MICHIGAN STATE UNIVERSITY | Entomology

Sterile Insect Release; a New Tool for Codling Moth Control in Michigan

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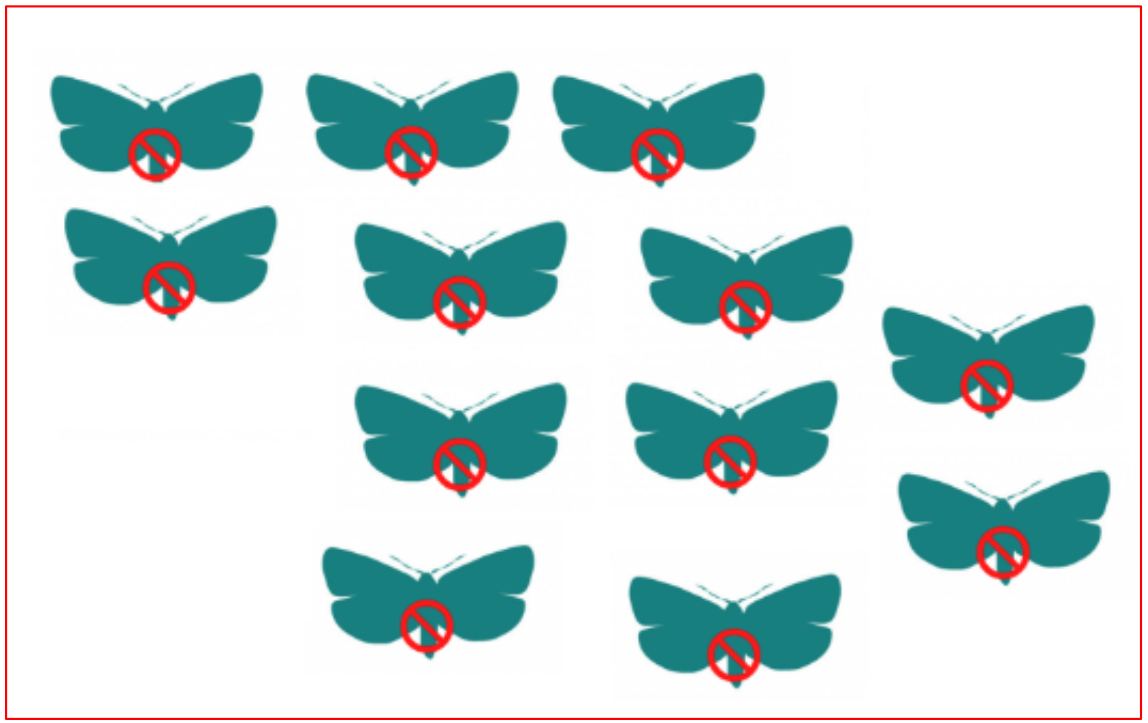
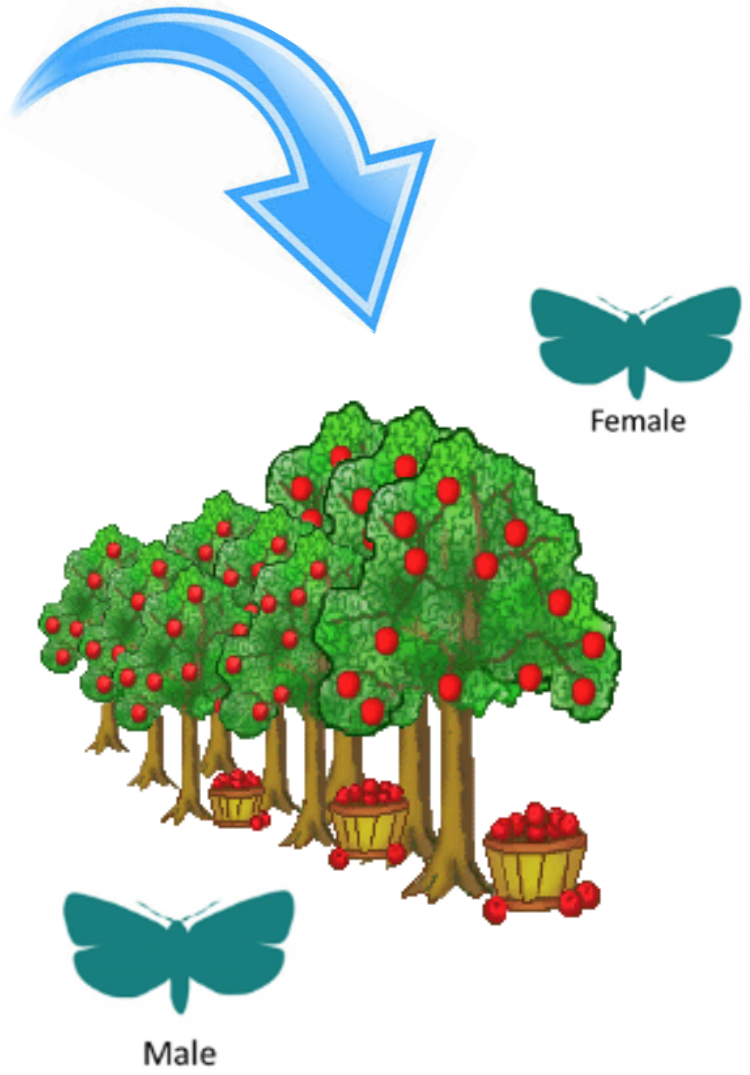
Fruit School 2019. Traverse City, MI

