Research Update on Lygus bug in Strawberry

UC IPM
University of California
Agriculture and Natural Resources
Integrated Pest Management Program

UC CE

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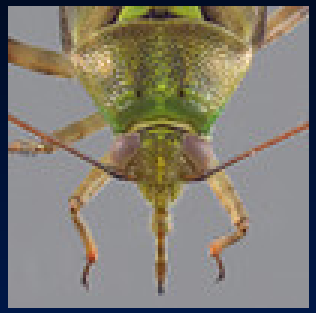
  - Agro-chemical companies
  - California Strawberry Commission ($8500)

Life stages

Five nymphal stages

Mouthpart

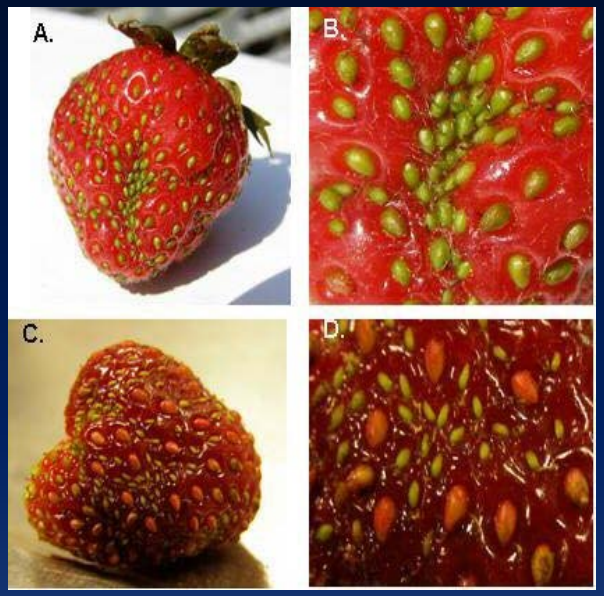


Damage

- “Cat-facing” - Irregularly shaped strawberries
- Feeding on seeds- affecting normal growth of the tissue beneath the achenes
- Risk period: Flower opening to ~10 days after petal fall
- Damage from nymphs when there are more flowers than fruits – early summer

Damage

- Not all Cat-faced strawberries are related to lygus bug feeding
  - Improper pollination (cold weather or frost injury)
  - Lygus bug injured achenes will be hollow
  - Lygus bug damage could be severe during the summer
- Do NOT base your sprays on incidence of cat-faced berry



http://www.omafra.gov.on.ca/english/crops/hort/news/hortmatt/2006/14hrt06a1.htm

Outline

- Insecticide trial 2015
- Egg laying behavior of lygus bug adult

Insecticide efficacy trial

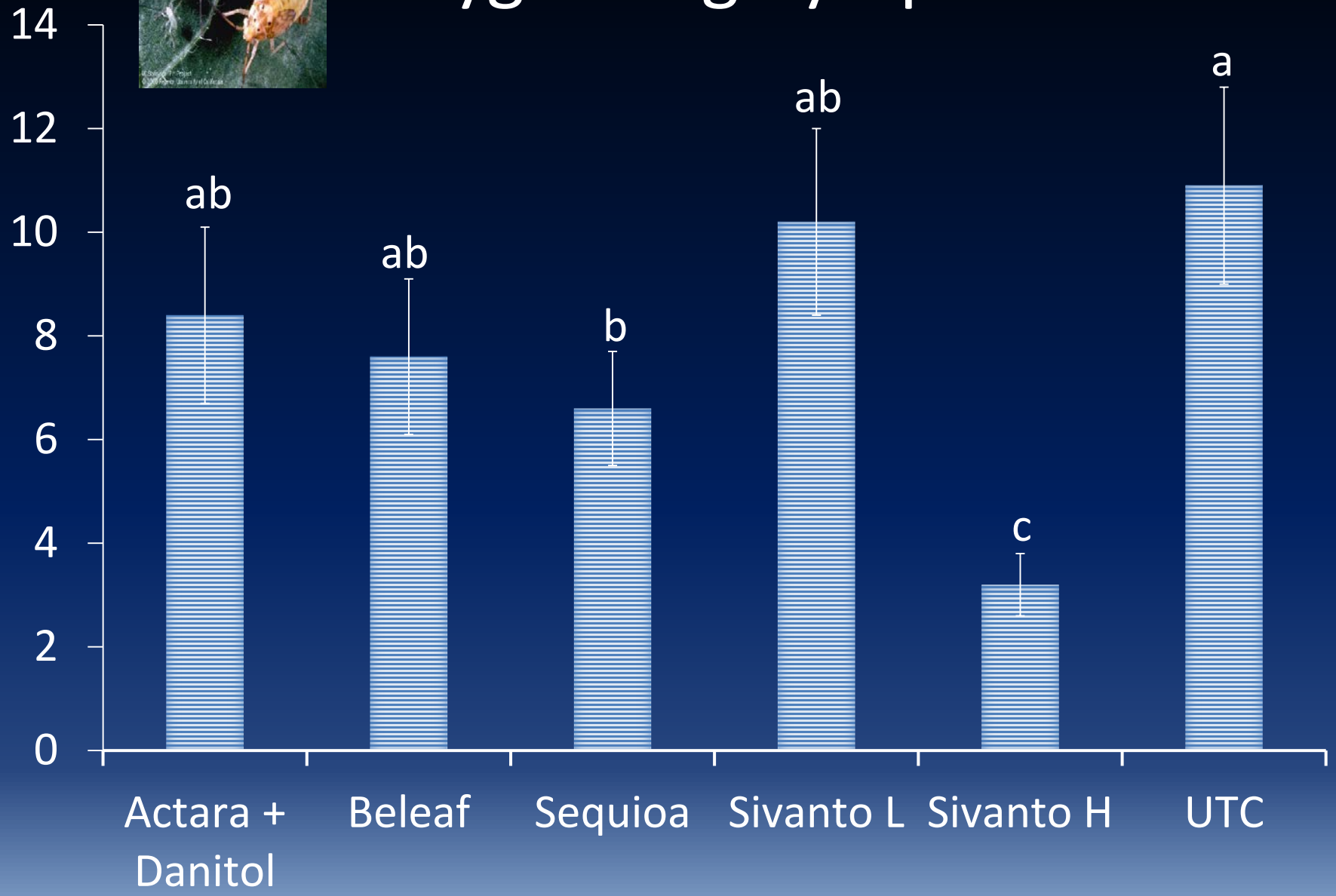
- Insecticides applied using commercial tractor mounted sprayer
- Water volume 200 gal/acre
- Two applications
- Plot design: Randomized complete block design with 5 replications
- Plot size: 10 beds by 65 ft long

