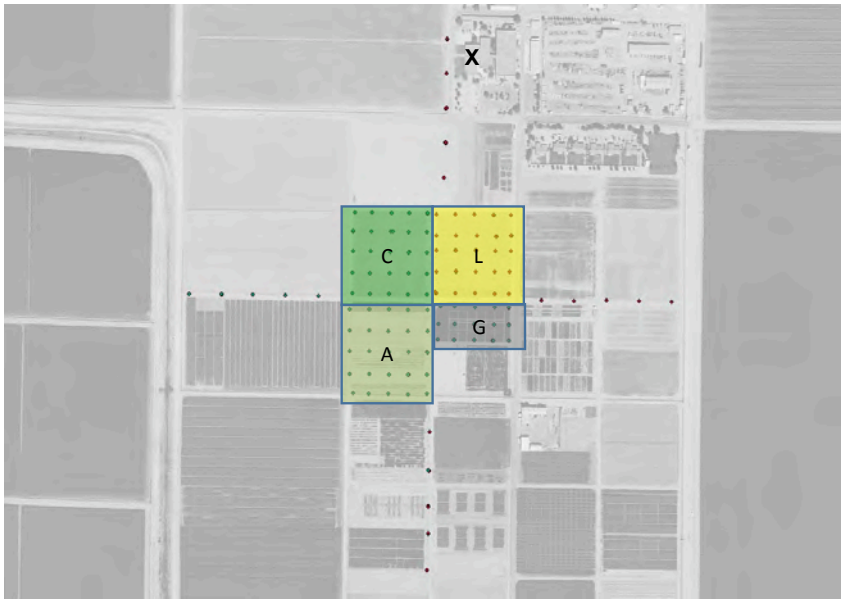
←Temporal Scale→
July/August

A Typical Week

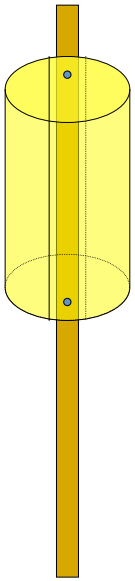


- Monday
  - Put out the marks
  - Set up the traps

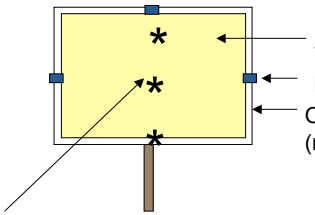




- Tuesday—Day 1 Collections
  - Collect JRH traps (rectangle)
  - Pluck JLB traps (circle)



The Traps

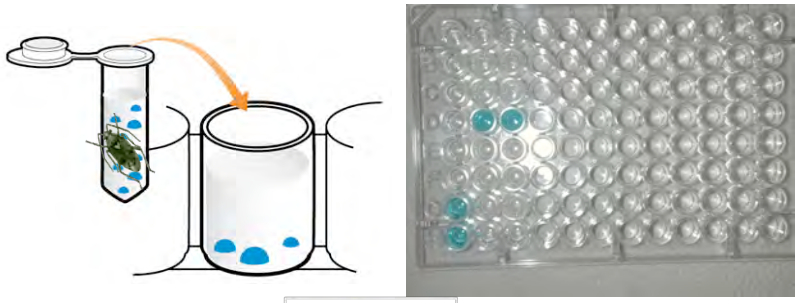


3 industrial strength staples (or screws):
The rigid plastic will be stapled to the wood post.
The delicate transparency will be clipped over the rigid plastic.

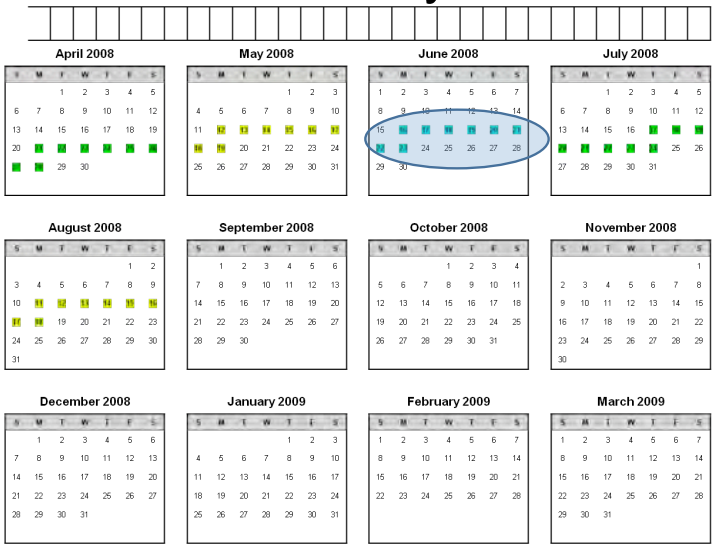
- Friday—Day 4
  - Collect
- Monday—Day 7
  - Collect
  - Take down all traps

