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Progress in the mechanization of mating disruption deployment

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PROGRESS IN THE MECHANIZATION OF MATING DISRUPTION DEPLOYMENT

Natalie Eisner¹, Elissa Chasen^{1,2}, Brian Luck¹ and Shawn Steffan^{1,2}

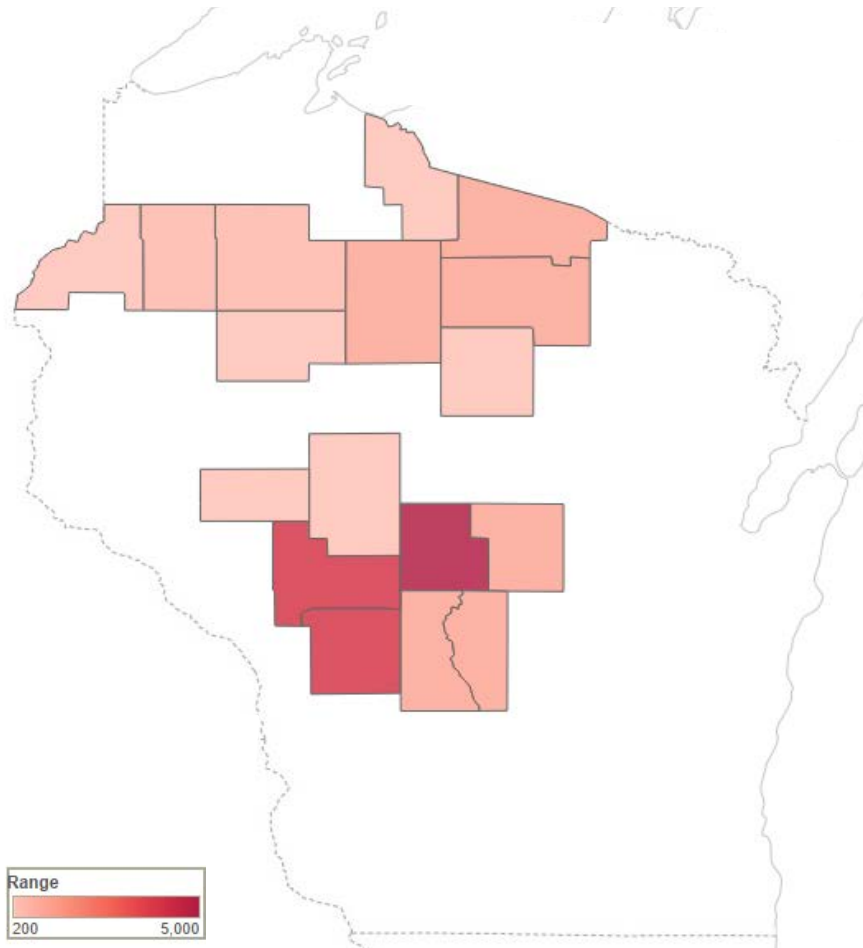
August 30, 2017

¹University of Wisconsin, Madison, ²USDA - ARS





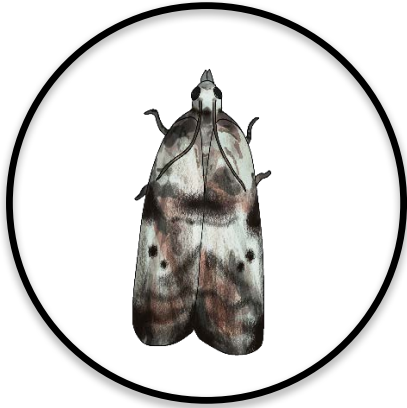
WISCONSIN CRANBERRY PRODUCTION



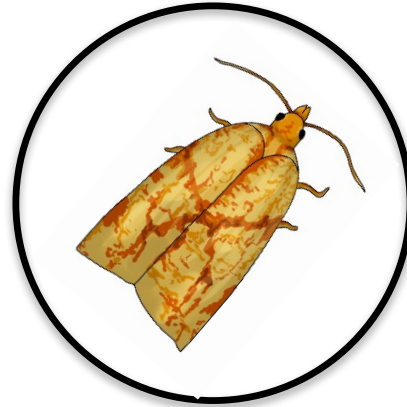
Cranberries are Wisconsin's most important fruit crop in terms of quantity and economic value



