

Mechanism and Improvements of Mating Disruption

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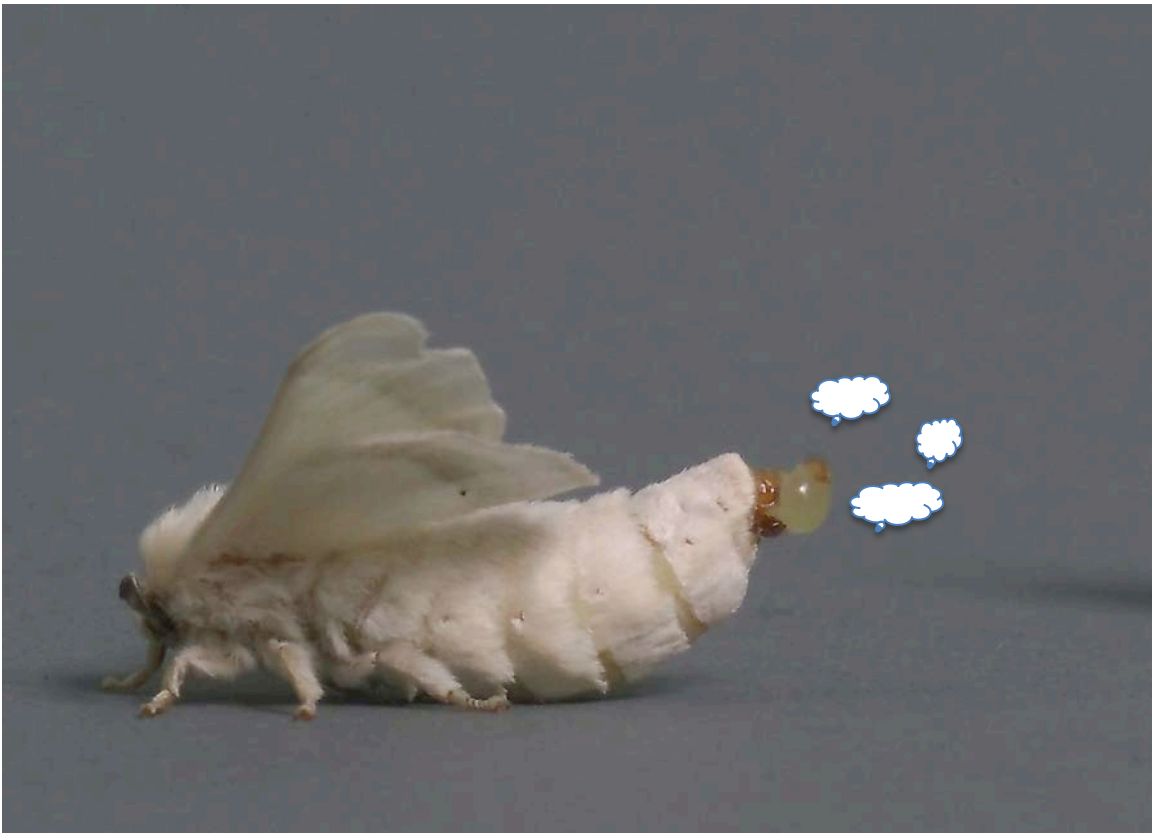






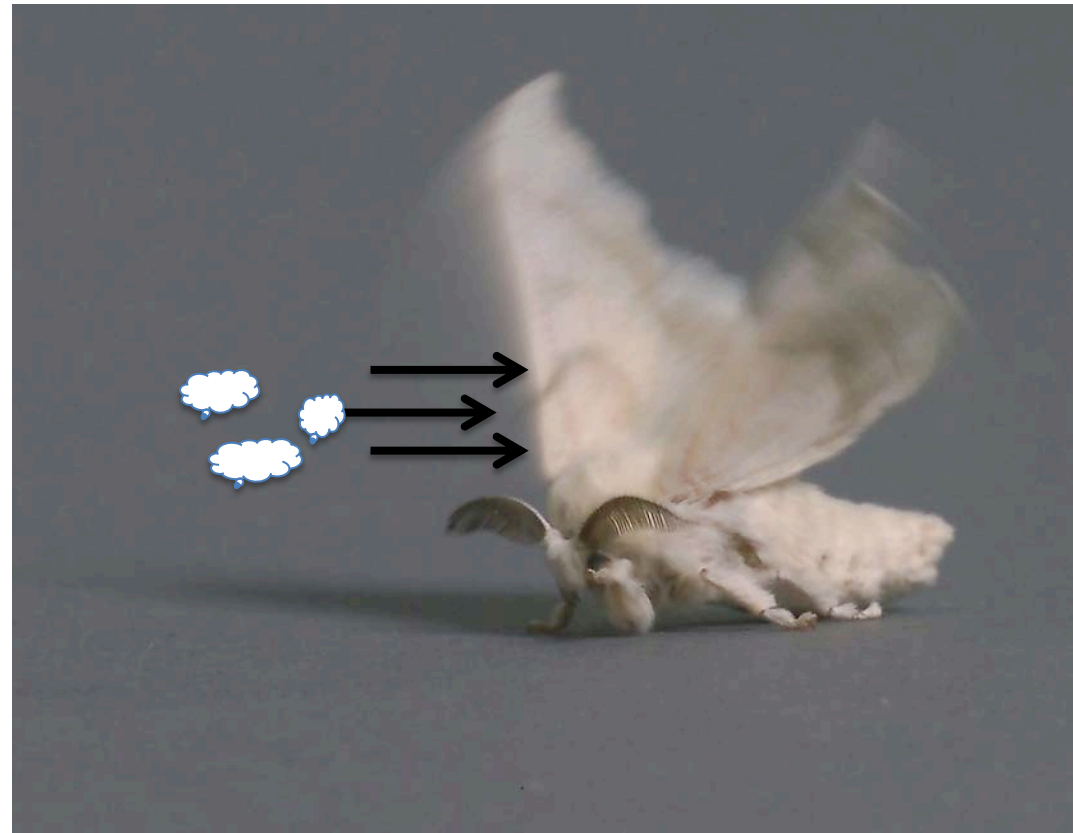
Pheromones

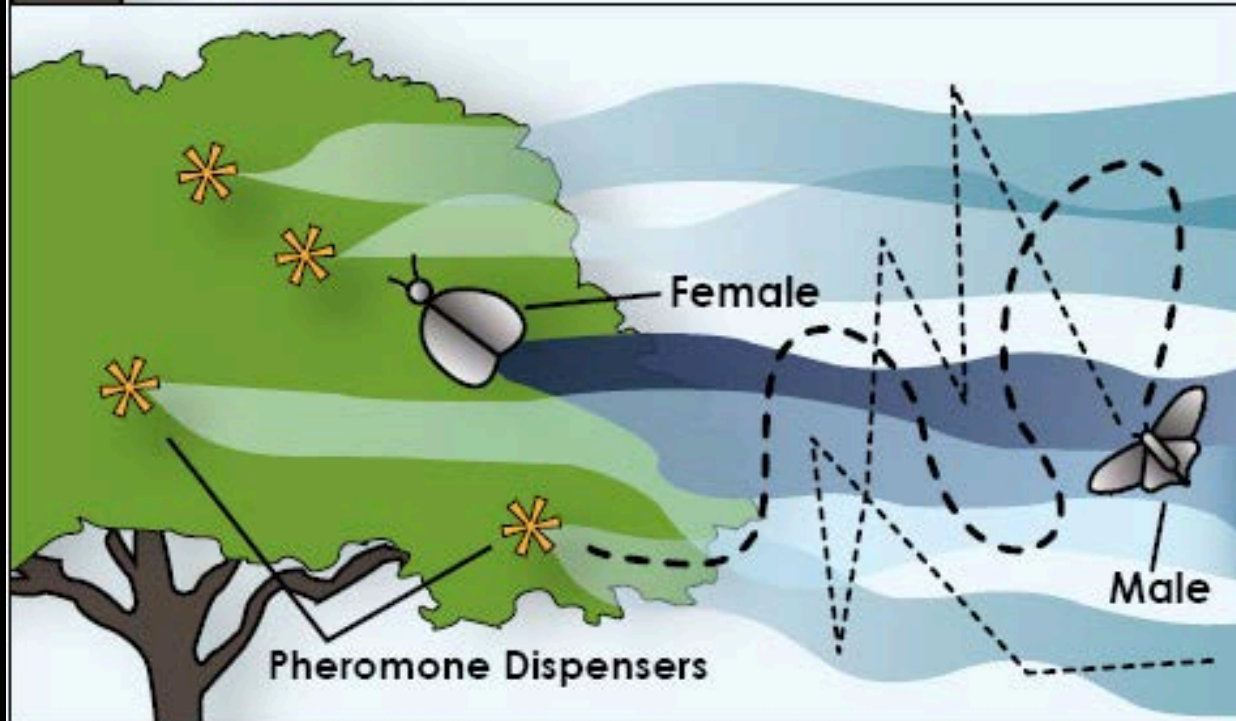
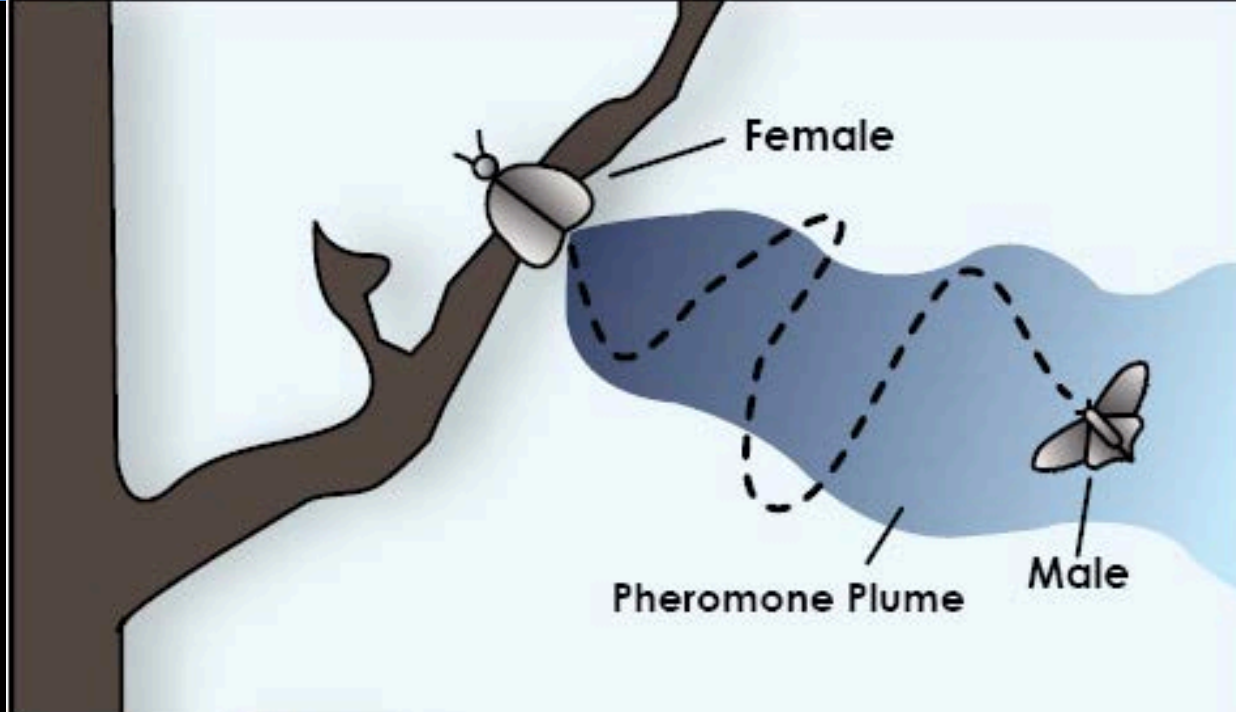
Projection