Sterile Insect Release



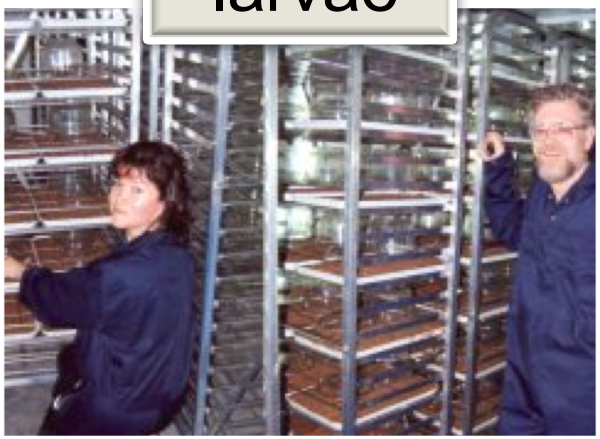


Sterile Moths from OKSIR in British Colombia

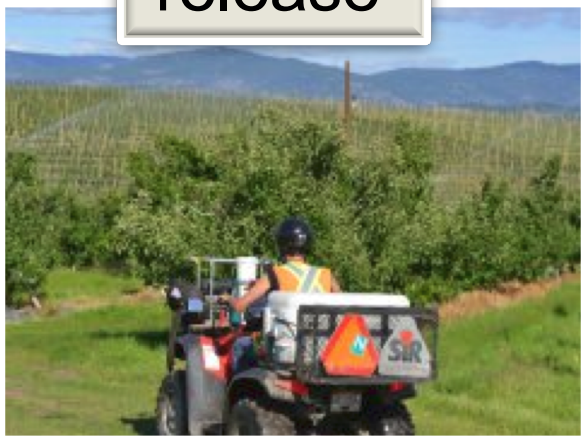
eggs

adults

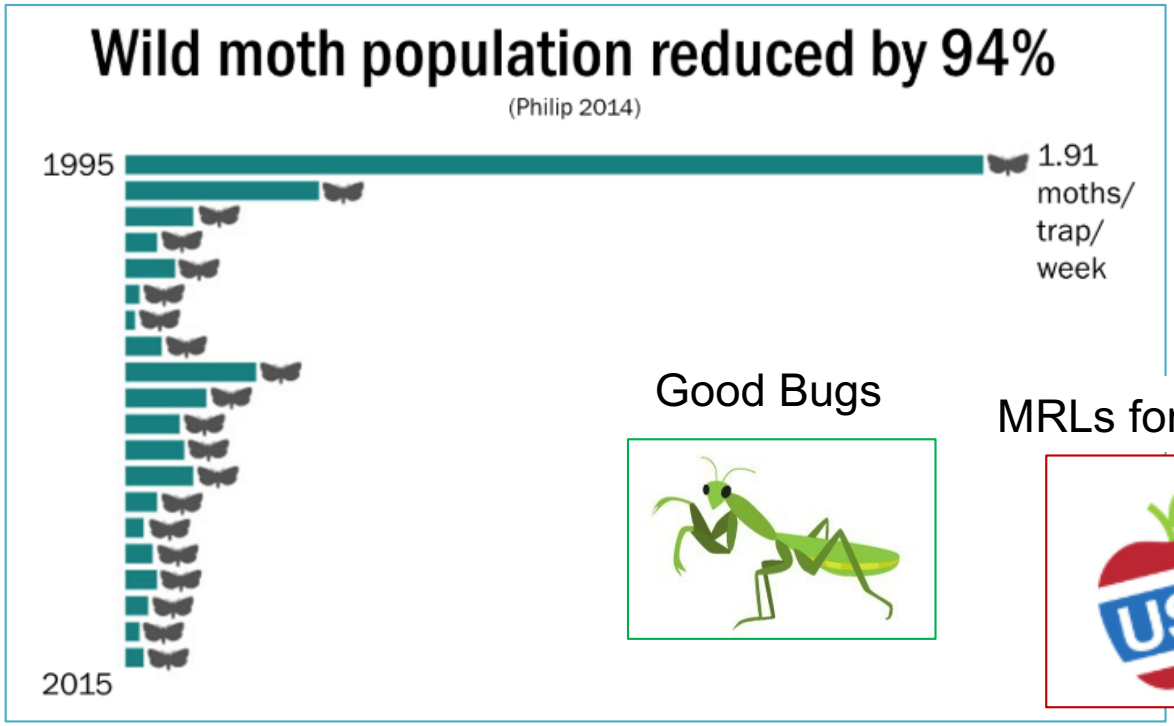
larvae



release



Benefits of SIR

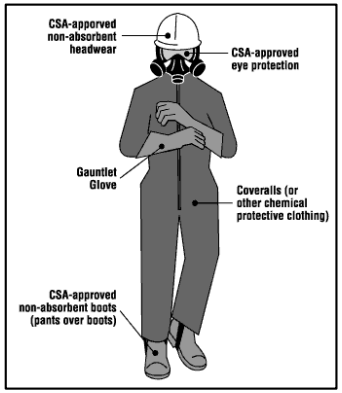


Good Bugs

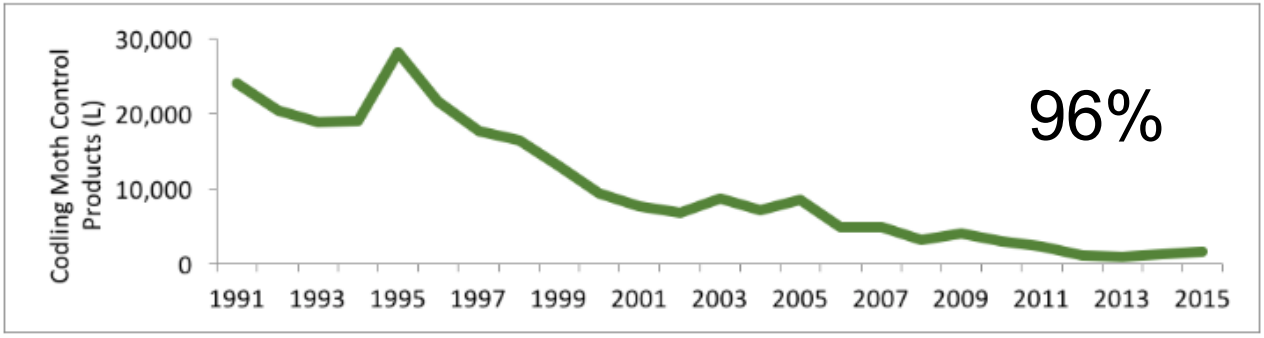
MRLs for exports