Treatments

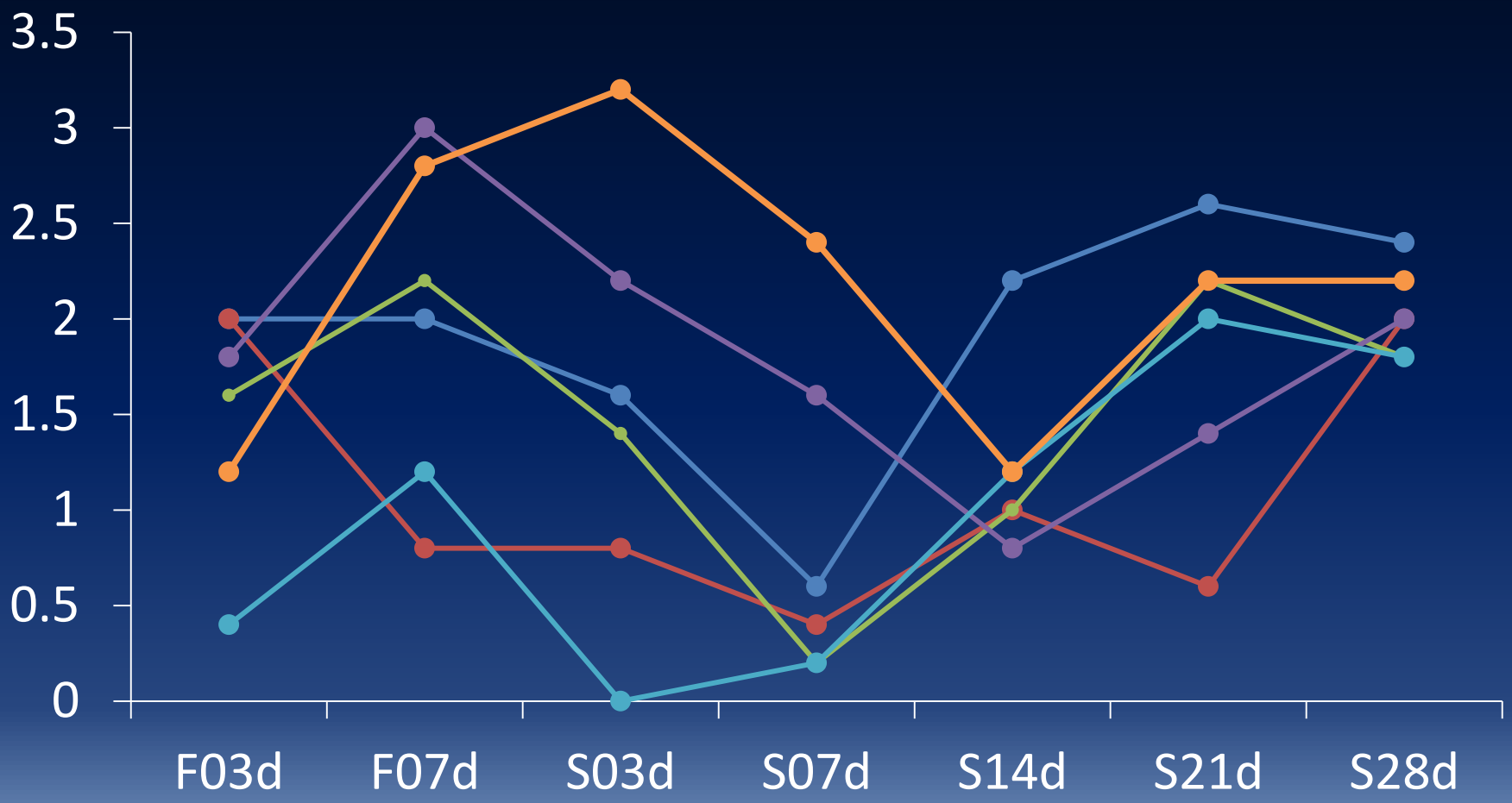
Treatment	Active ingredient	Amt formulated/ acre
Actara + Danitol	Thiamethoxam + Fenpropathrin	4.0 oz + 21 fl oz
Beleaf	Flonicamid	2.85 oz
Sequoia	Sulfoxaflor	2.88 fl oz
Sivanto L	Flupyradifurone	10 fl oz
Sivanto H	Flupyradifurone	14 fl oz