Pheromones

Reception



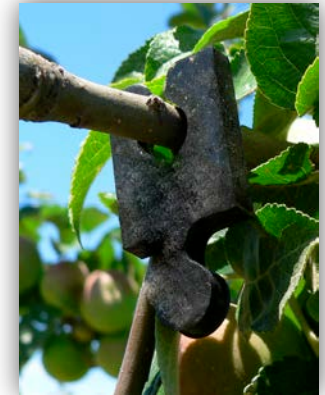


Pheromone technologies – Moderate density / high releasing

Isomate



Tangler



Cidetrak

Checkmate



NoMate

Pheromone technologies – Low density / VERY high releasing

Desire to reduce the need for labor and the overall cost

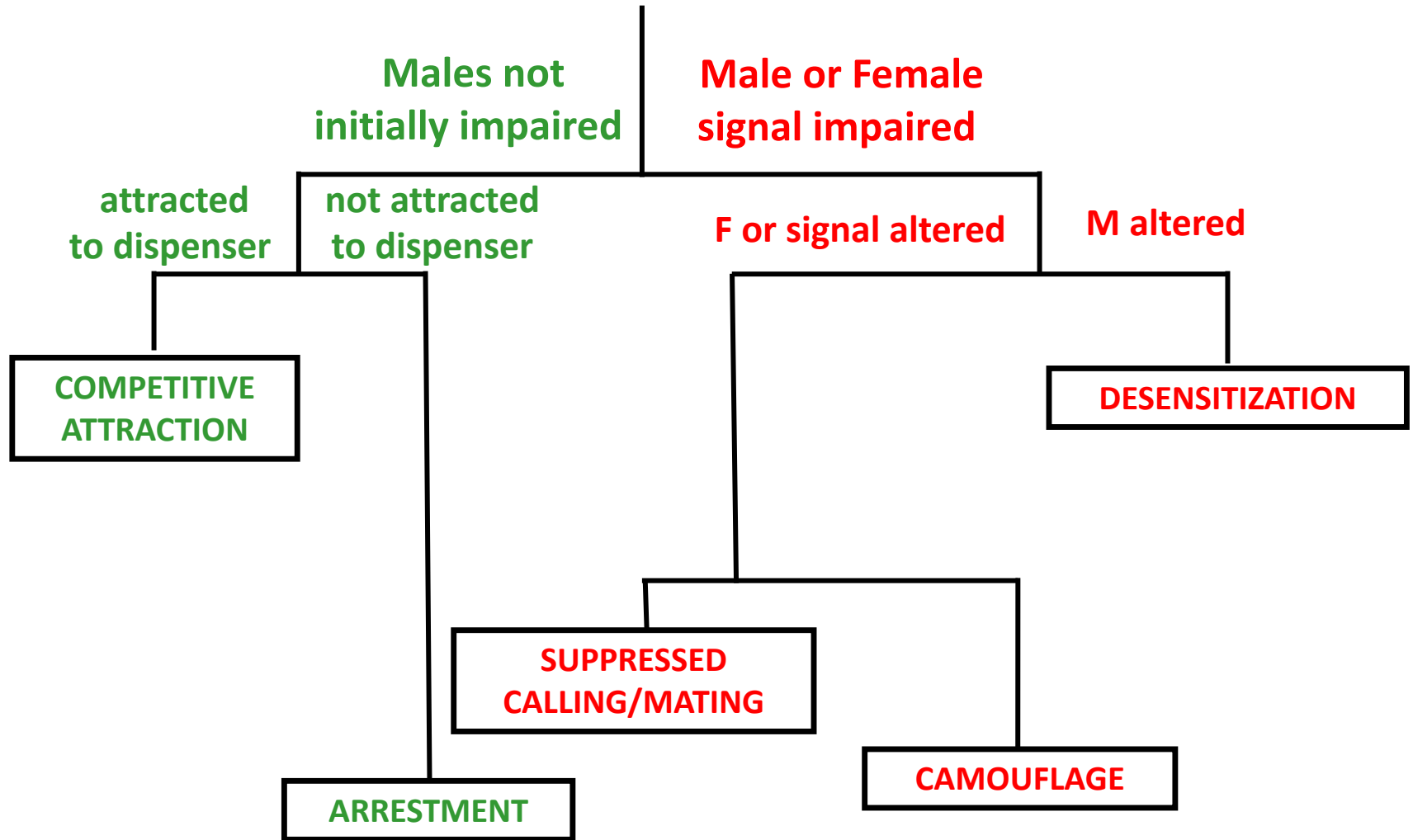


**Aerosol
emitters**

Meso



Mating disruption behavioral mechanisms