Pesticide resistance

Pesticide exposure



Since 1991, the amount of pesticide used against codling moth in the program area has been reduced by 96%.



Objectives

Reduce

Cost

Optimize

Release Pattern

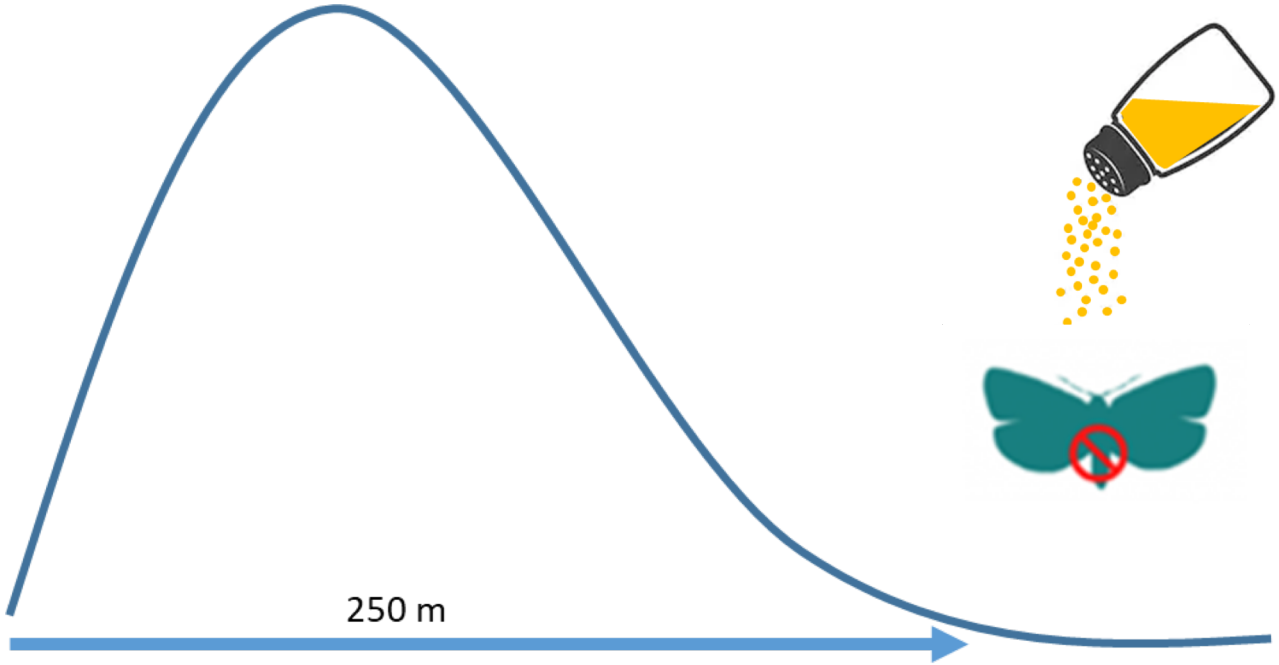
Understand

Release Quantity

Best way to release the moths?

Can we gain efficiencies by driving less?