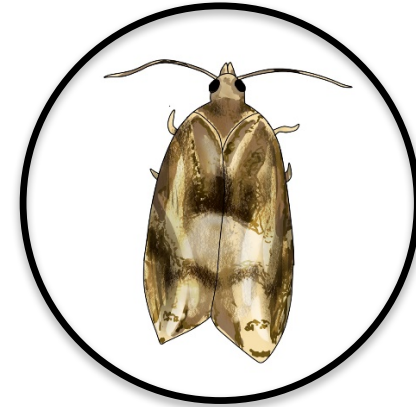
MAJOR PESTS IN WISCONSIN



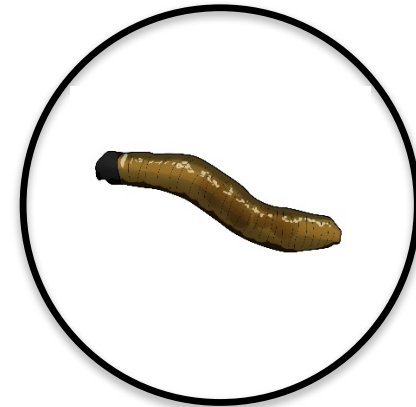
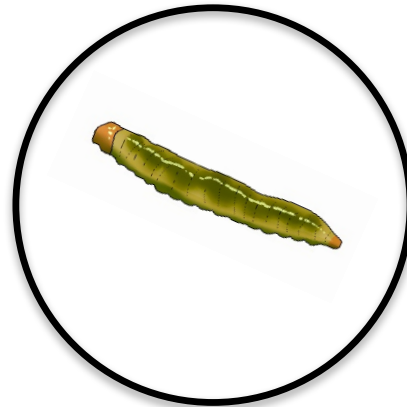
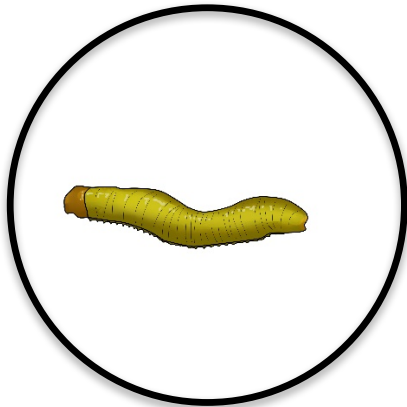
CRANBERRY FRUITWORM
ACROBASIS VACINII (PYRALIDAE)



SPARGANTHIS FRUITWORM
SPARGANTHIS SULFUREANA
(*TORTRICIDAE*)

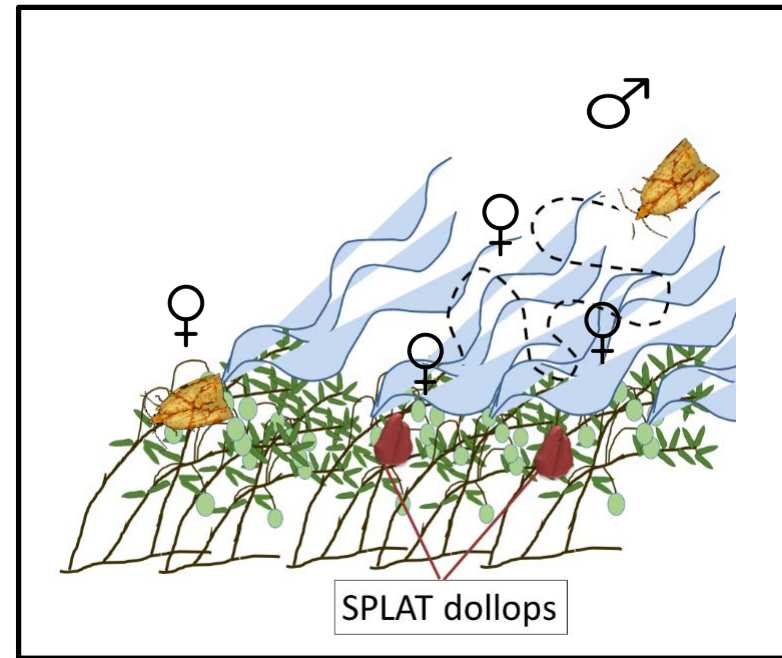
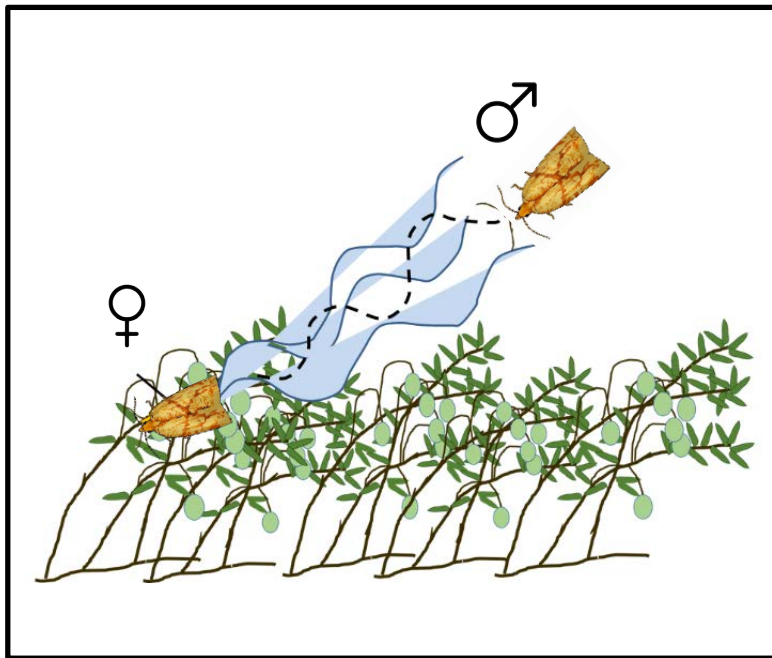