COMPETITIVE DISRUPTION

NON-COMPETITIVE DISRUPTION

Non Competitive



Competitive Disruption



Competitive Disruption



Orchard Burn - East Wenatchee



0.5

0

1

Moor Farm

0.25

3

6



W 20th St

25

0

100

Moor Farm

50

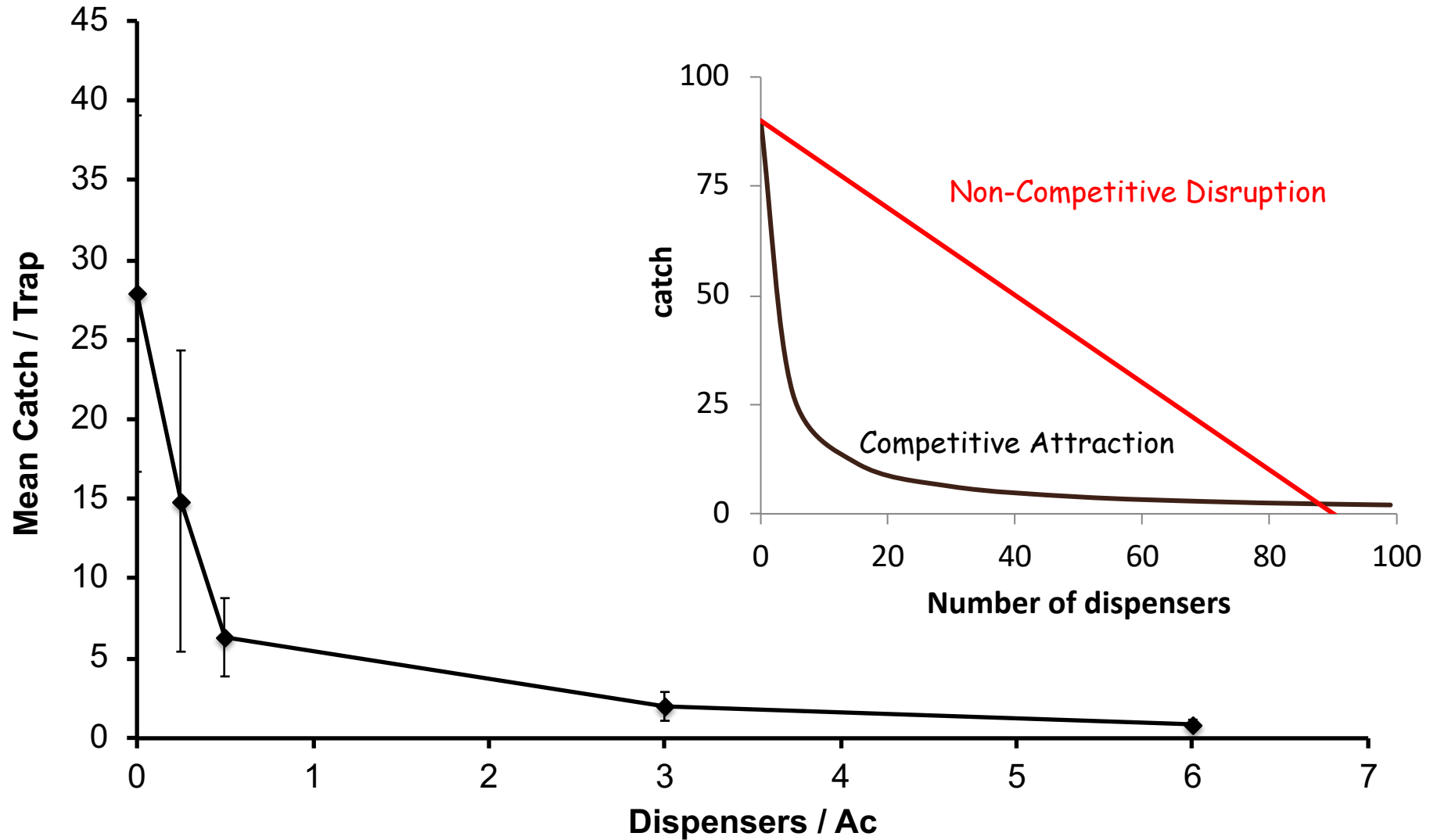
200

400

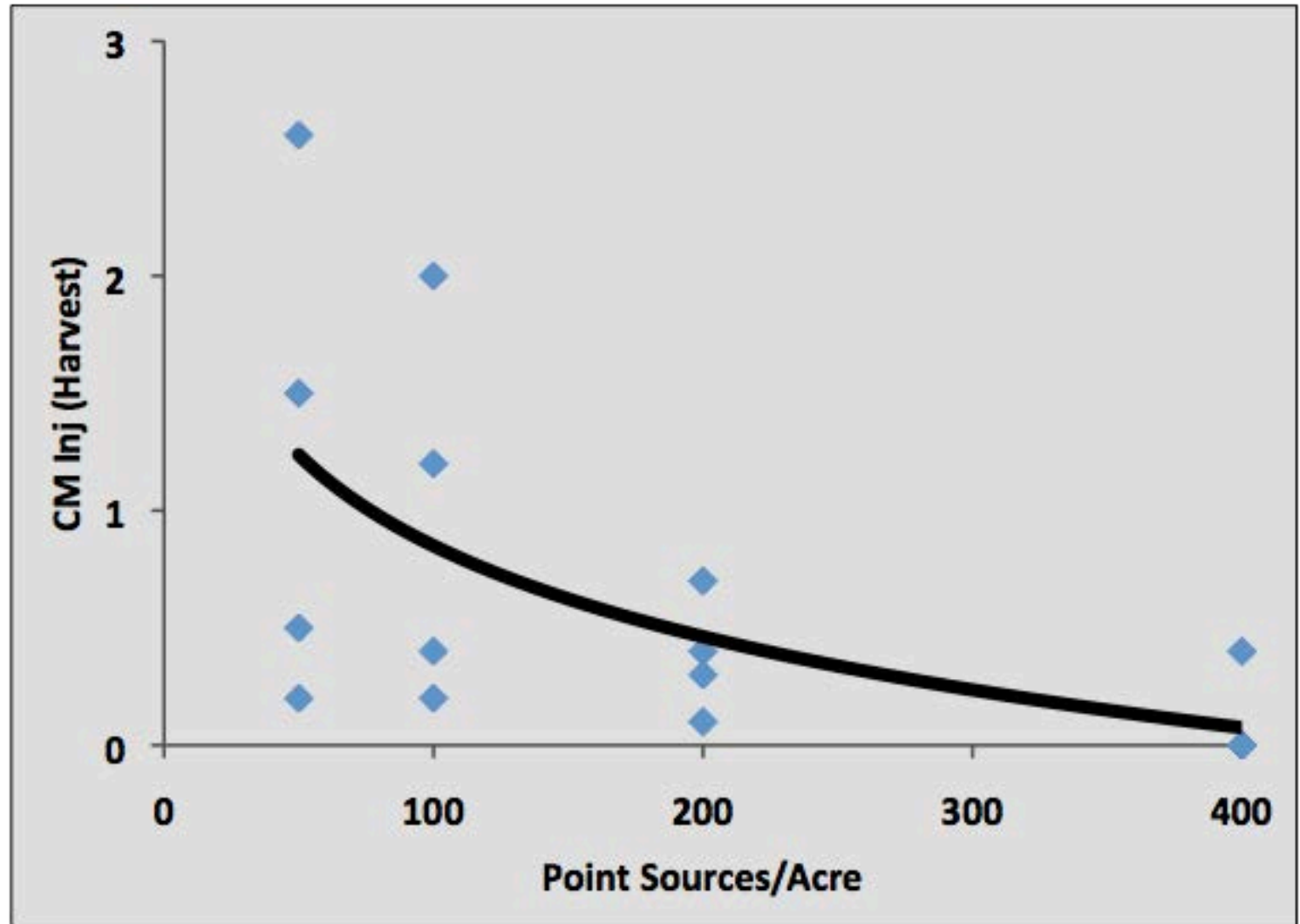
McGillivray

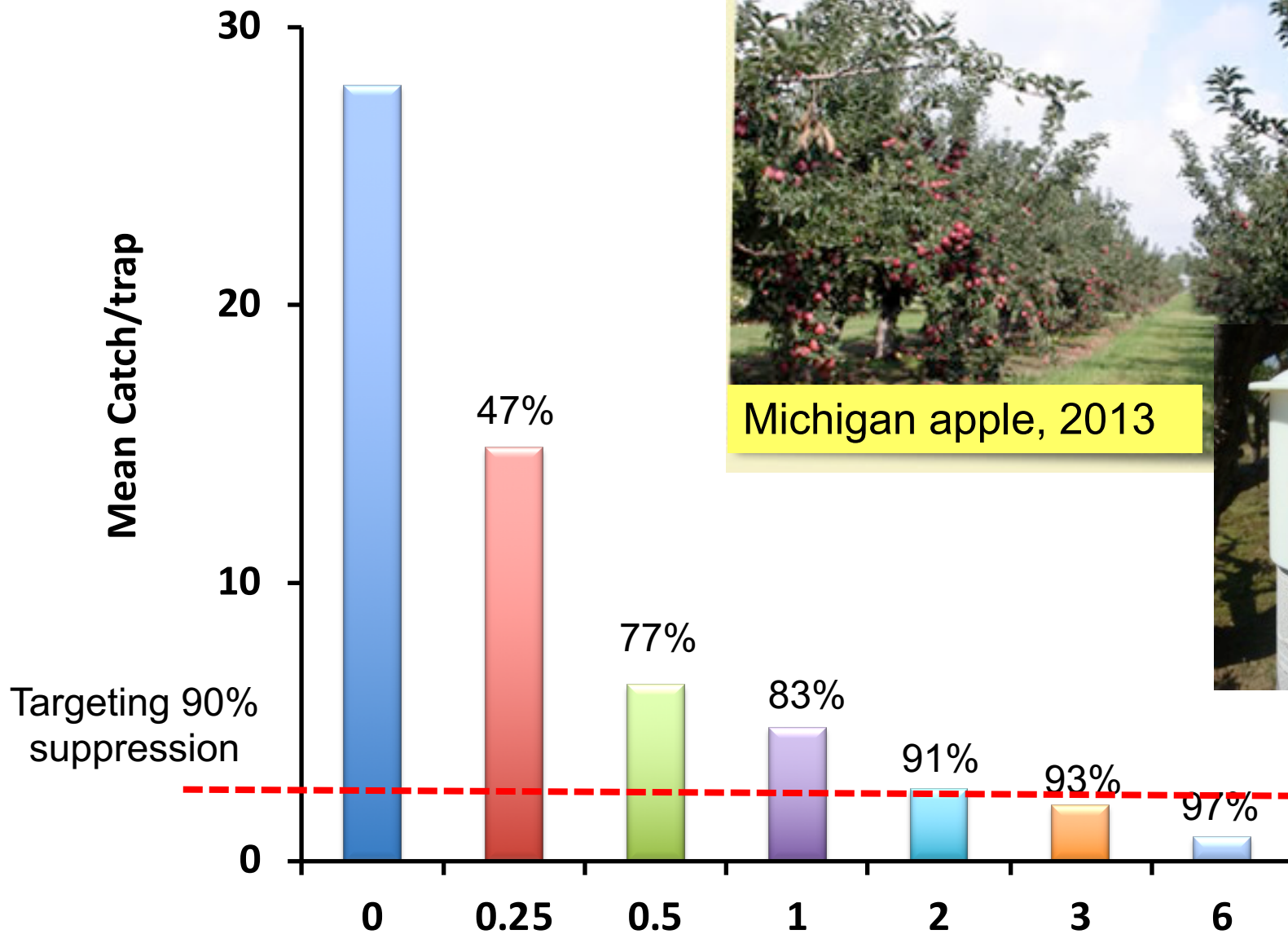
Exeter St