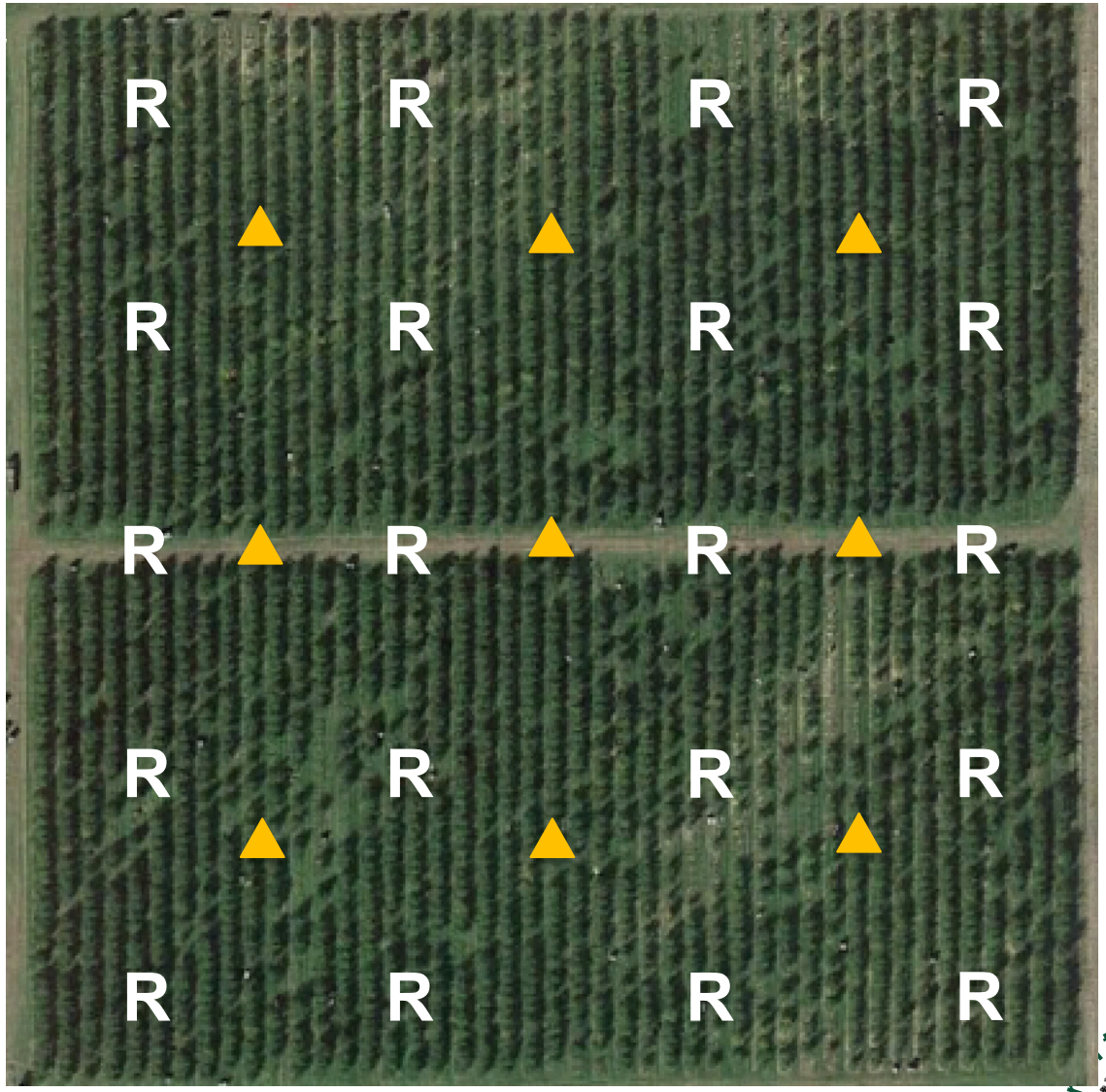
We know from our previous research



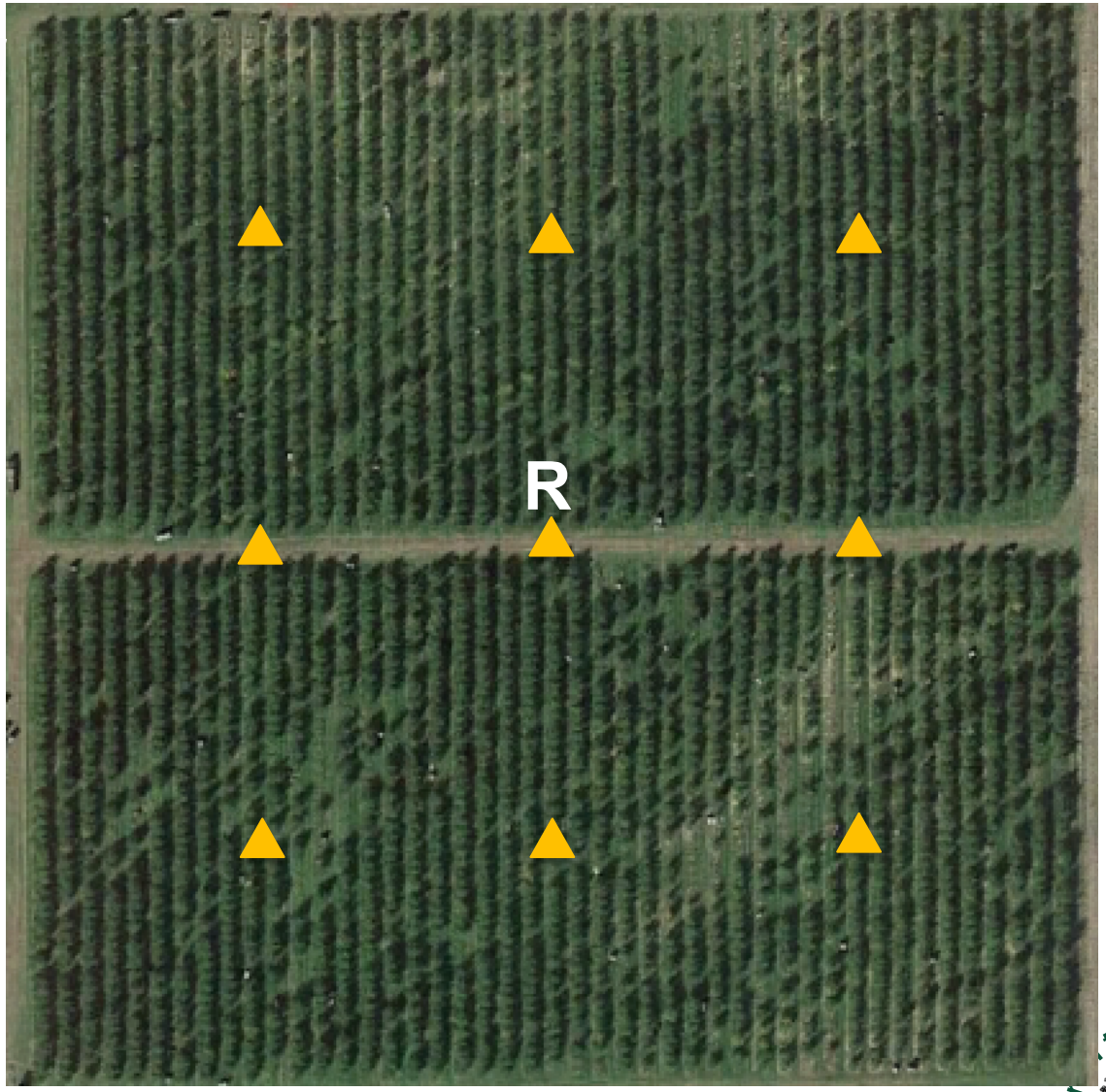
Dispersive distance of moths shown to be up to 250 m