Repeat the Process Every 2-3 Weeks

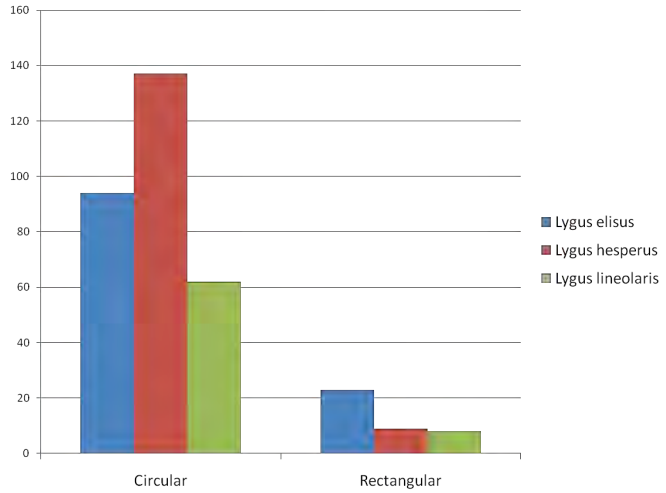
- 11X over 2 growing seasons (2007, 2008)
- Note:
  - pre-sampled the plots prior to each spray
  - post-sampled the day after each spray.
  - sweep samples