Untransformed dosage response plot

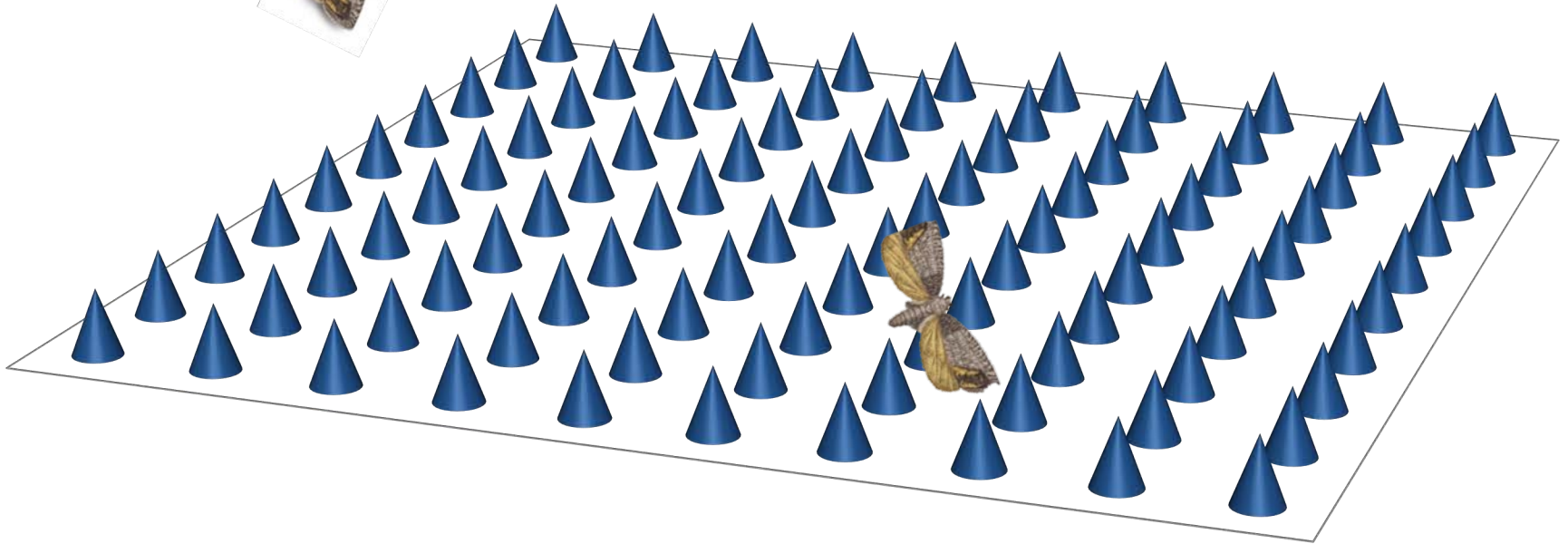


Fewer Point Sources = More Variability

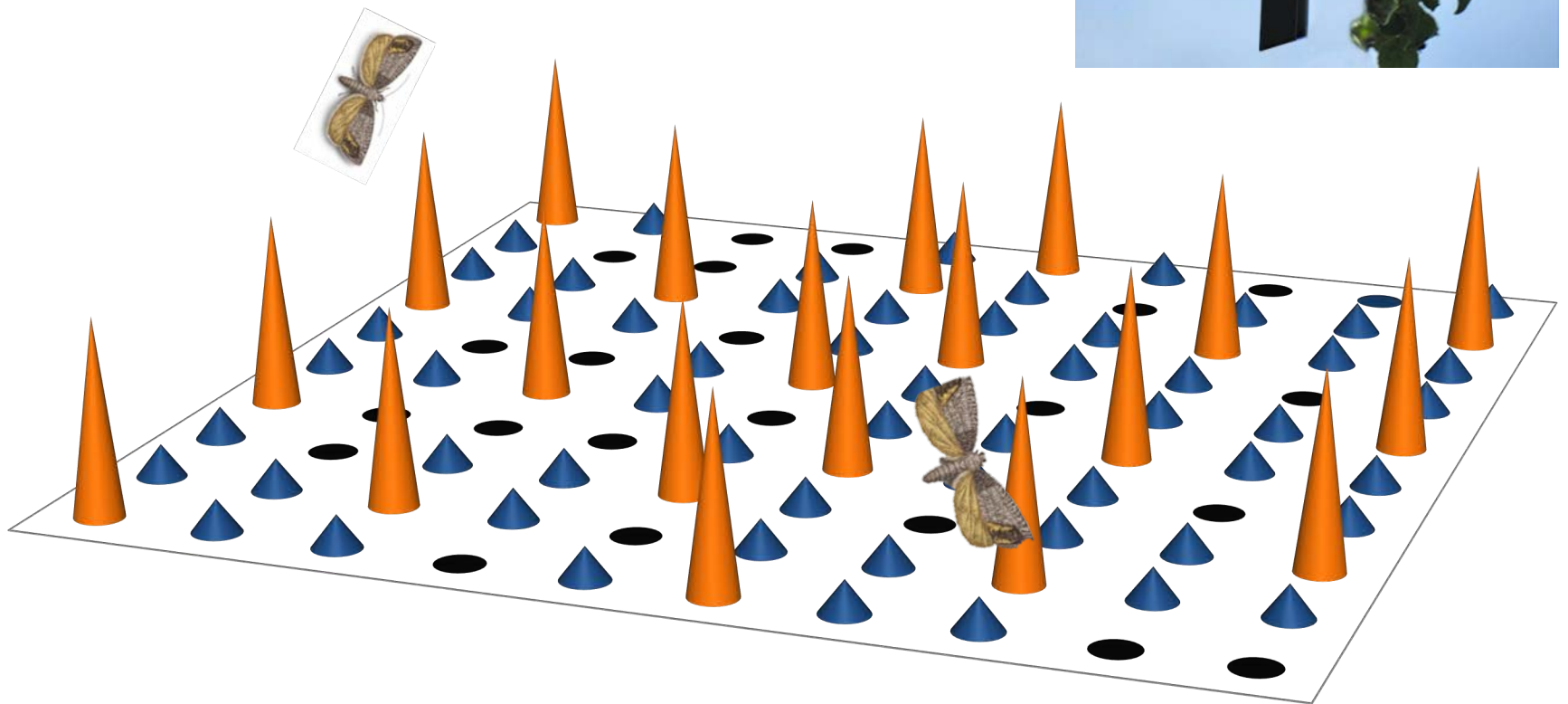




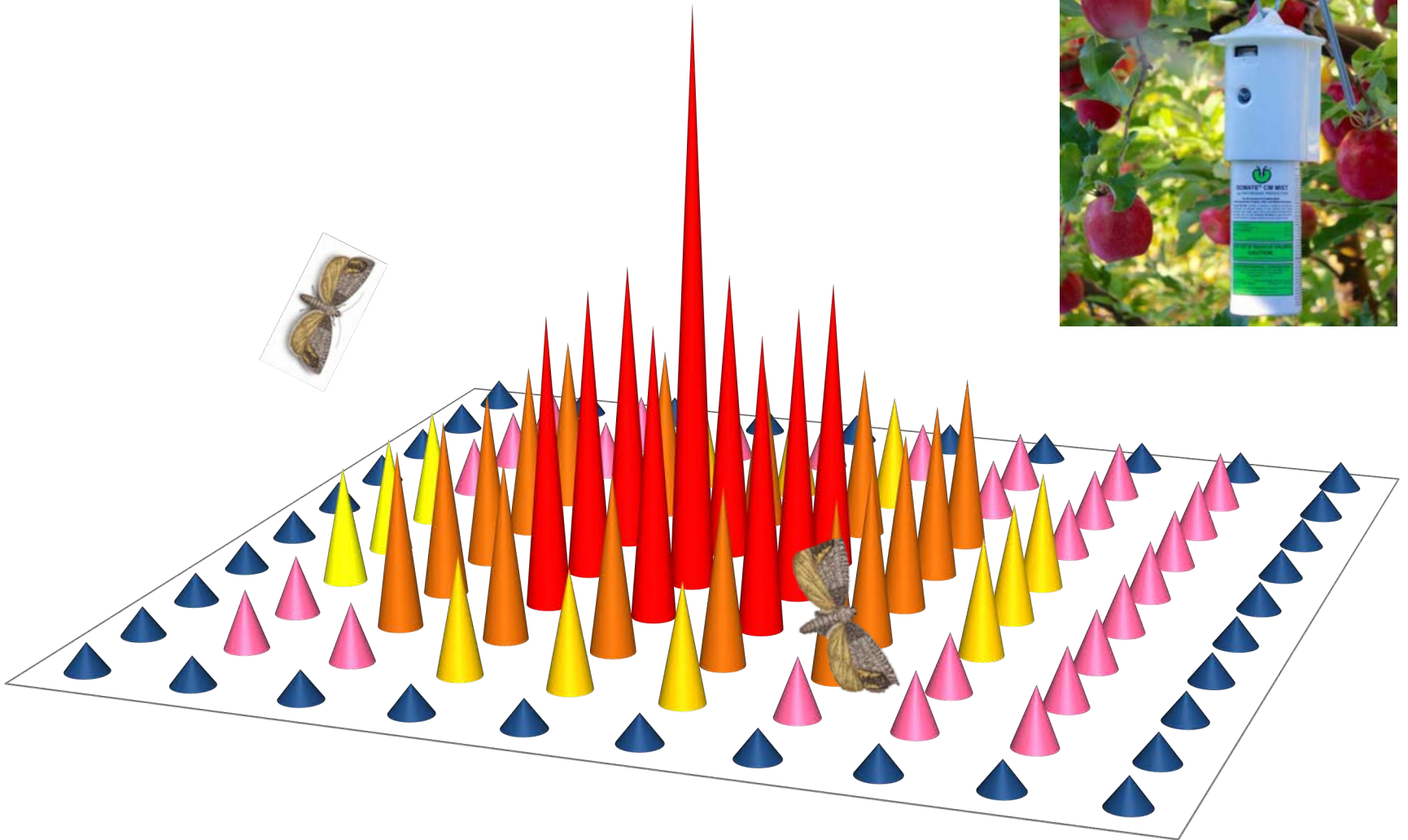
Hand Applied



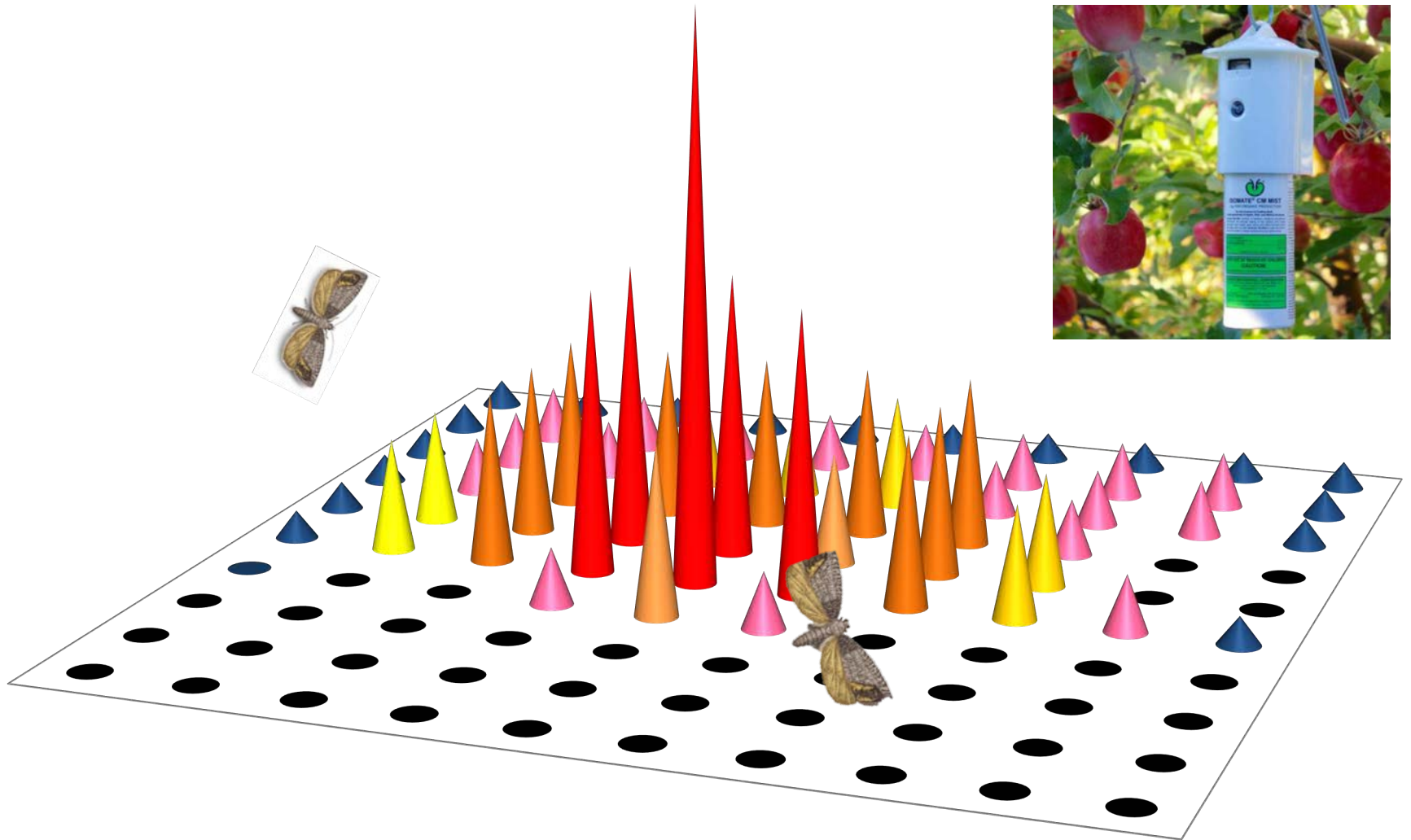
Meso



Aerosol Emitter

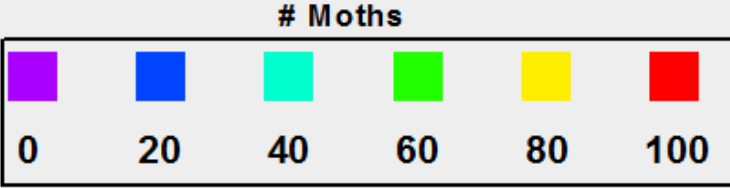
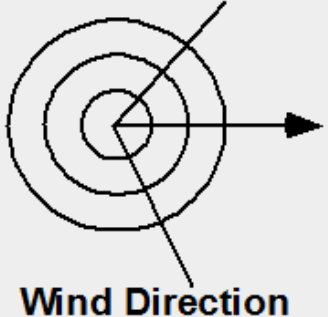
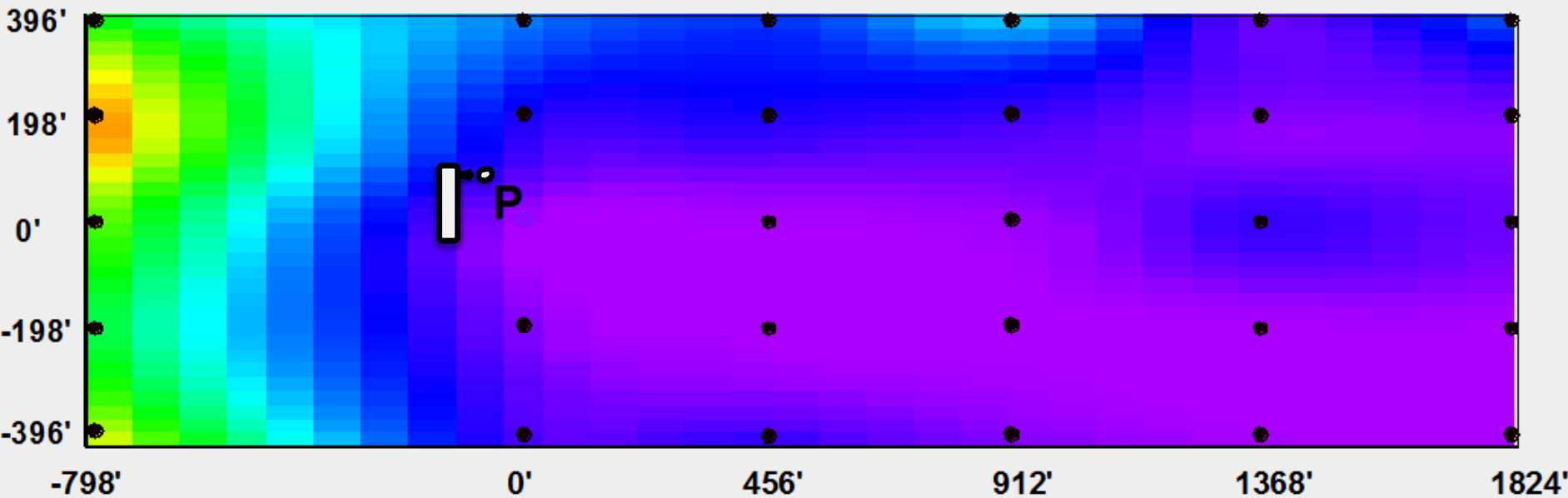