BLACKHEADED FIREWORM
RHOPOBATA NAEVANA (*TORTRICIDAE*)





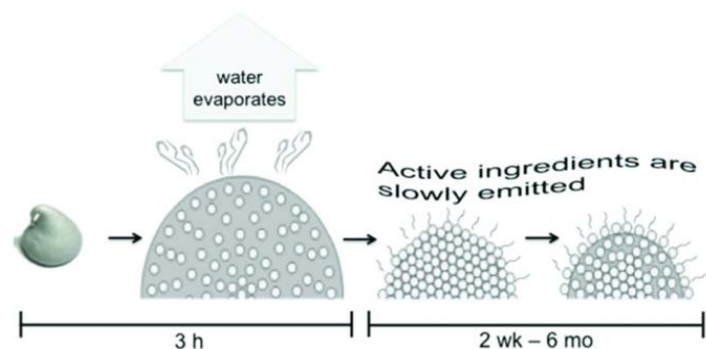
MATING DISRUPTION





WHAT IS SPLAT[®]?

- Specialized **P**heromone **L**ure and **A**pplication **T**echnology
- Inert, food grade wax imbued with pheromones
- SPLAT texture – resembles consistency of thick frosting



ISCA

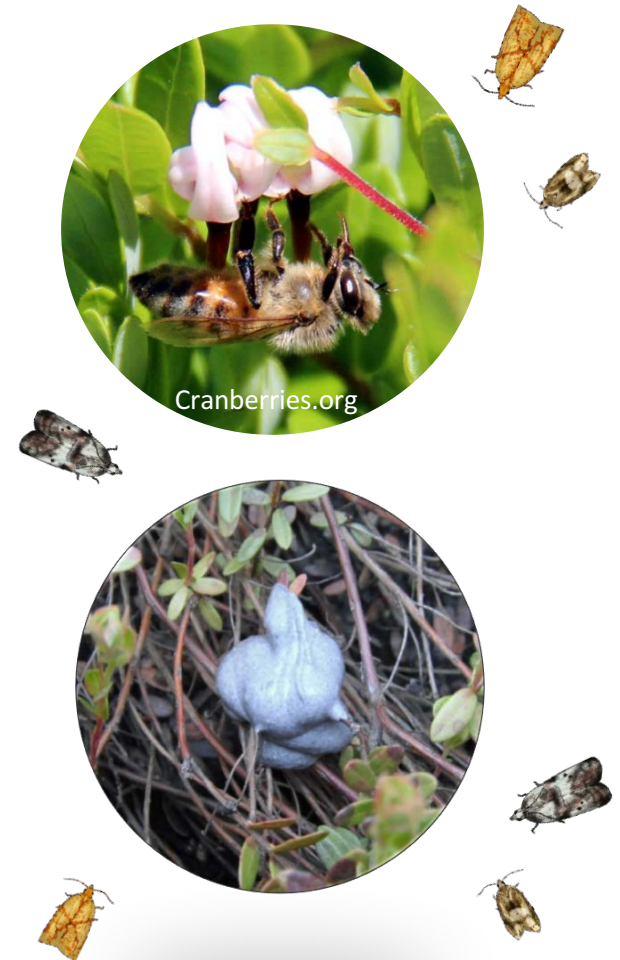
TECHNOLOGIES