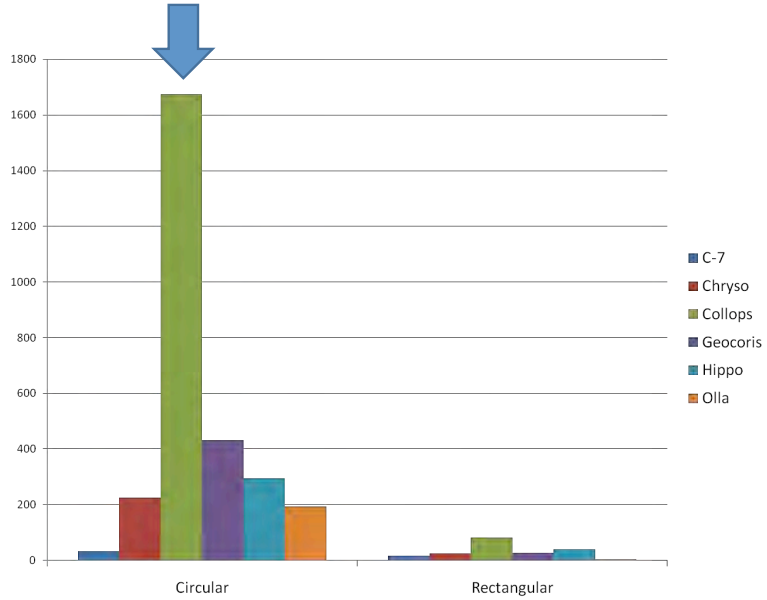


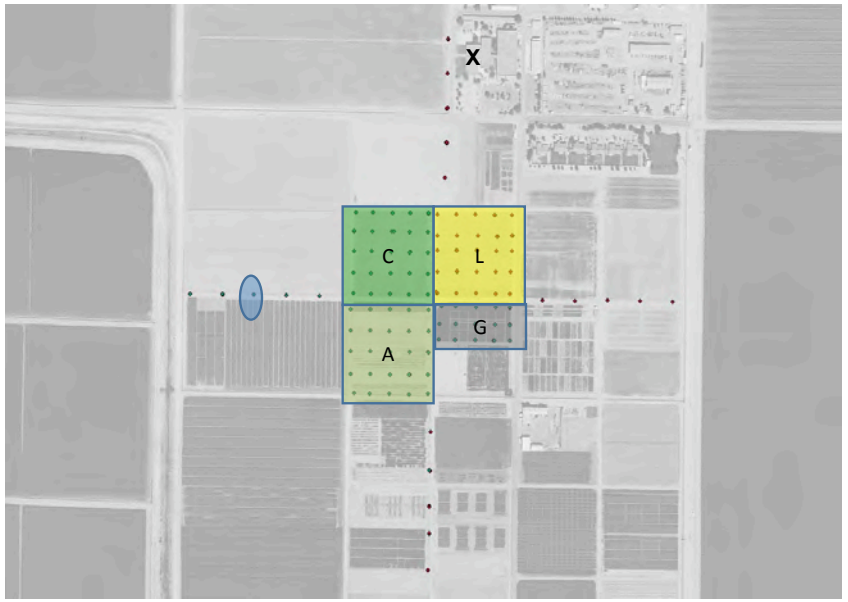
Preliminary Data

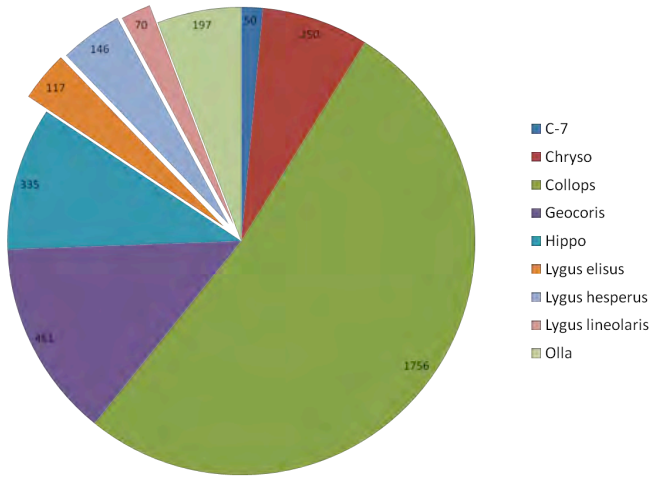


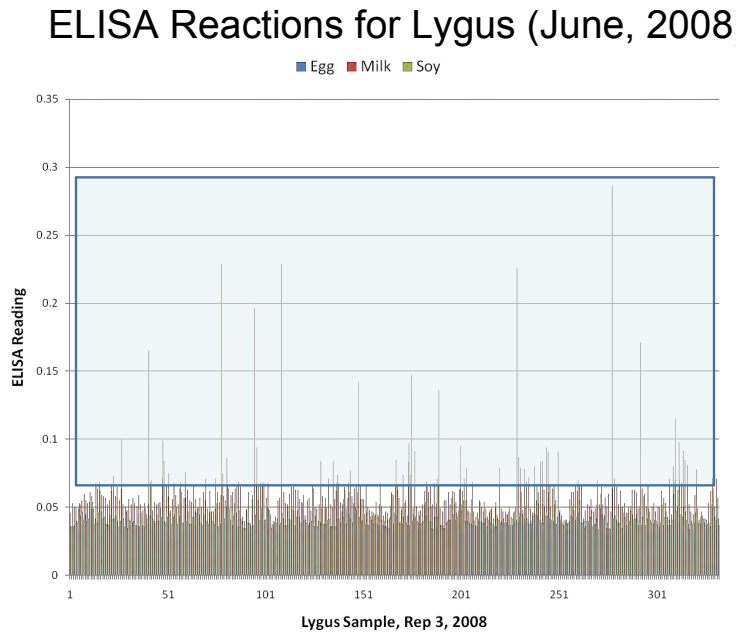
Trap Efficiency

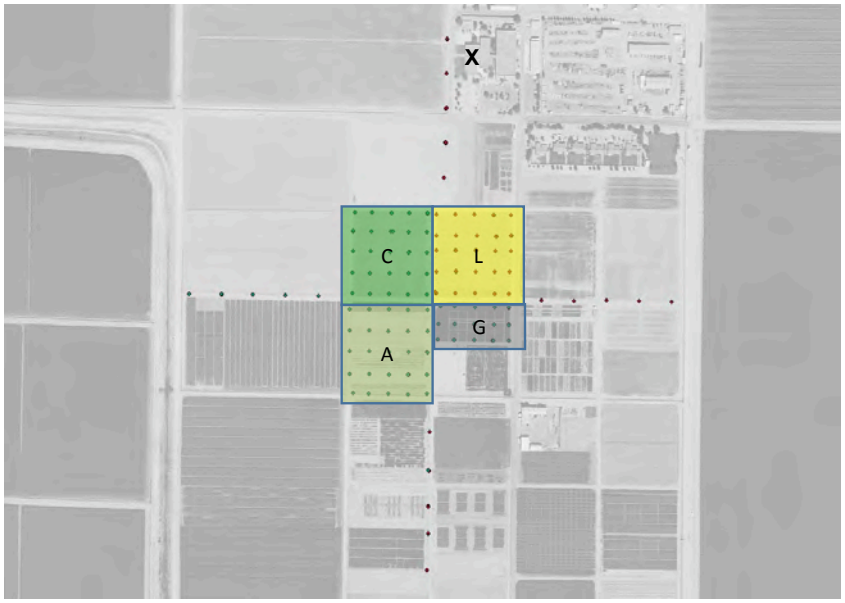


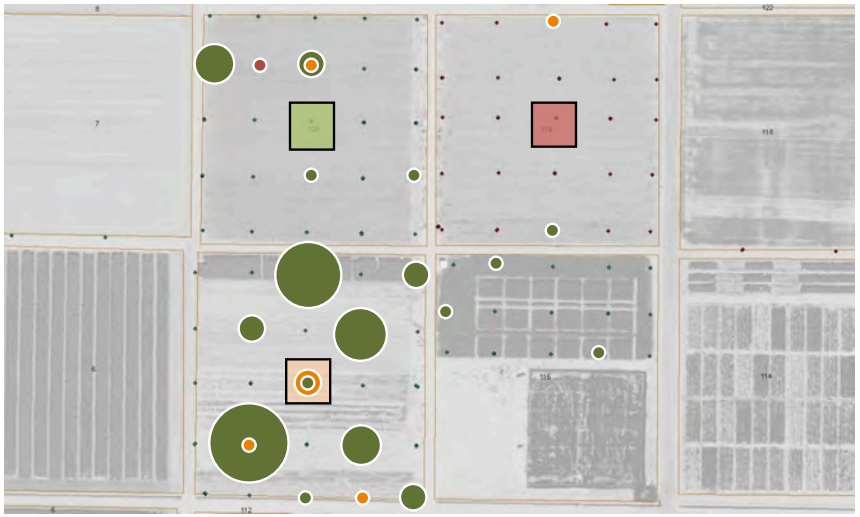

1800
1600
1400
1200
1000
800
600
400
200
0
Circular
Rectangular
C-7
Chryso
Collops
Geocoris
Hippo
Olla


X
C
L
A
G

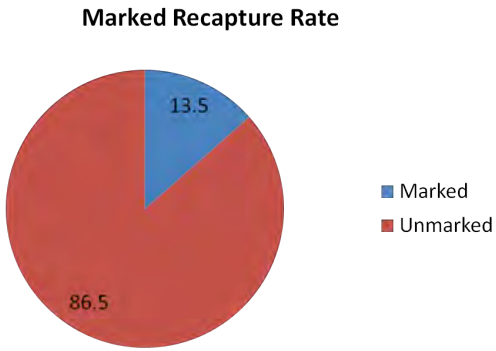

50
150
1756
461
335
117
146
70
197
C-7
Chryso
Collops
Geocoris
Hippo
Lygus elisus
Lygus hesperus
Lygus lineolaris
Olla


ELISA Reactions for Lygus (June, 2008)
Egg
Milk
Soy
ELISA Reading
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
51
101
151
201
251
301
Lygus Sample, Rep 3, 2008





Crop	N	Distance (m)
Lesquerella	1	164
Alfalfa	6	86 (±97)
Cotton	38	119 (±54)




Strawberry Weed Site
Google


Strawberry Weed Site
Google

Challenges:

Plowing through the data
Identifying someone with expertise in dispersal statistics
→Opportunity for collaboration

Things to do:

- ✓Collect data (2 y)
- ✓Organize the data into data files
- Identify individual to assist with analysis
- Analysis (this fall)
- MS preparation (this winter/spring, next summer)
  - 4 MSs