Aerosol Emitter



Low catch Interpreted as huge plume and males deactivated downwind

Alternatively males move upwind towards the dispenser bypassing traps

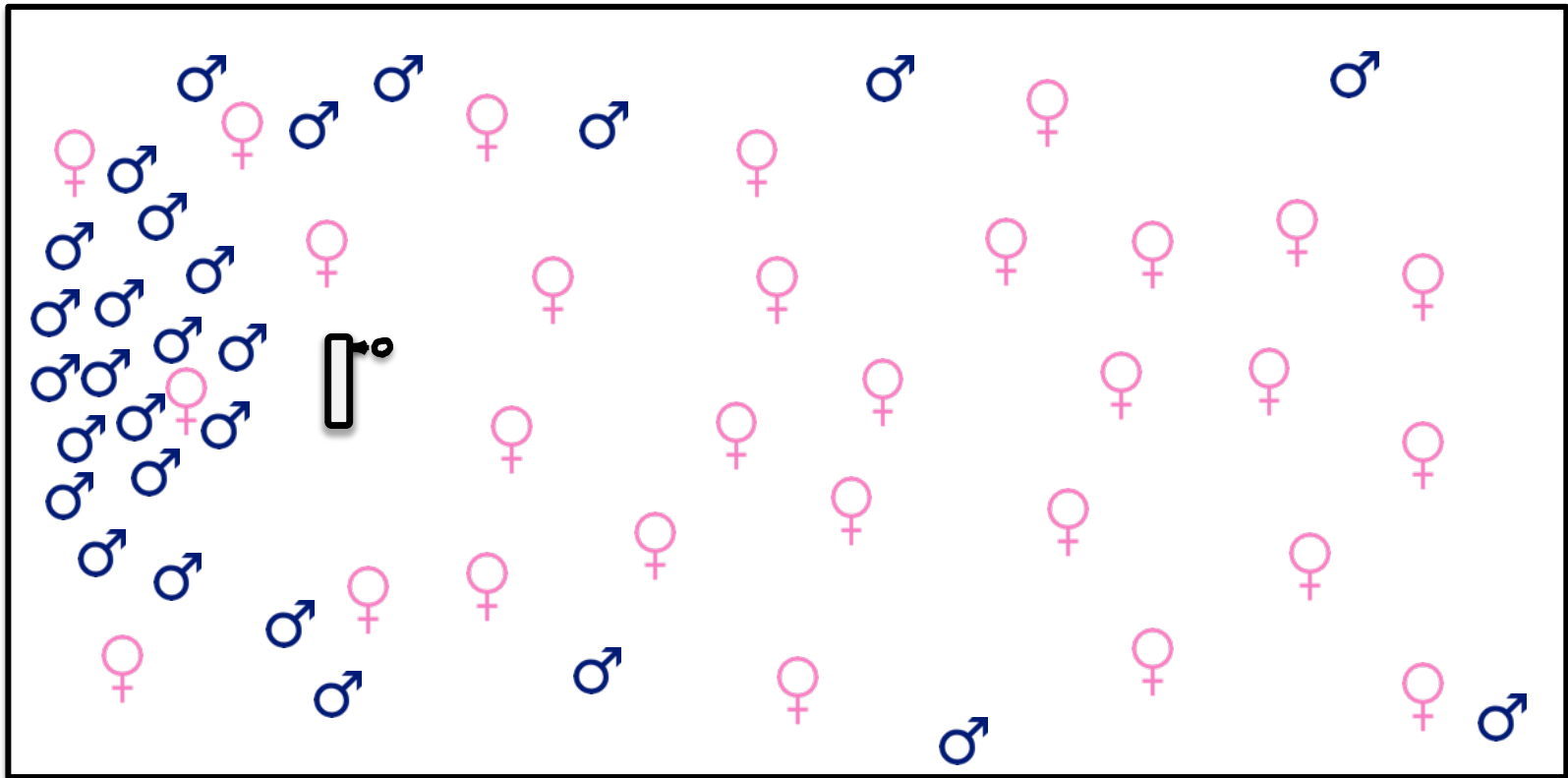


- Trap Location
- P** Puffer Location

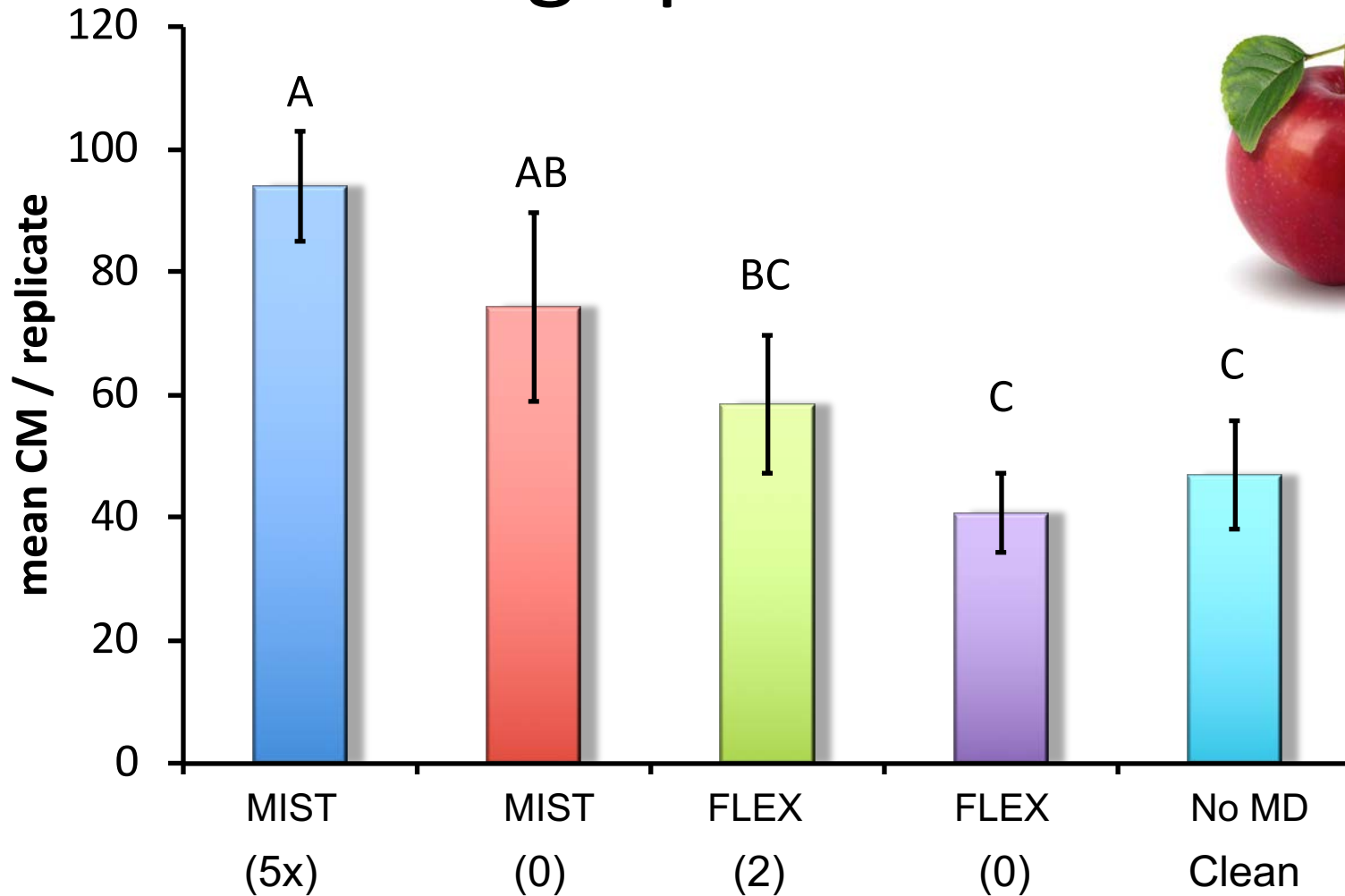
Figure courtesy of S. Welter, UC

Induced Allopatry

Where males move upwind towards the dispenser
bypassing traps and females



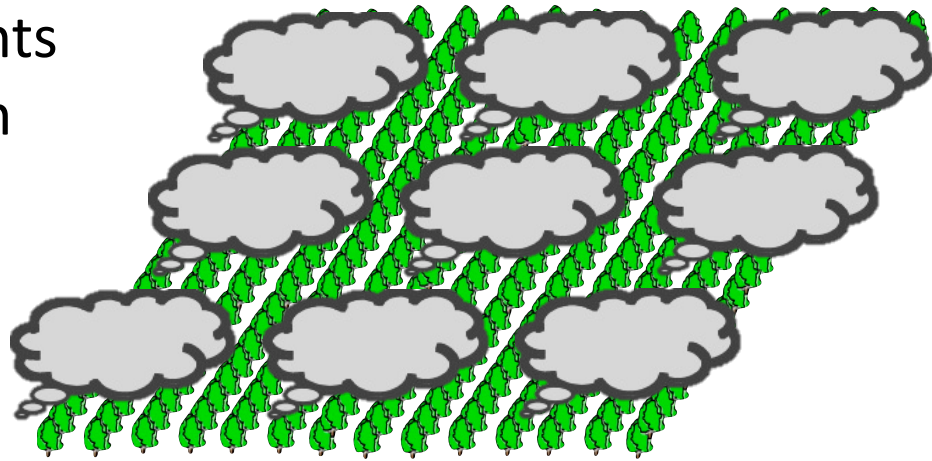
Male catch greatest after exposure to high pheromone



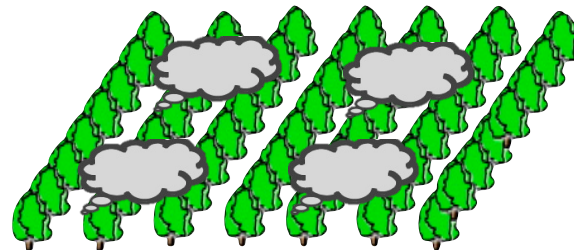
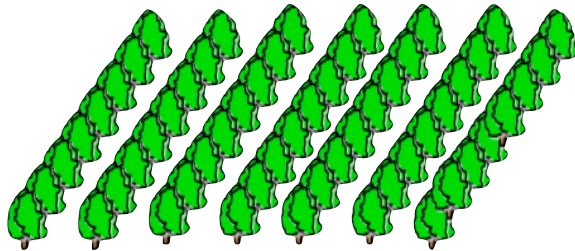
Experimental design area-wide CM MD