Various possible release methods

Reduced Number of Release Points : **Even**, Center, Corners



Reduced Number of Release Points : Even, **Center**, Corners



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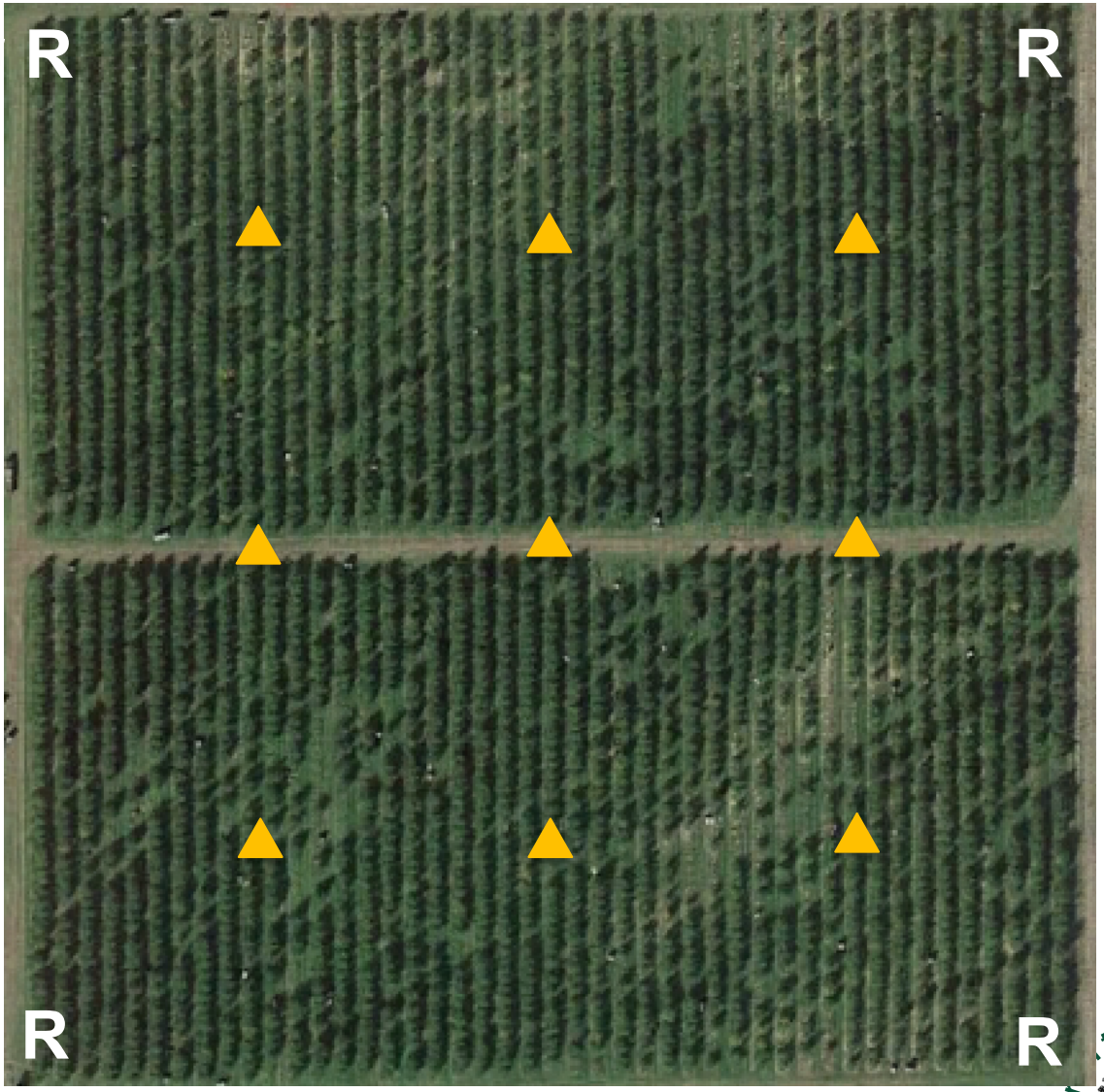
Reduced Number of Release Points : Even, Center, **Corners**