Pest Management Tools & Solutions



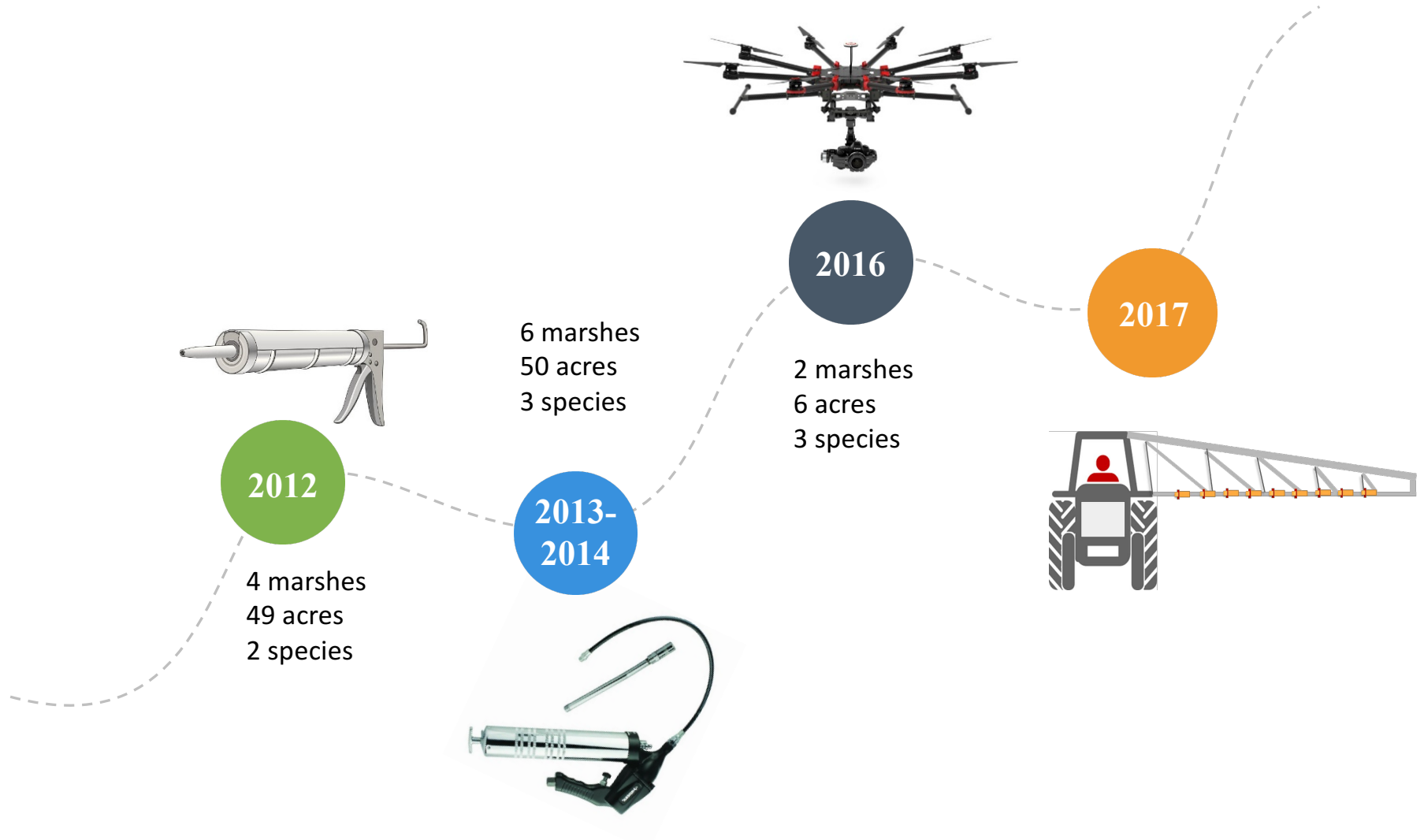
ADVANTAGES OF SPLAT

- **Non-target species unaffected**
- **Slow-release** over duration of moth flight
- **Biodegradable** - can be left in bed during harvest
- Implementation of this system could potentially **eliminate** some, if not all, **pesticide** applications for the control of these insects in cranberry production