Assessments
CM catch
injury



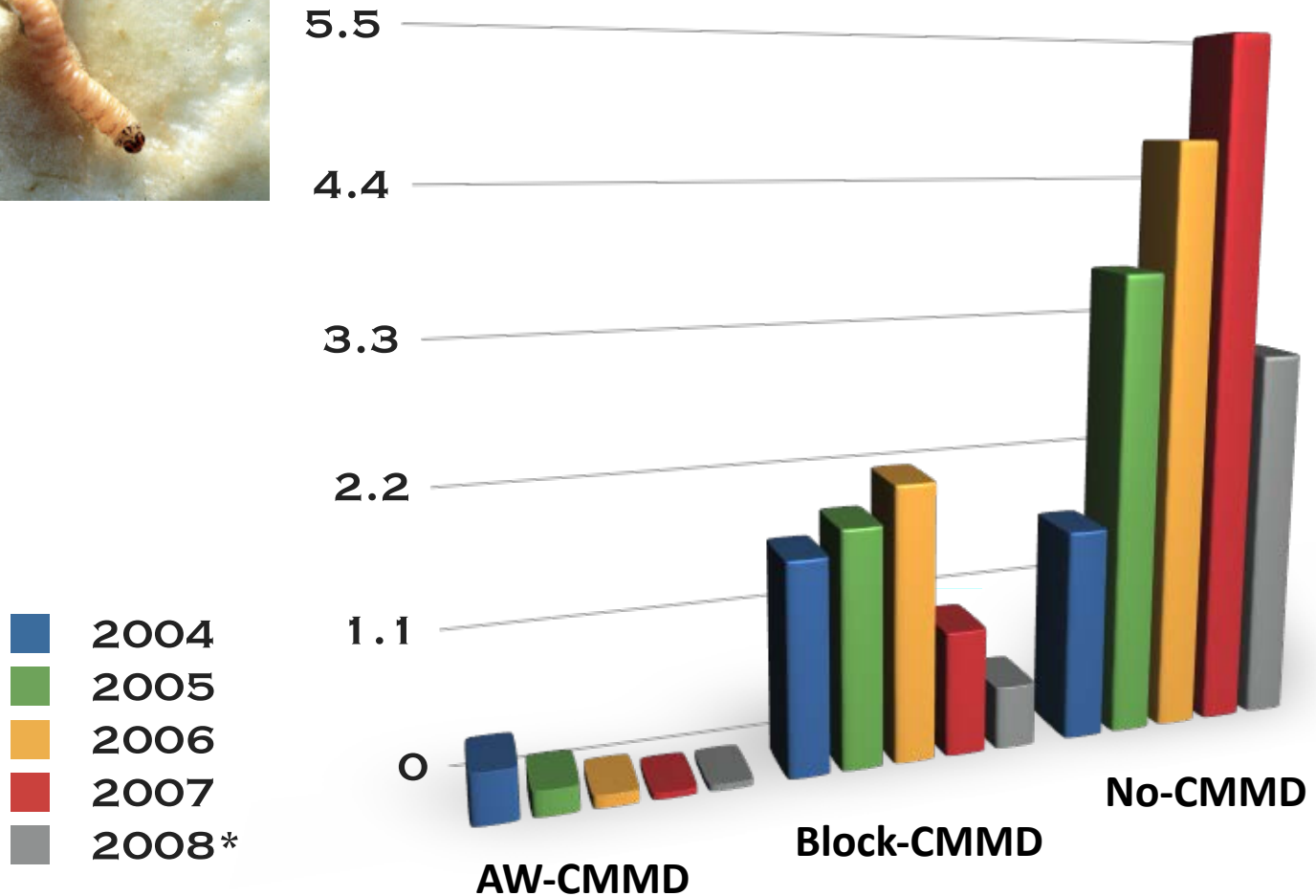
4 regions



3 reps per region



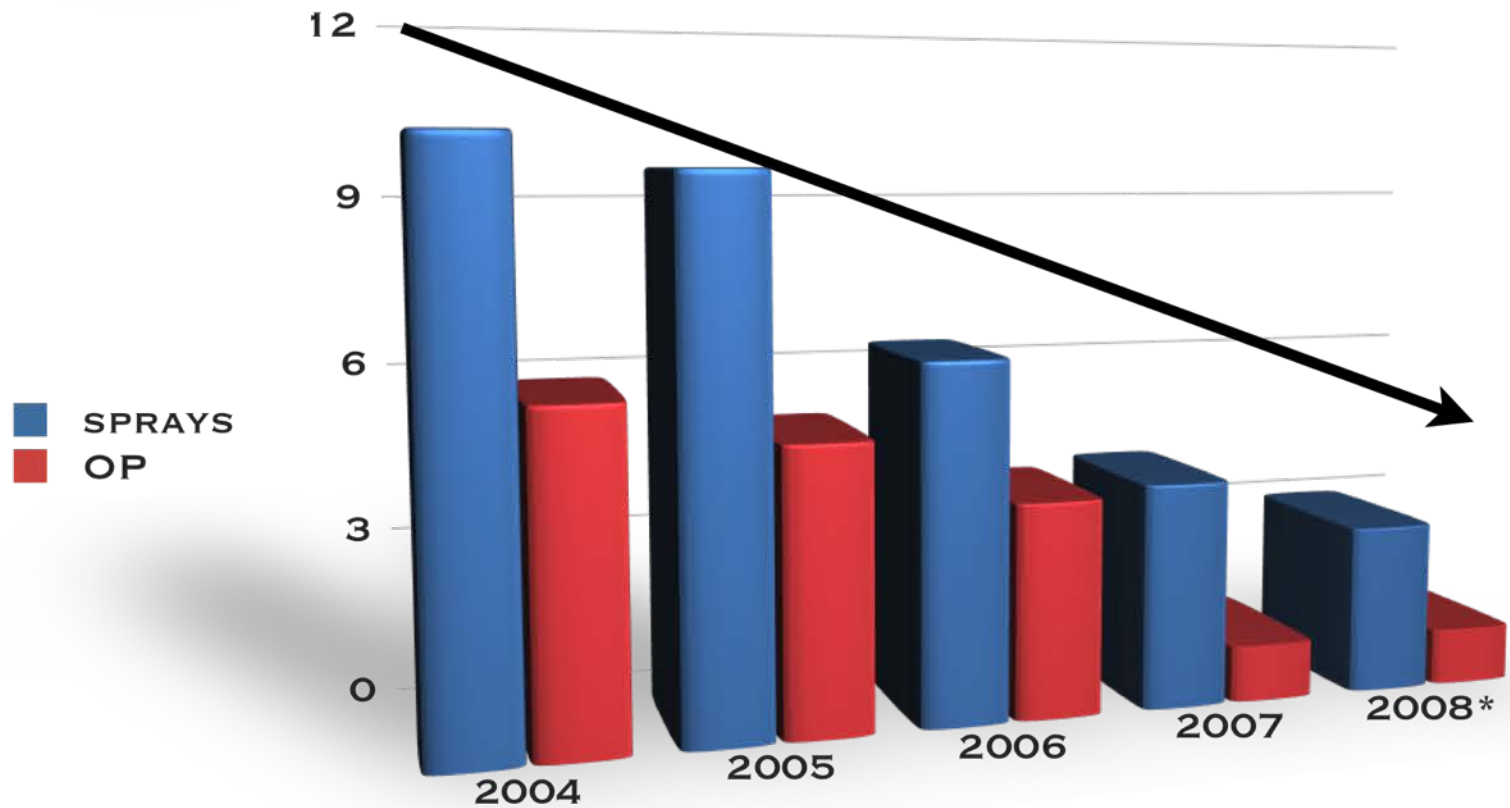
Percent Fruit injury at Harvest



Reduced need for companion insecticides

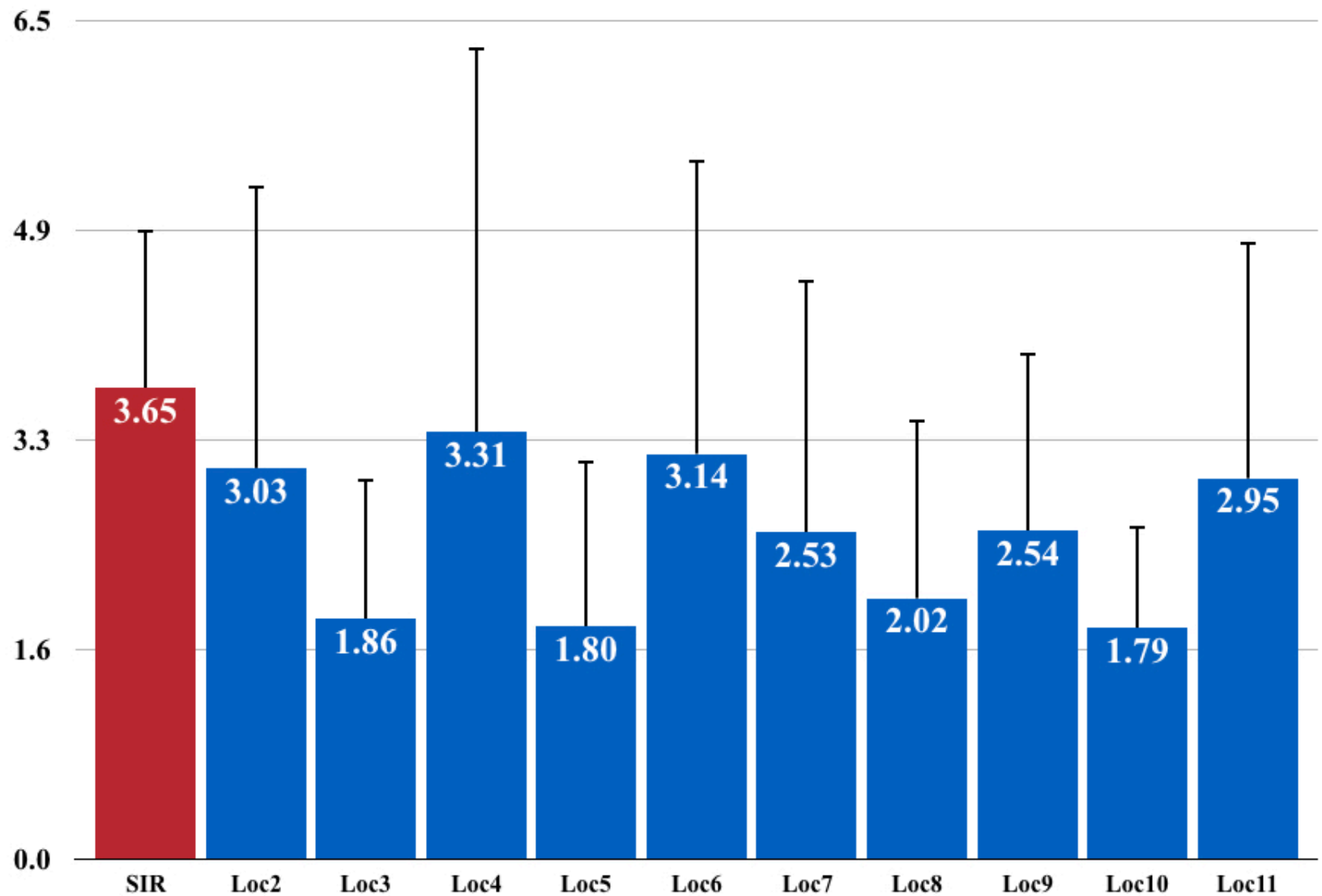


Total CM Insecticide sprays



Average Amount of Codlemone in Female Glands