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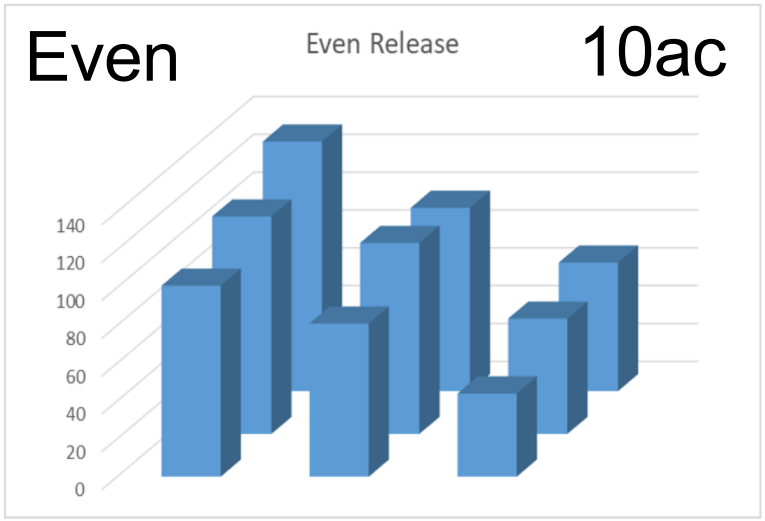
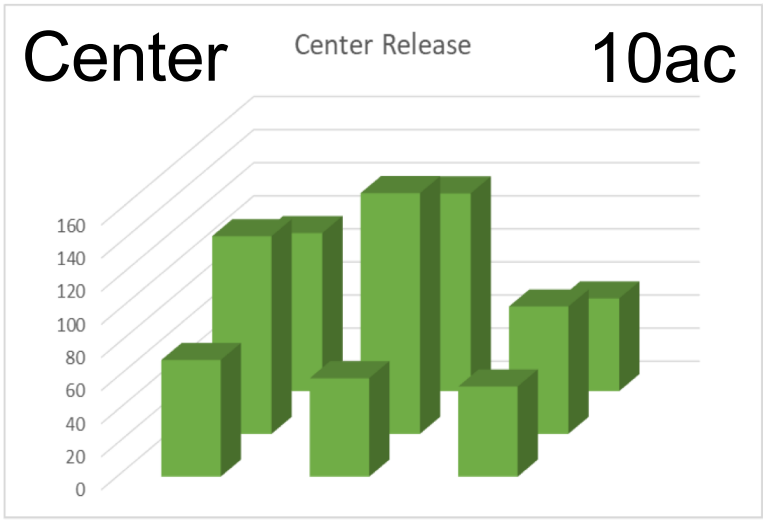
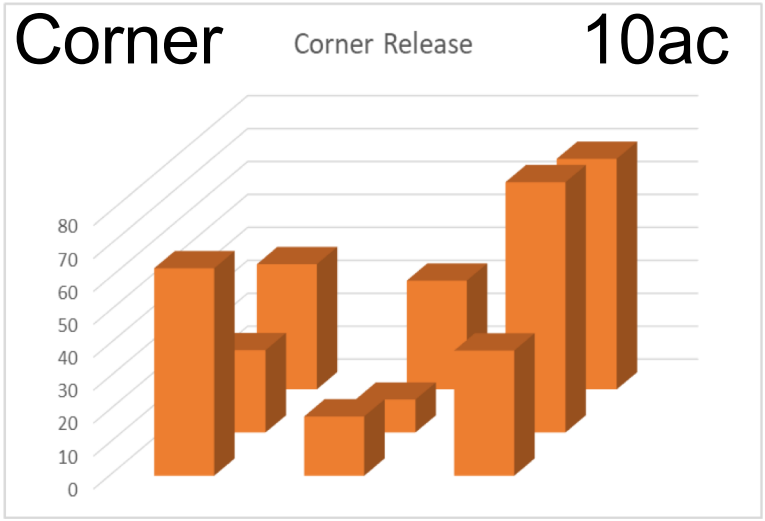
Reduced Number of Release Points : Even, Center, Corners







How many moths needed for control?

- 40:1, 20:1, 10:1 ?

40:1 ratio ??
Sterile:Wild

Release Ratio needed for suppression?