Lygus bug nymphs by week

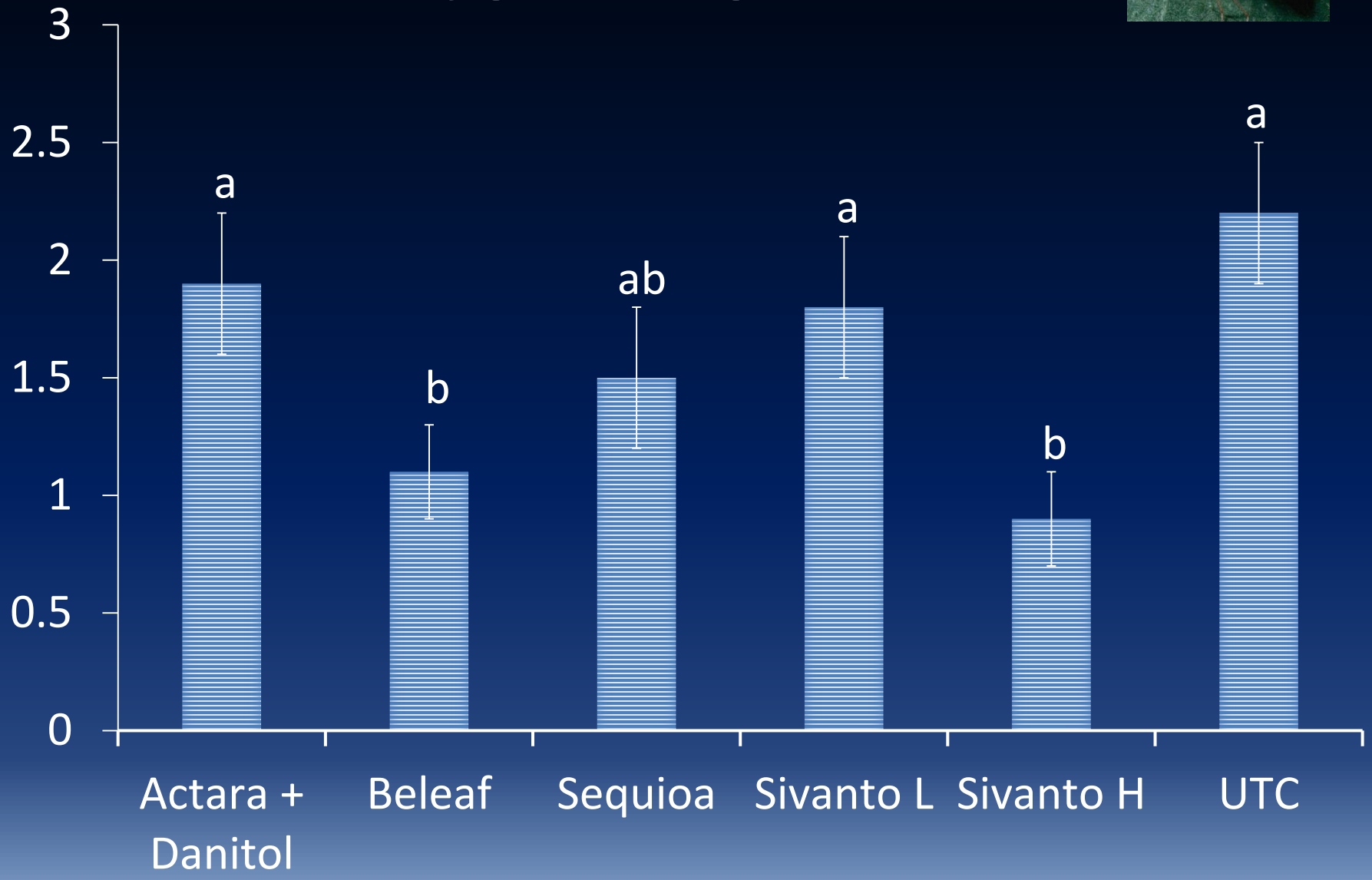
Lygus bug nymphs



Lygus bug adult by week



Lygus bug adult



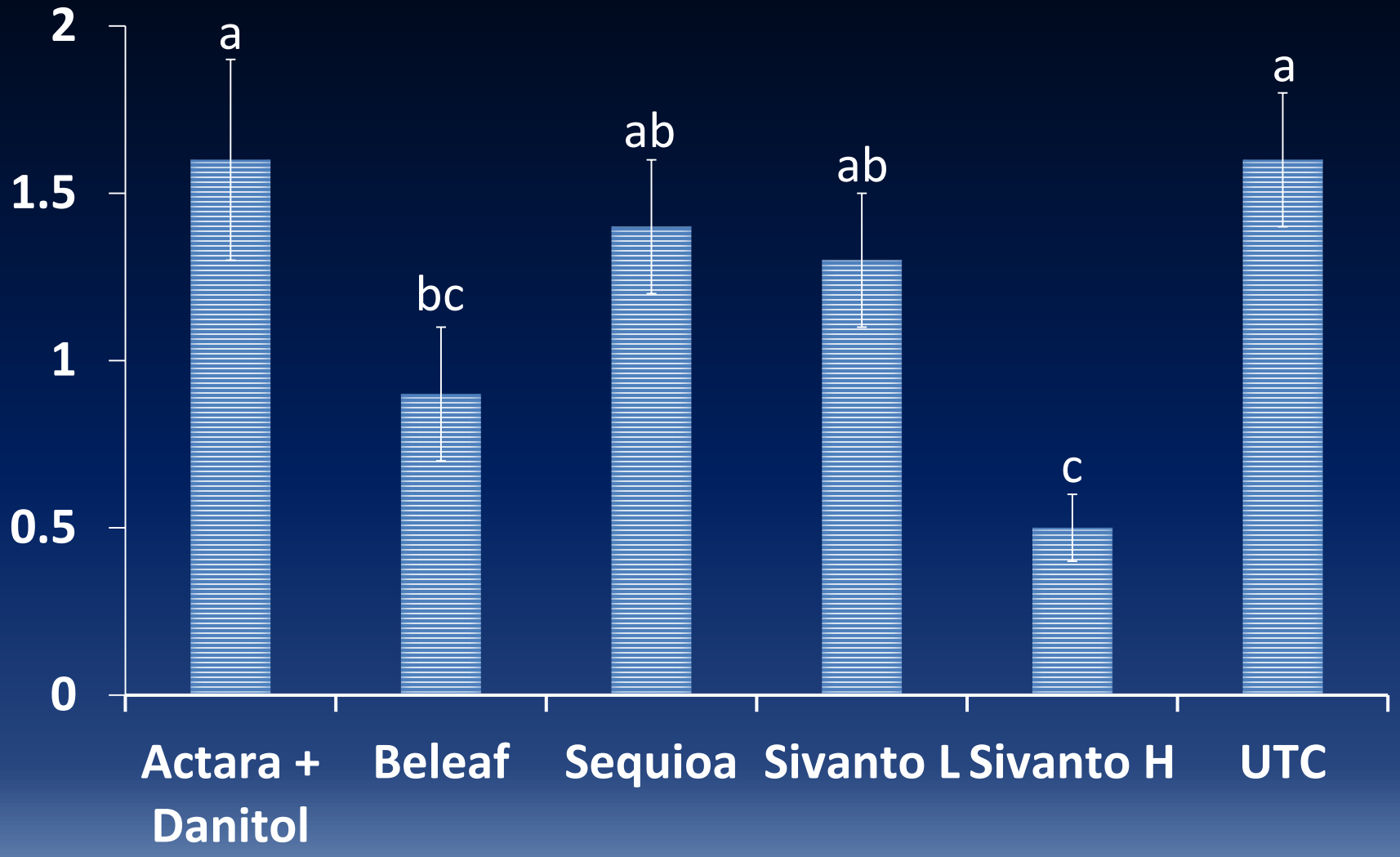
Predatory bugs

Bigeyed bug

Minute pirate bug

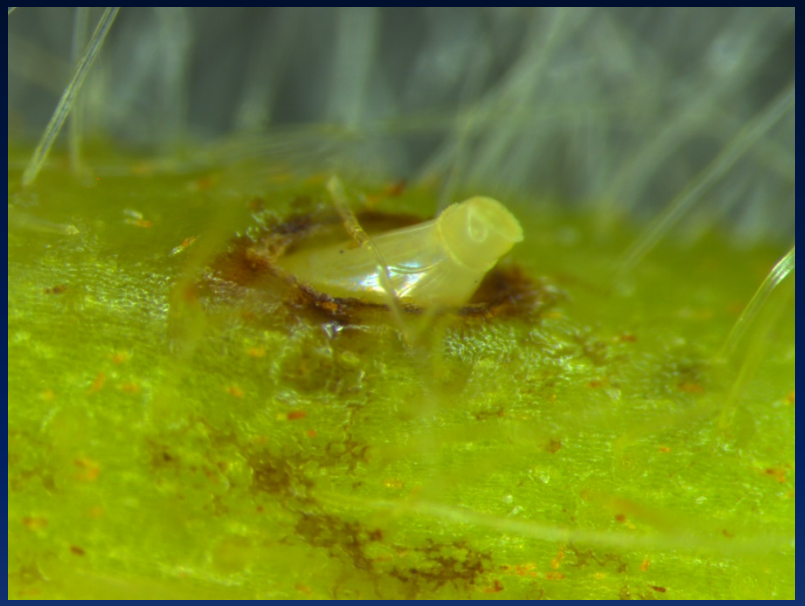
Damsel bug

Predatory bugs



Rationale

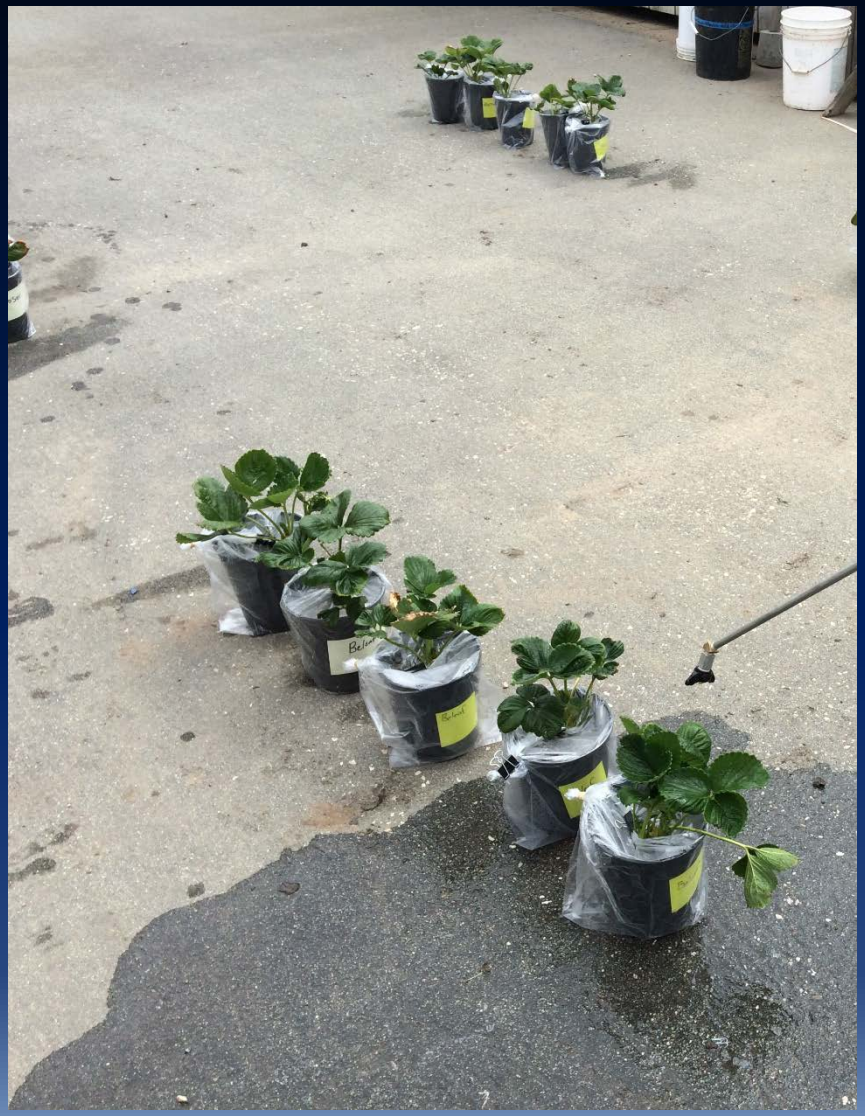
- Lygus bug feeding and egg laying is important behavior that cause economic losses