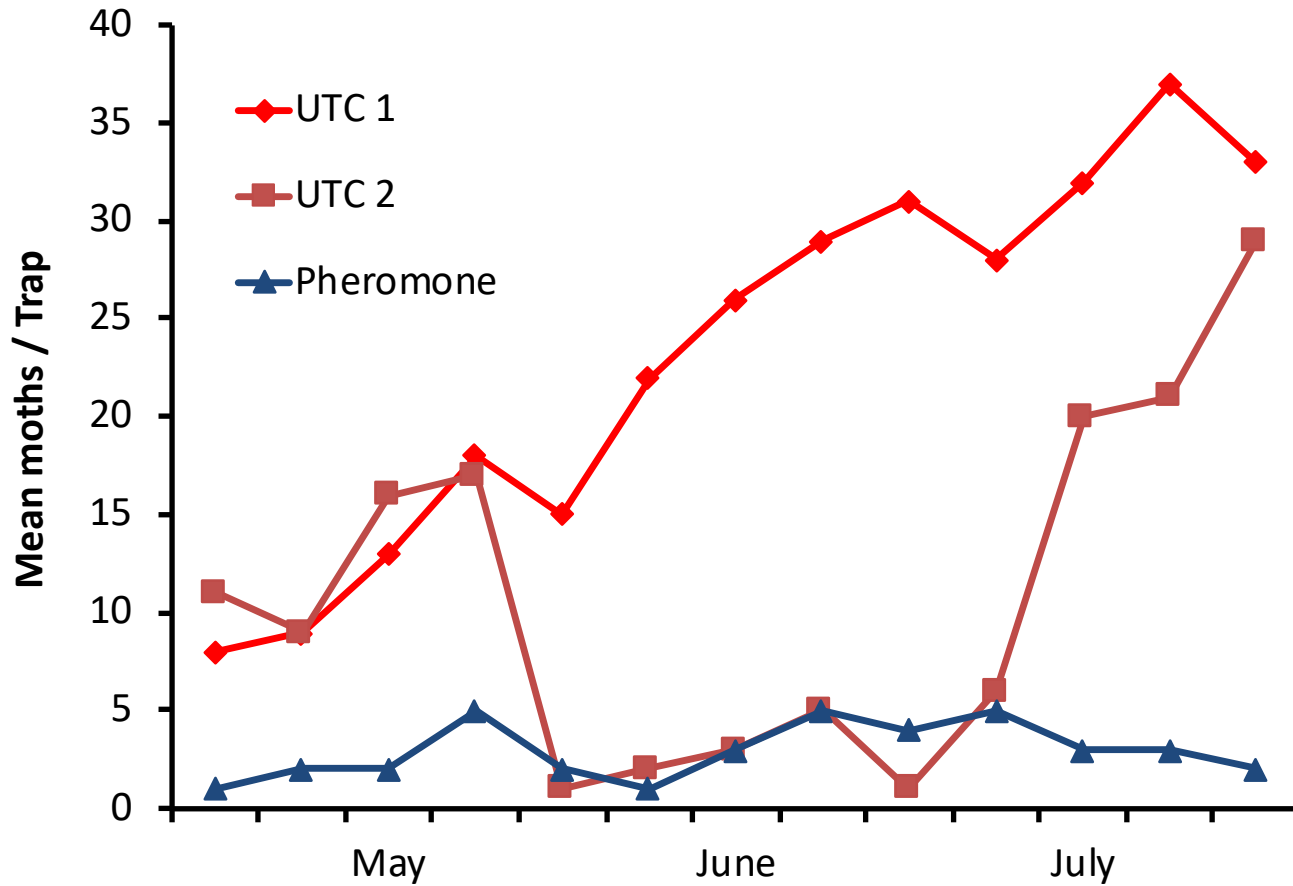
No Quantitative or Qualitative Change



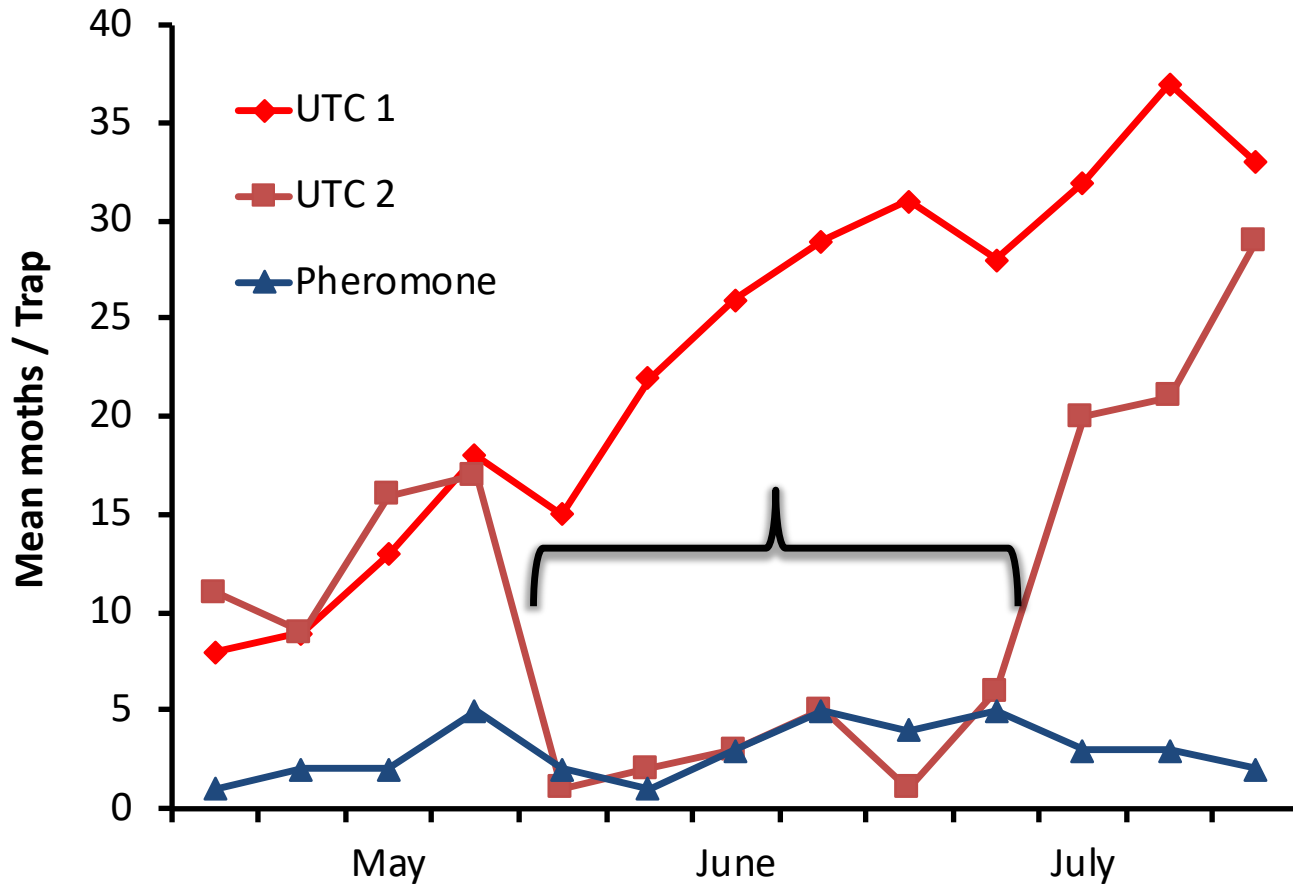
Sub-lethal Effects of Pesticides



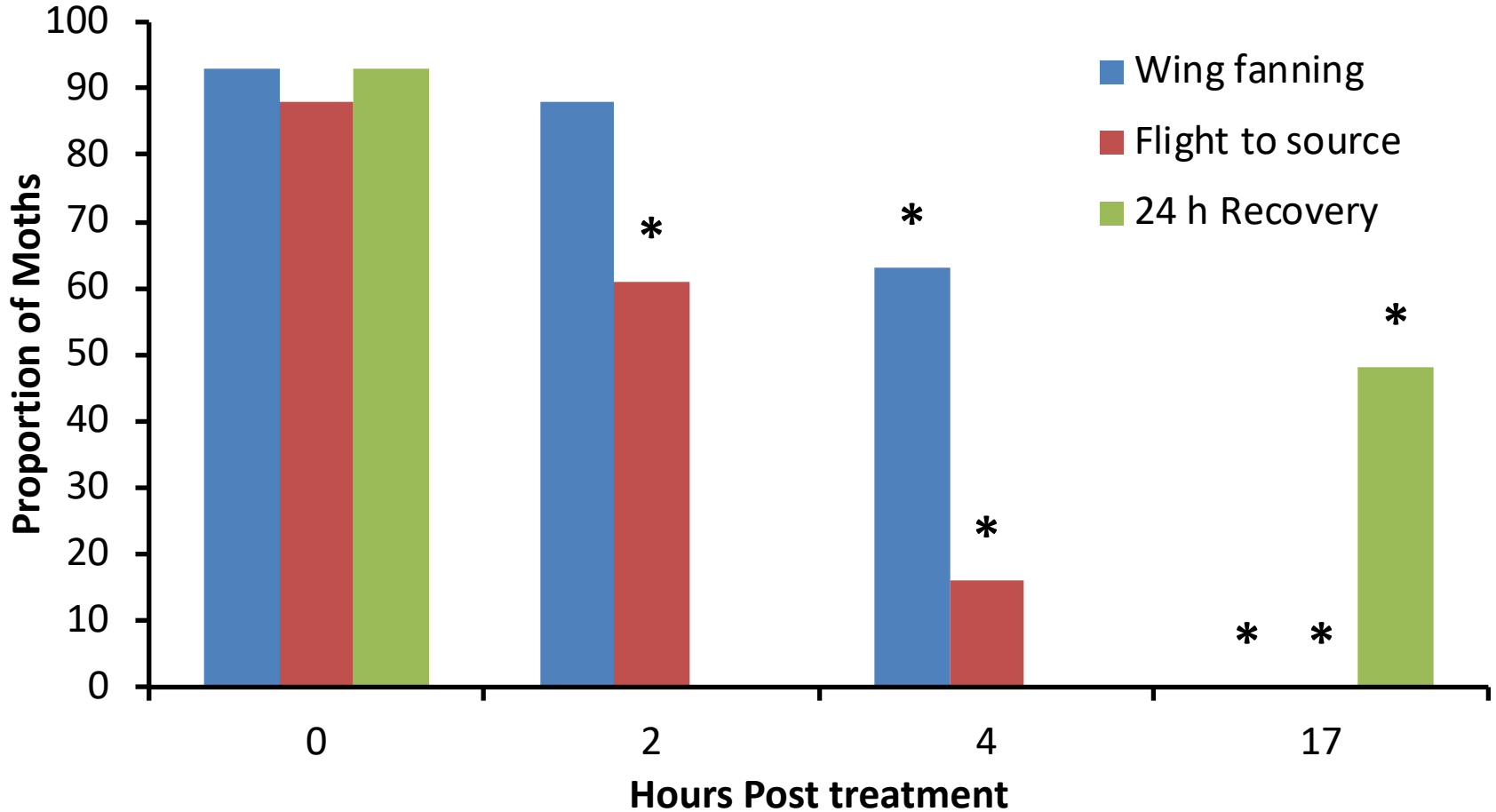
The Curious Case of Altacor[®]



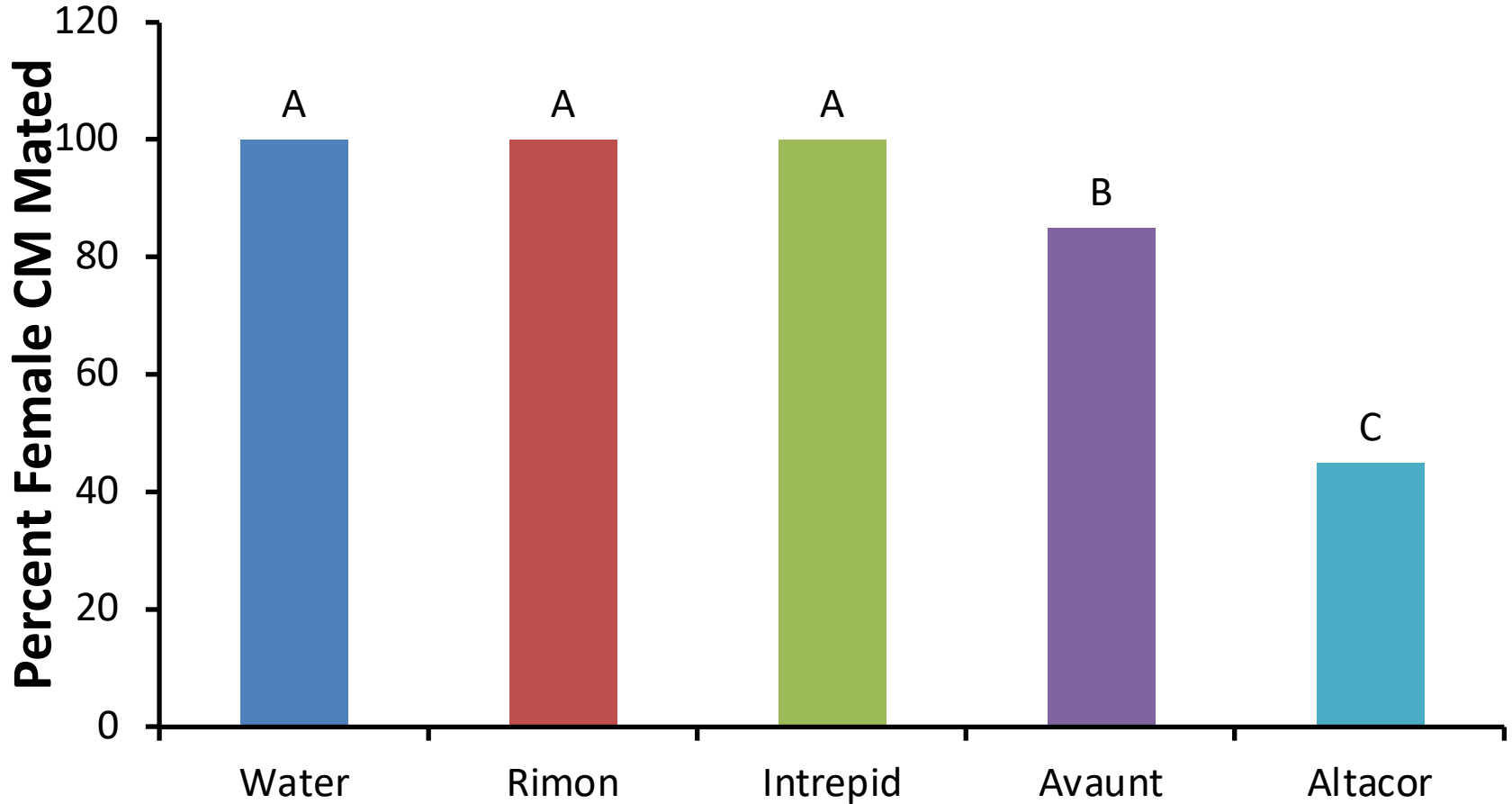
The Curious Case of Altacor[®]