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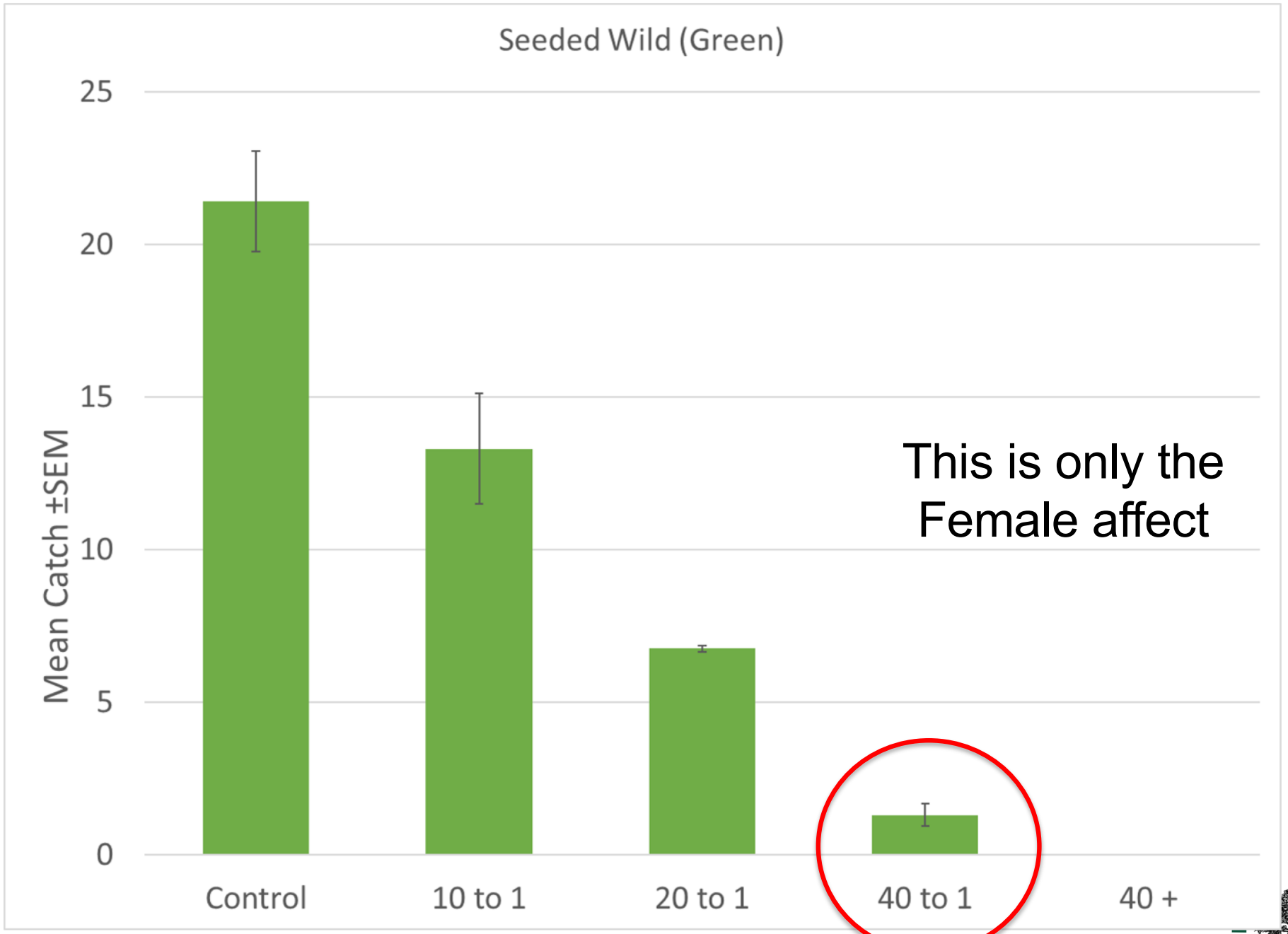
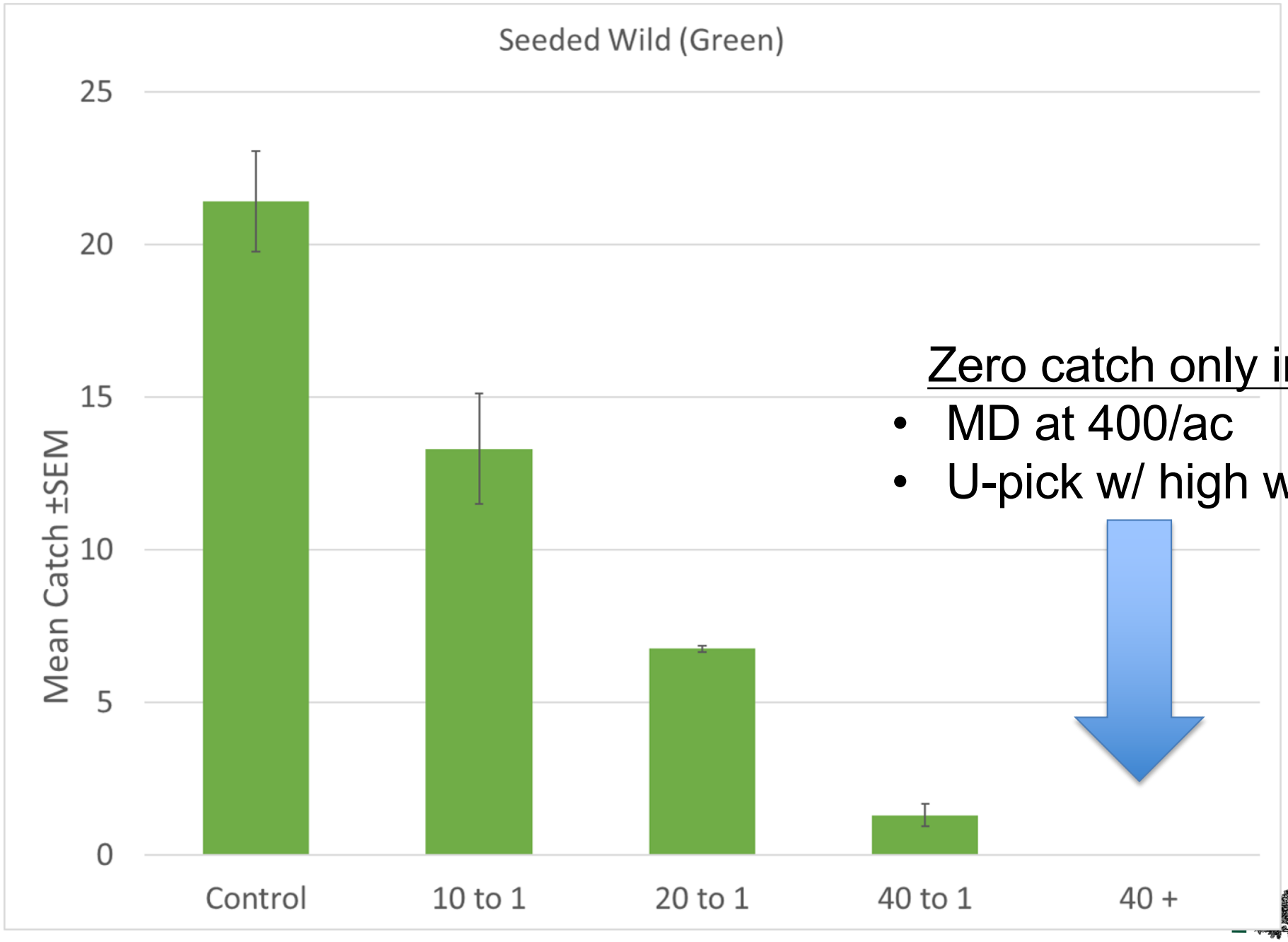