- Several insecticides are used to manage lygus bug in strawberry
- Insecticide residues may alter egg laying behavior of lygus bug in strawberry plants



(Desneux et al. 2007)

Method

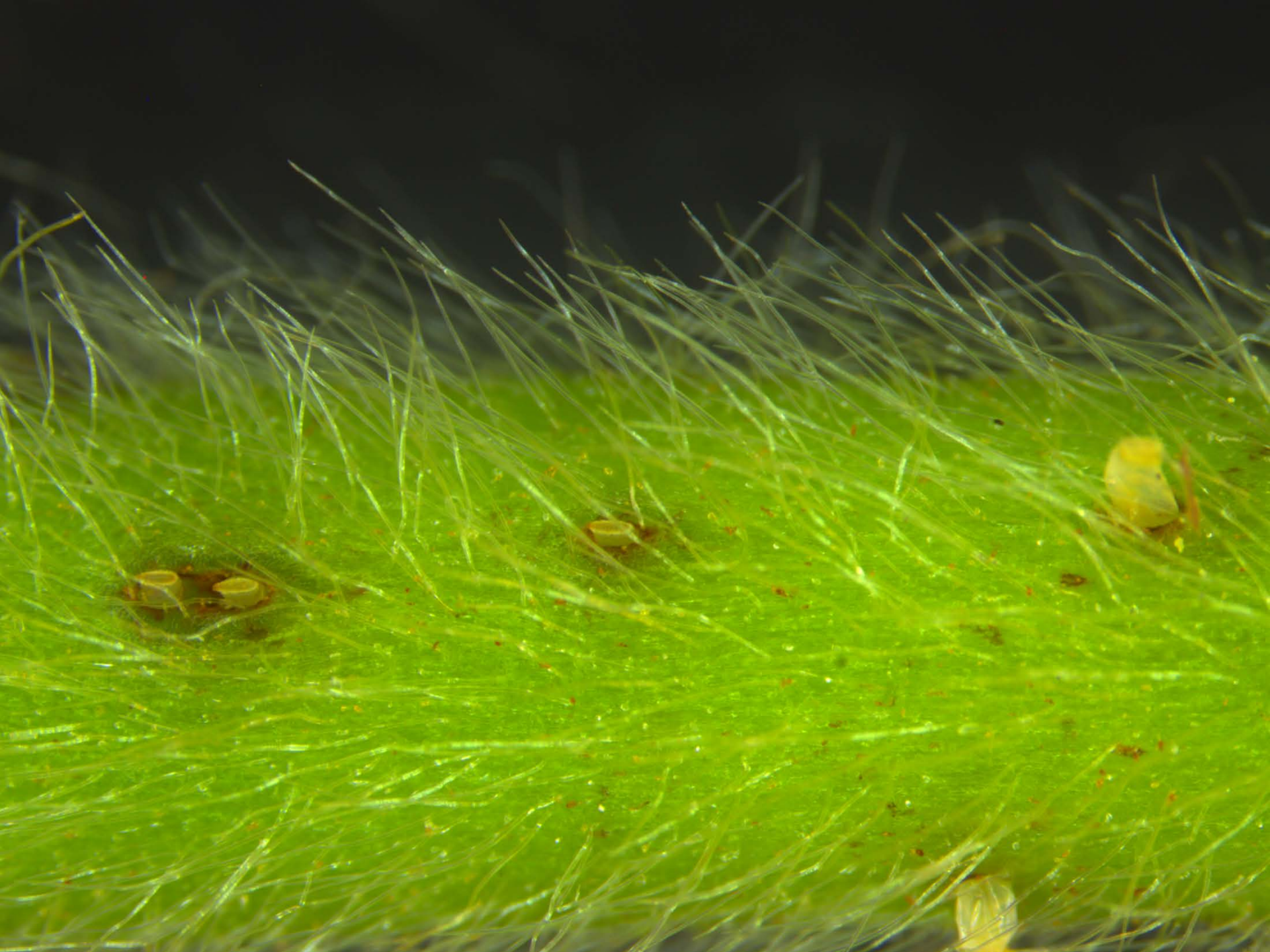
- Lygus bug adults and nymphs were field collected
- Newly emerged adults were used for the studies
- Plants were treated with insecticides
- 5 lygus bug adults were introduced into a cage with strawberry plant
- Plants were evaluated after 14 days