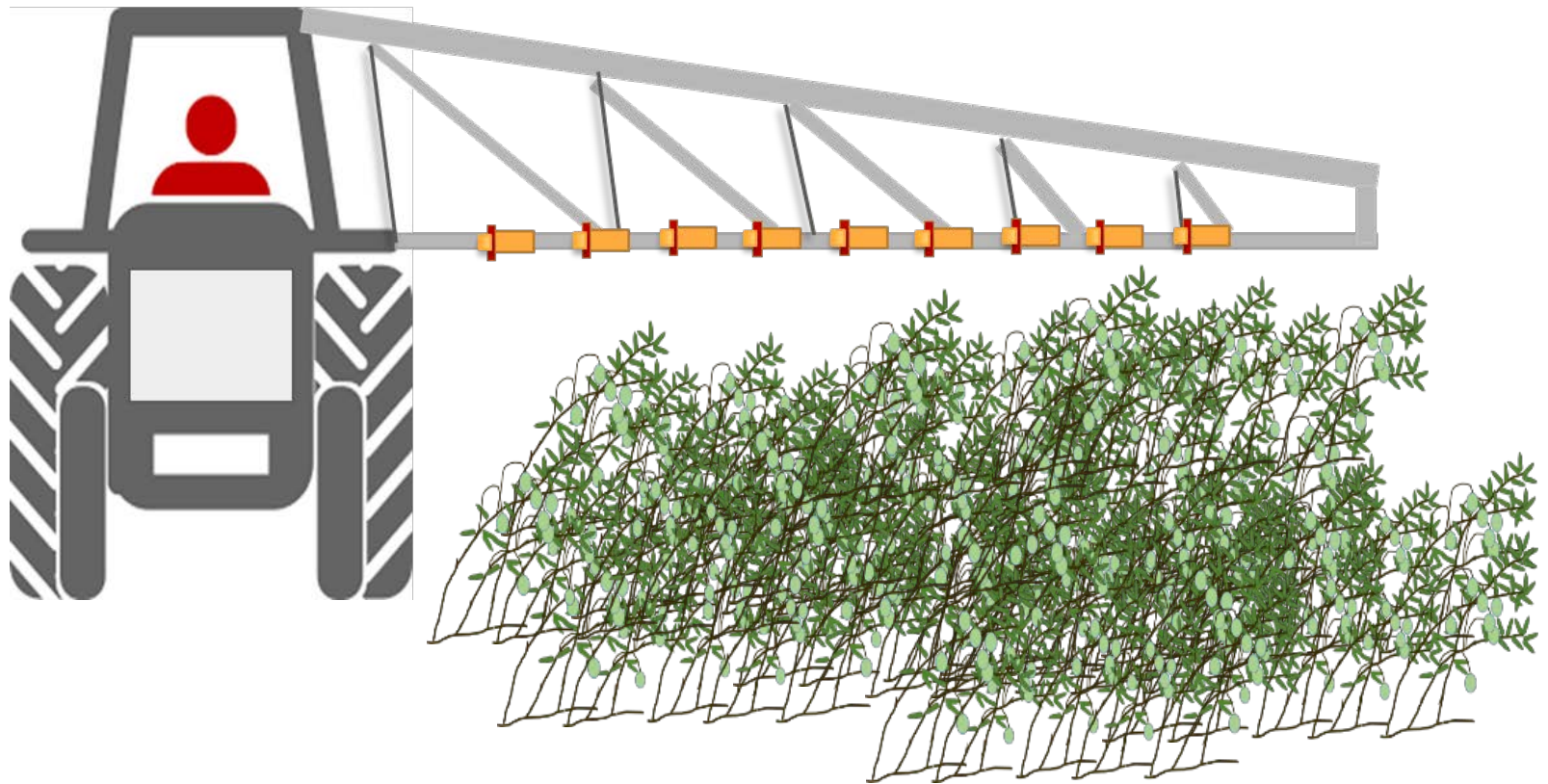


BACKGROUND





BOOM SPRAYER MOUNTED APPLICATOR





MECHANIZATION PROCESS

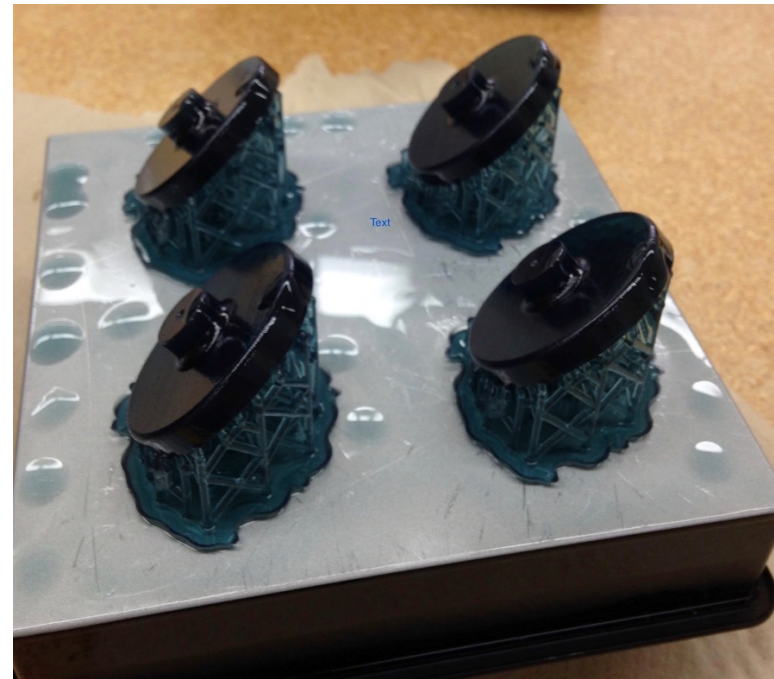


- SPLAT delivered in 750 gram tubes
- Application rate is 1000 grams/acre