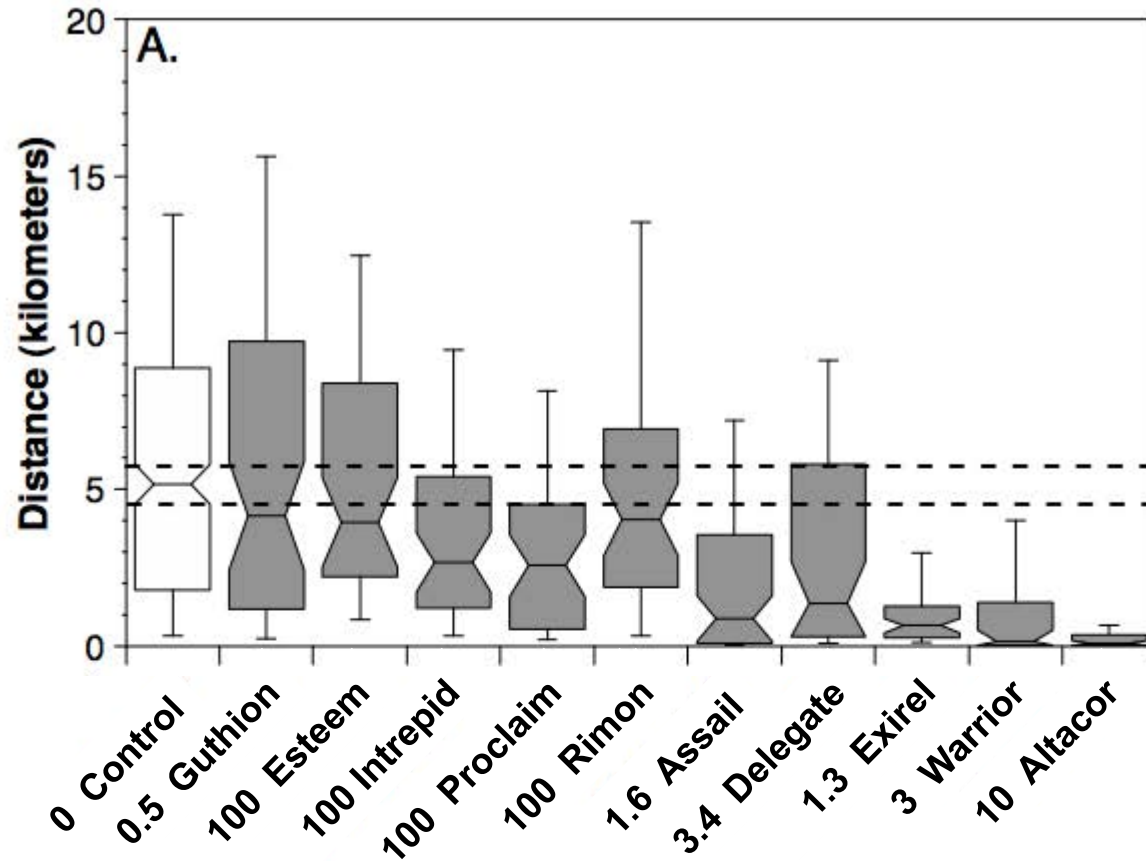
Effect of Altacor[®] on Male CM



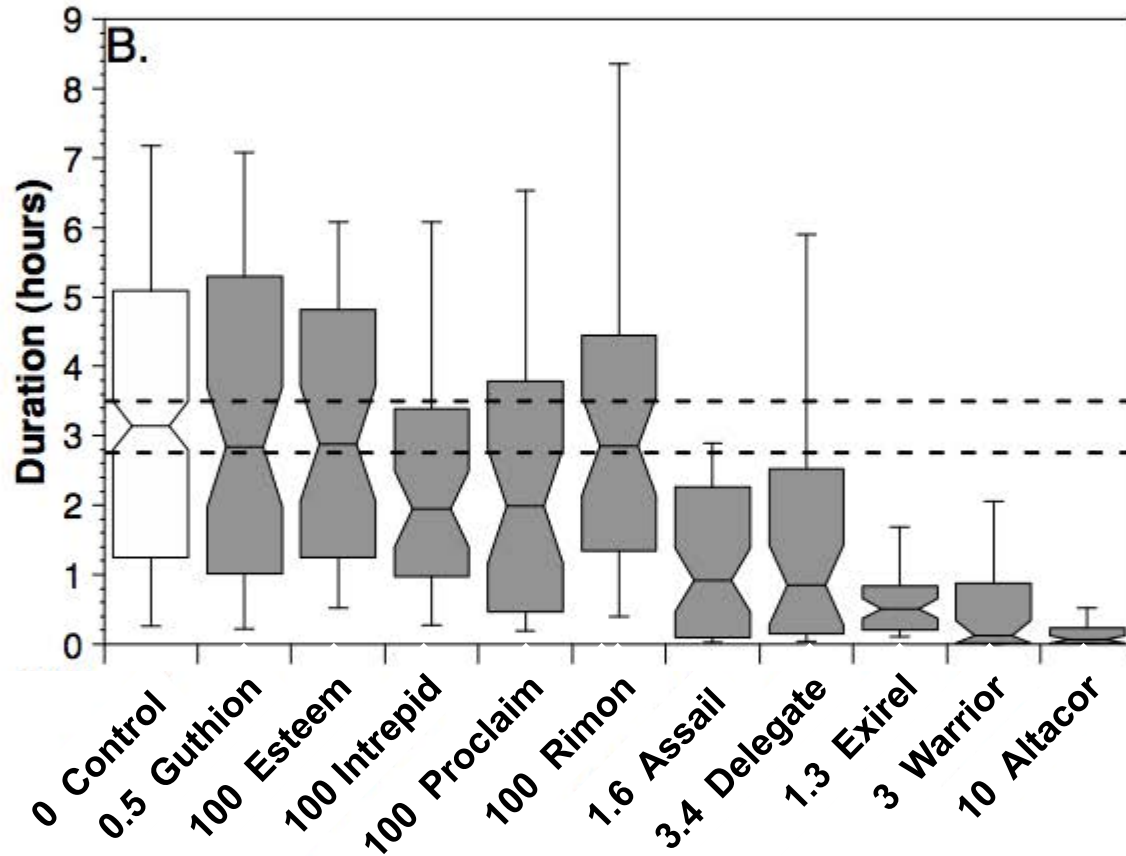
Effect of Altacor[®] on Female CM



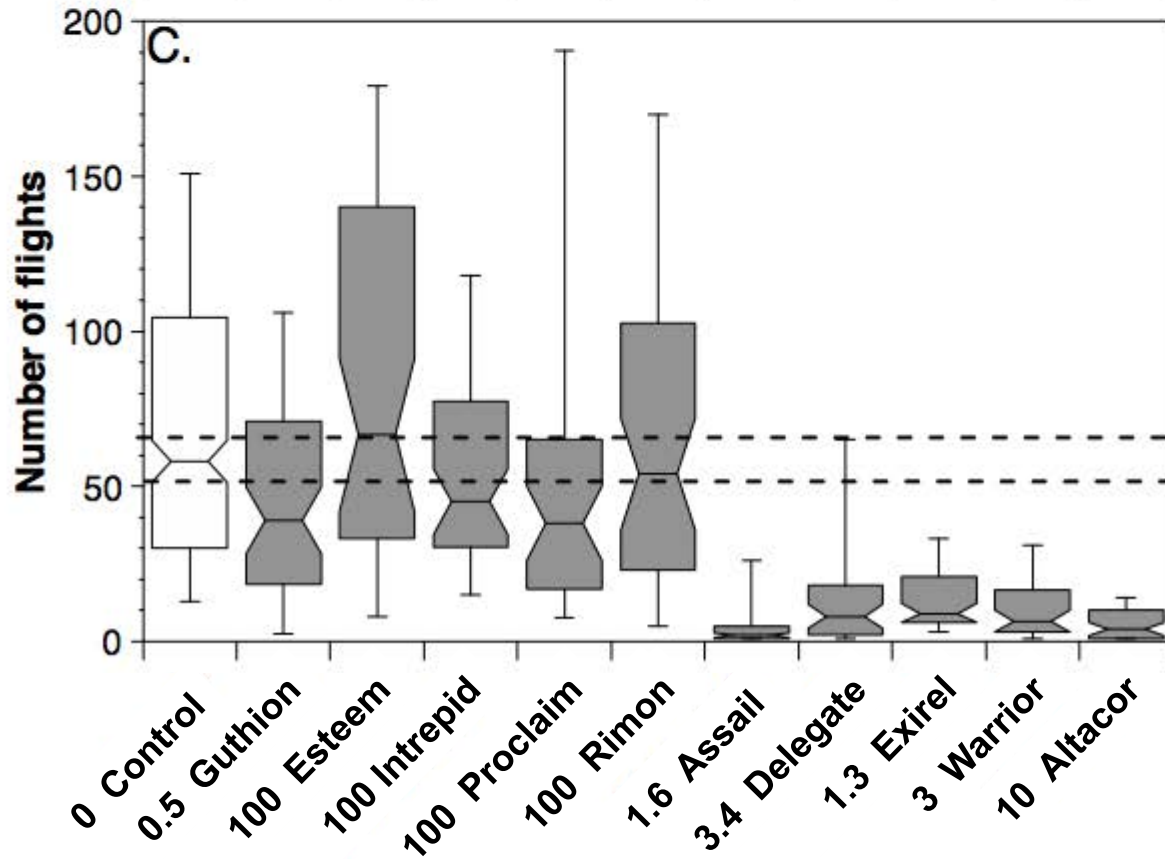
Sub-lethal Effects of Pesticides on Male CM – Flight Distance



Sub-lethal Effects of pesticides on Male CM – Flight Duration



Sub-lethal Effects of pesticides on Male CM – Total Flights





Conclusions

- CM direct exposure to high dosages of codlemone increases catch.
- Exposure of high concentration of pheromone did not deactivate males.
- Competitive attraction remains the primary mechanism for mating disruption for Aerosols.