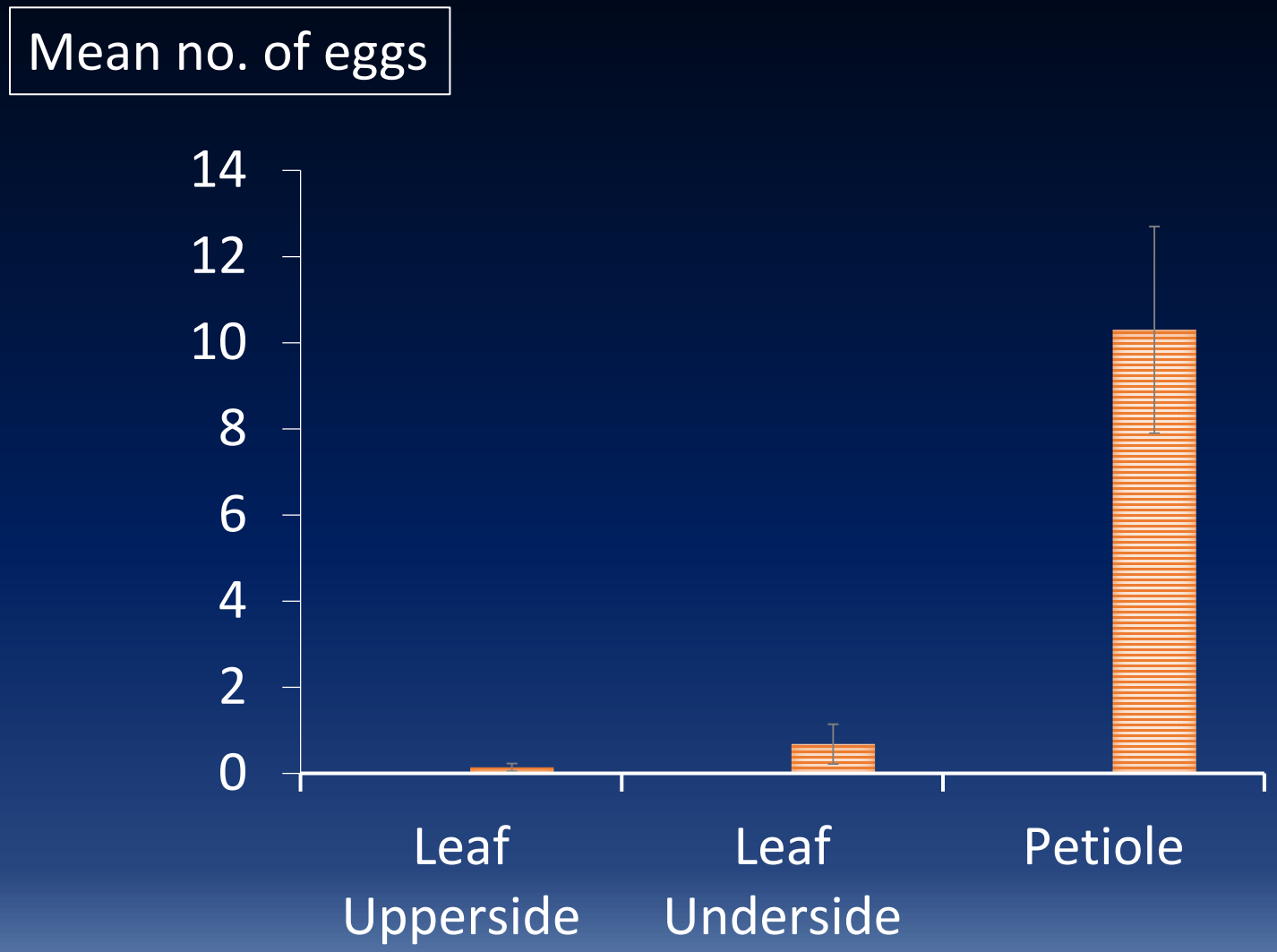
Treatments

Treatment		Rate per acre
Beleaf	Flonicamid	2.8 oz
Sequoia	Sulfoxaflor	2 fl oz
Rimon	Novaluron	10 fl oz
Sivanto	Flupyradifurone	14 fl oz

Dynamic (0.25% v/v) was added

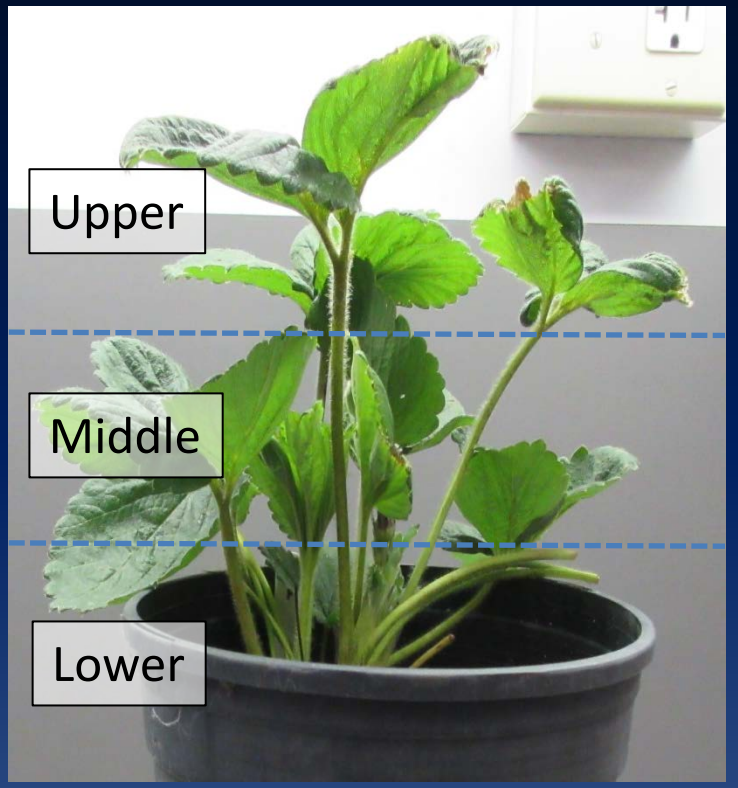


Results: Untreated - Lygus bug eggs



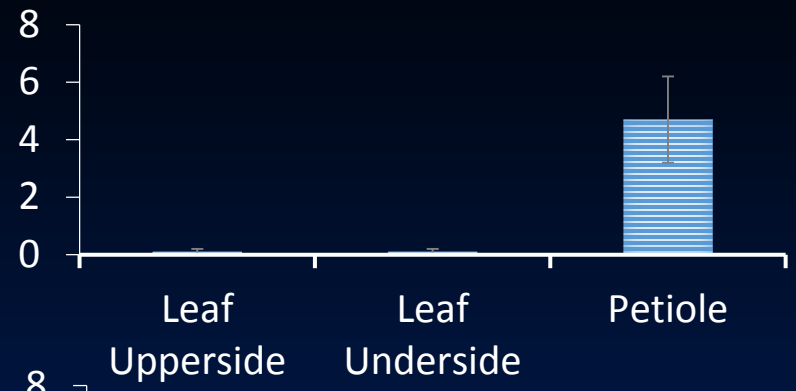
Method

- Divided strawberry plant into 3 zones
- Plants were evaluated for lygus bug eggs and injury
- Plant part evaluated: Petiole/stem, upperside and underside of the leaves, and fruit