MECHANIZATION PROCESS

HARDWARE





MECHANIZATION PROCESS

HARDWARE





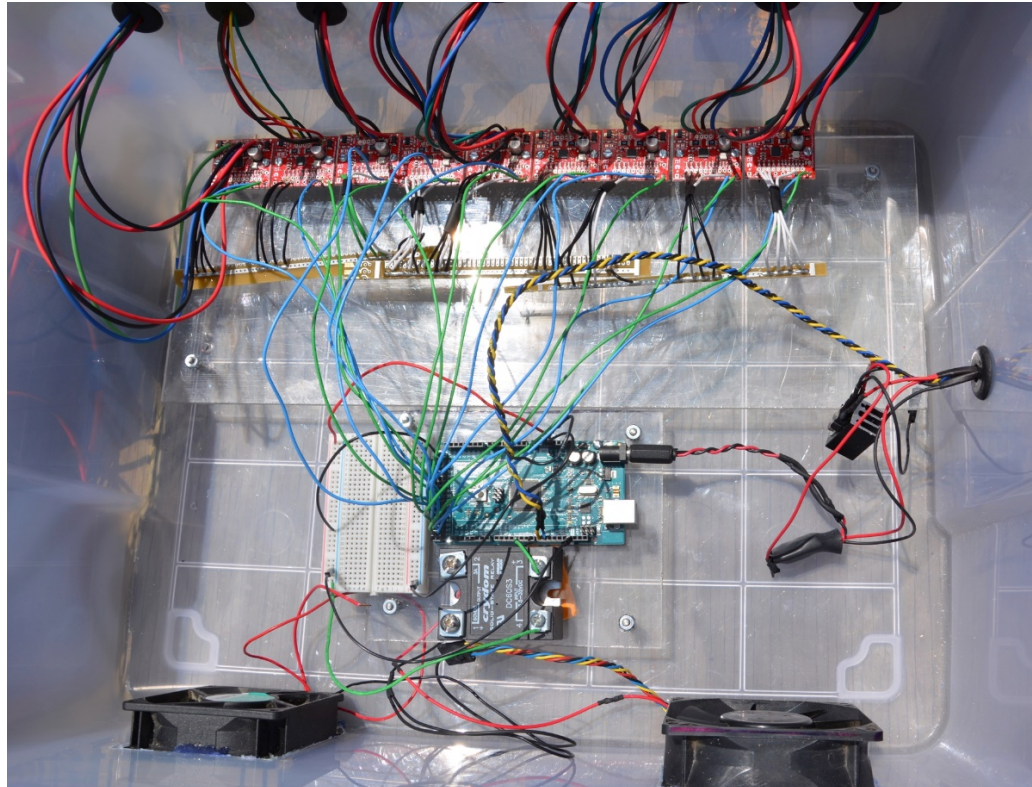
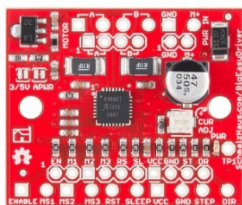
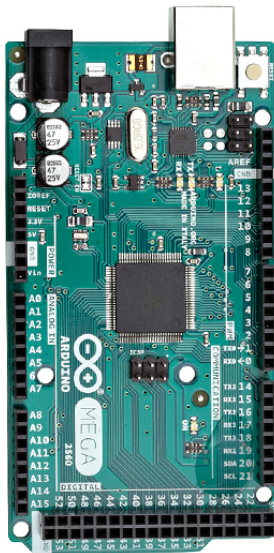
MECHANIZATION PROCESS