Seeded Wild (Green)
25
20
15
10
5
0
Mean Catch ±SEM
Control
10 to 1
20 to 1
40 to 1
40 +
This is only the Female affect



Zero catch only in:

- MD at 400/ac
- U-pick w/ high wild

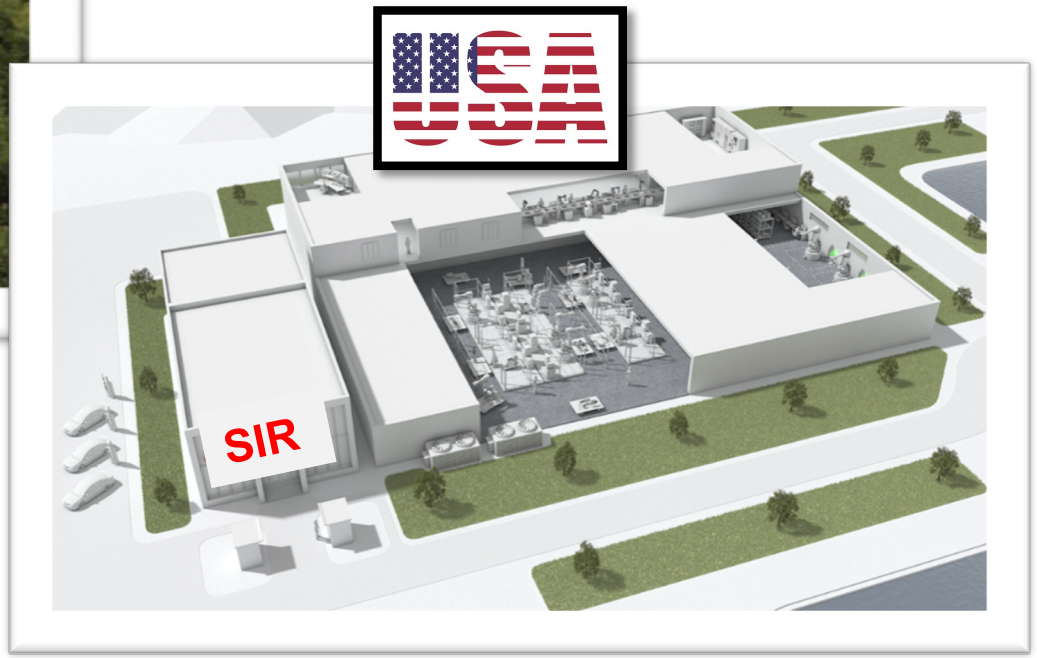
Questions for 2109

- **Better understand how many moths are needed by . . .**
- Season long releases over entire blocks
- Releases targeting 2nd generation only
- Looking at fruit injury

- **How does SIT fit into and IPM program by . .**
- Compatibility with MD
- Compatibility with various chemistries
- Ideal tool for organic or low input production
- *Drone releases

Future Trends

Aerial Releases



US Rearing Facility ?

- Research is on going . . .

Thanks to Project GREEEN

and the Canadian SIR program

Project GREEEN