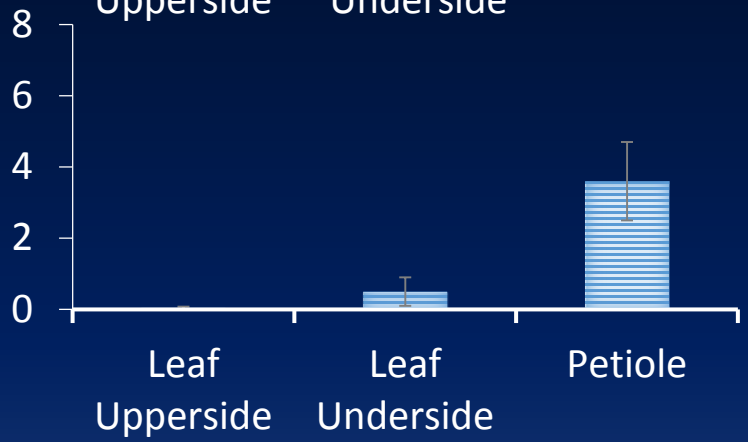


Lygus bug eggs by zone

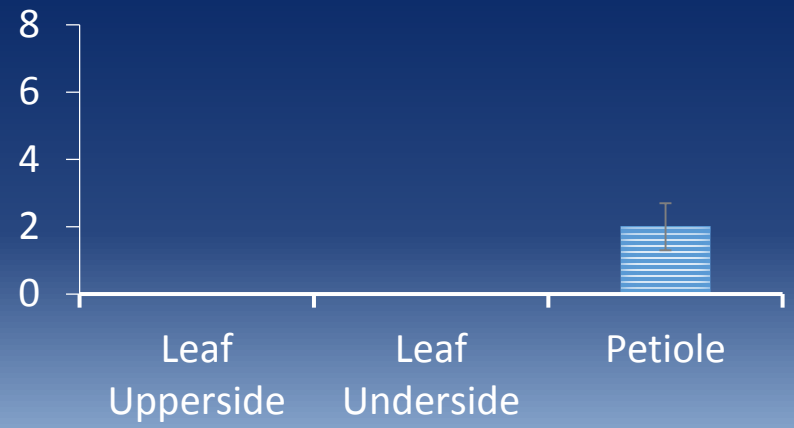
Upper



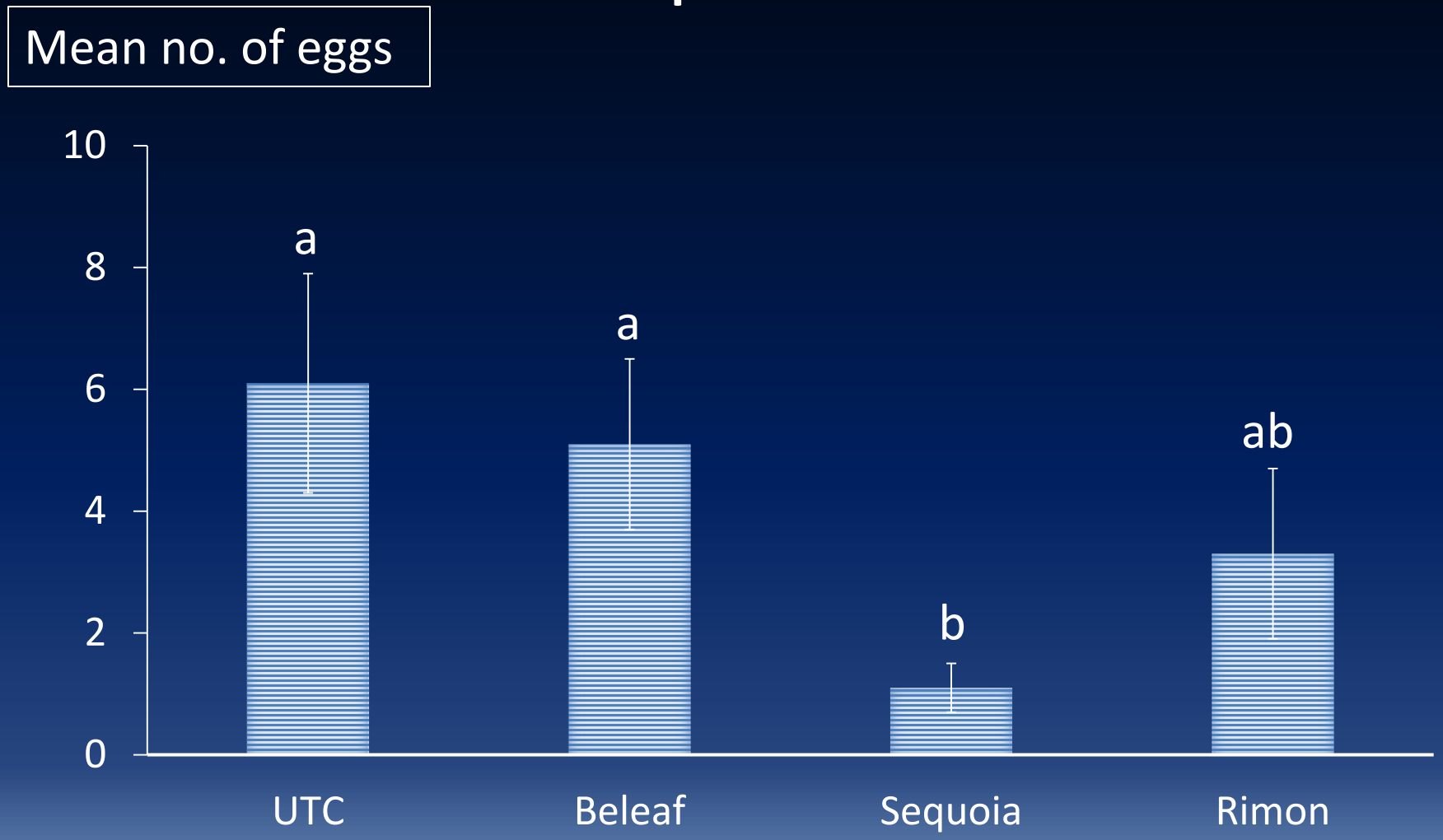
Middle



Lower



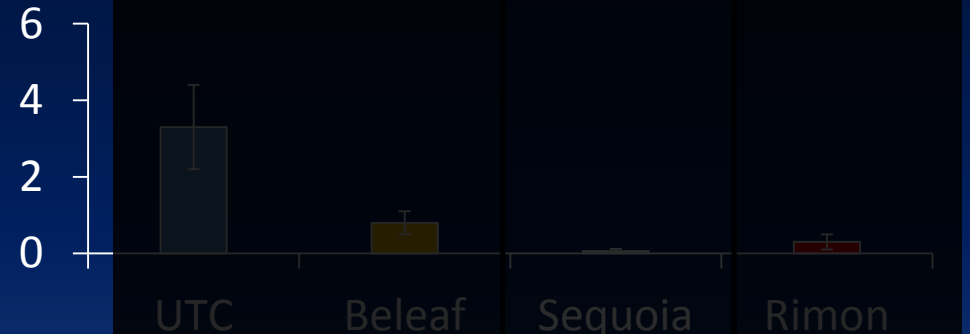
Insecticide effects on egg laying in petiole



Insecticide effects by zone

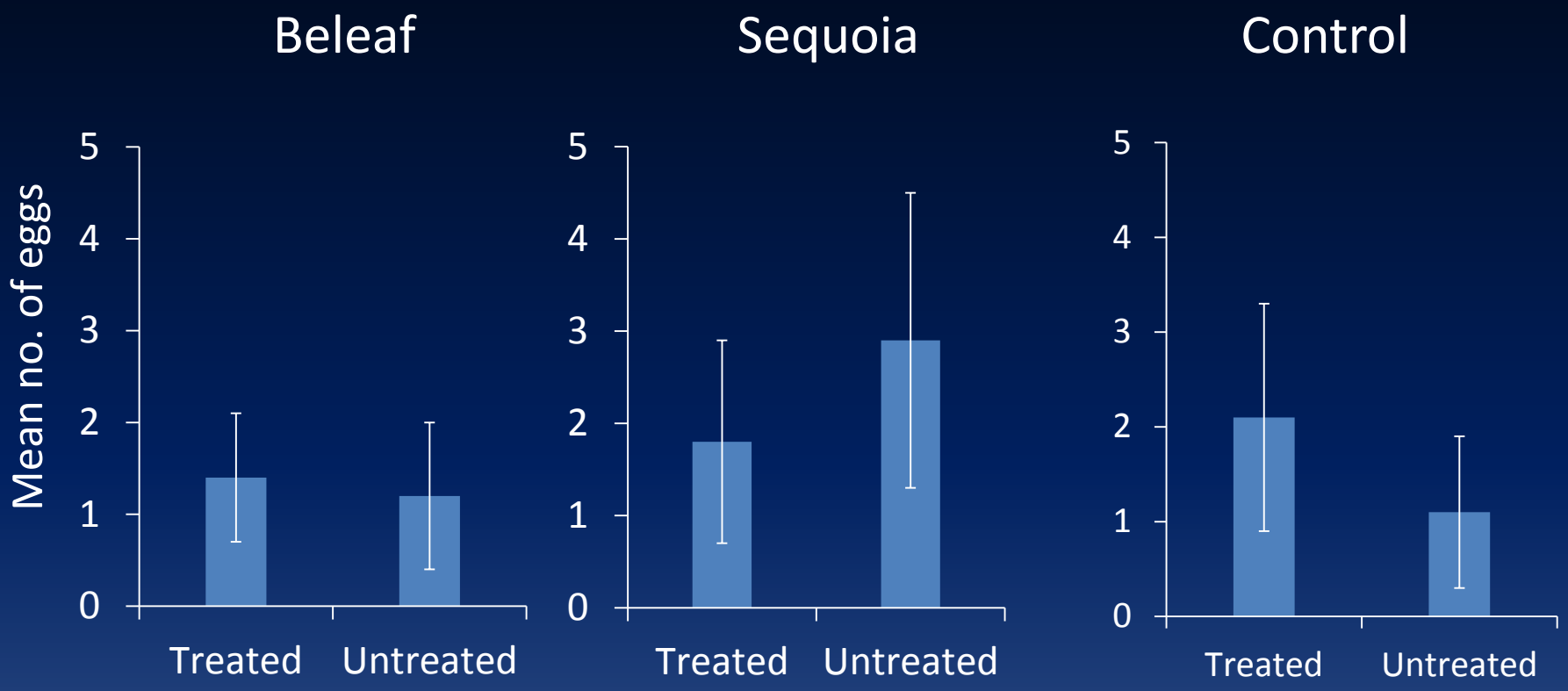
Upper

Middle

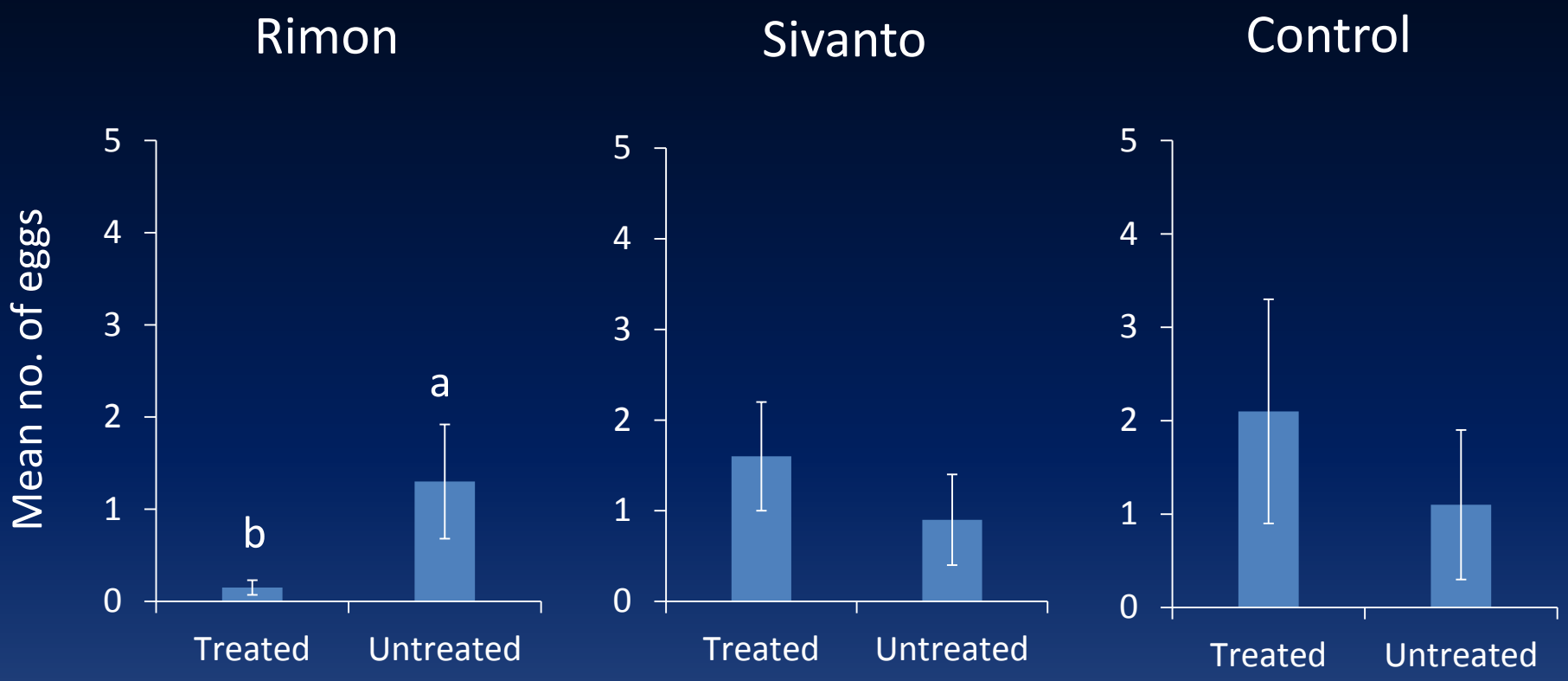


Lower

Results

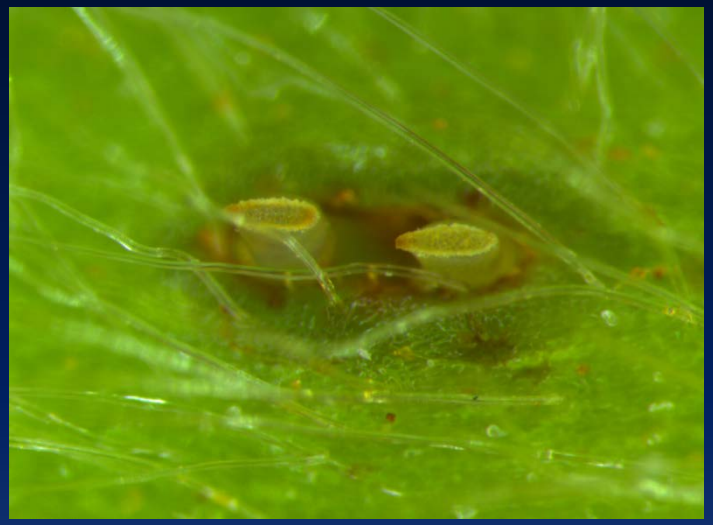

Beleaf
Sequoia
Control
Mean no. of eggs
0
1
2
3
4
5
Treated
Untreated

Results


Rimon
Sivanto
Control
Mean no. of eggs
5
4
3
2
1
0
b
a
Treated
Untreated
Treated
Untreated
Treated
Untreated

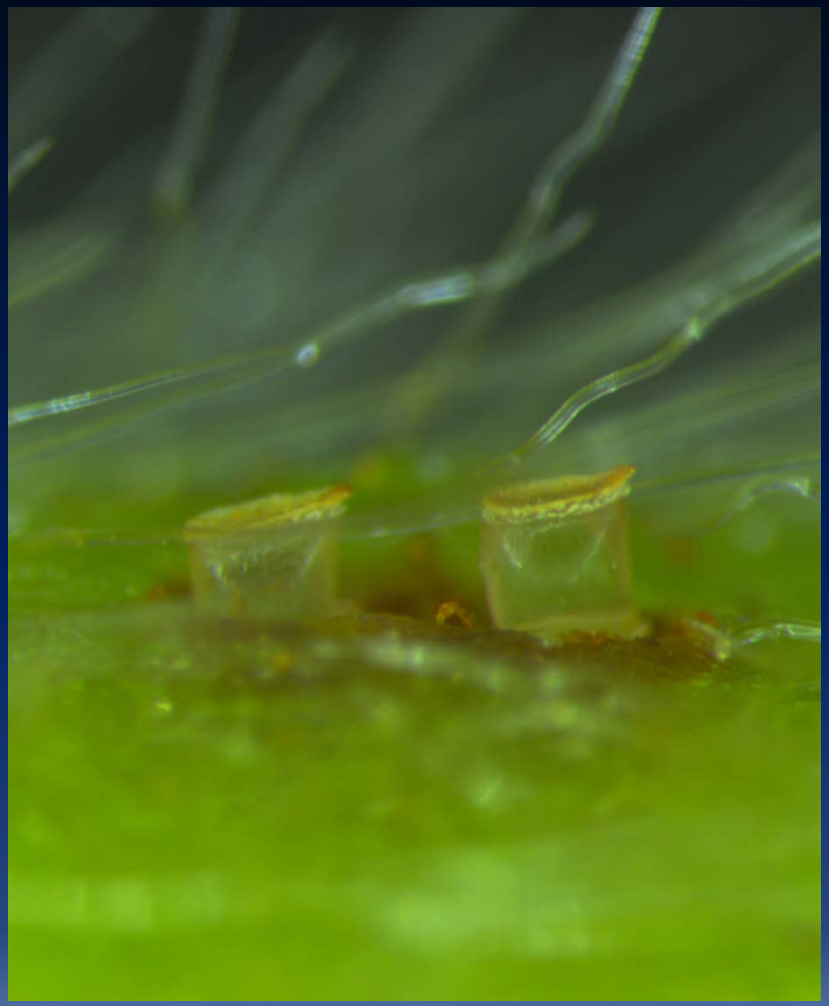
Summary

- Sivanto at 14 fl oz per acre performed better than other treatments against lygus bug
- Sivanto at 10 fl oz per acre did not suppress lygus bug
- Sequoia and Beleaf showed evidence of lygus bug suppression
- Combination of Actara and Danitol did not show any evidence of lygus bug suppression



Summary

- Most eggs were laid on petiole
- Numerically, more eggs were found the “middle” section of the strawberry plant
- Sequoia suppressed egg laying, although other insecticides did not appear affect egg laying behavior

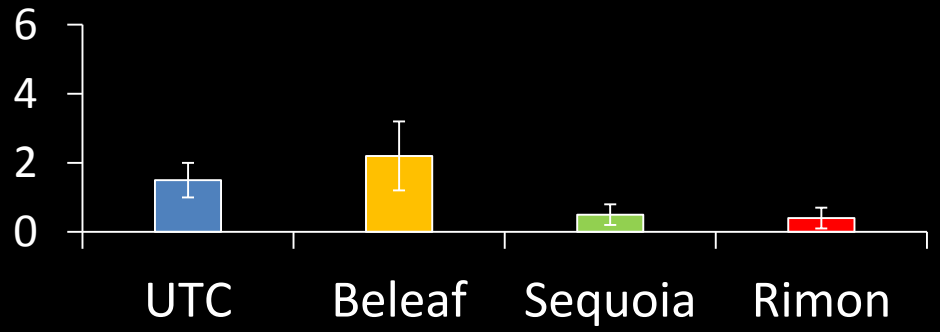


Summary

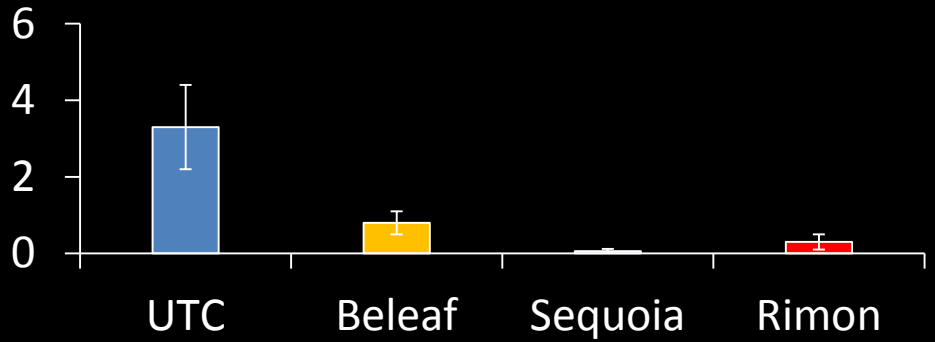
- Rimon – Eggs were numerically high in the lower section of the plant
- Choice study: Lesser number of eggs was laid by lygus bug when petiole was treated with Rimon

Insecticide effects by zone

Upper



Middle



Lower


Thank you!