MECHANIZATION PROCESS

HARDWARE



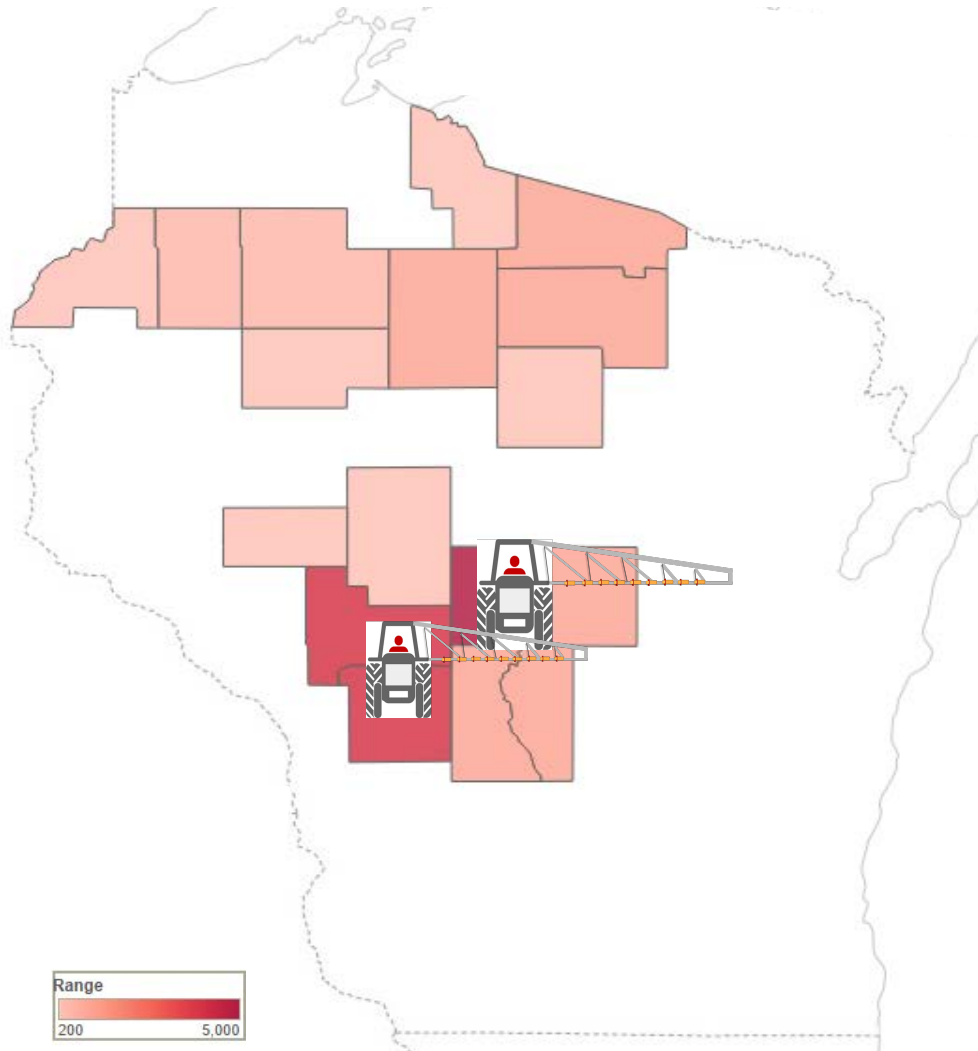



FROM THE CONTROL DECK





2017 SPLAT APPLICATION



- 80 acres total
- 4 marshes in central Wisconsin 
- Commercial acreage

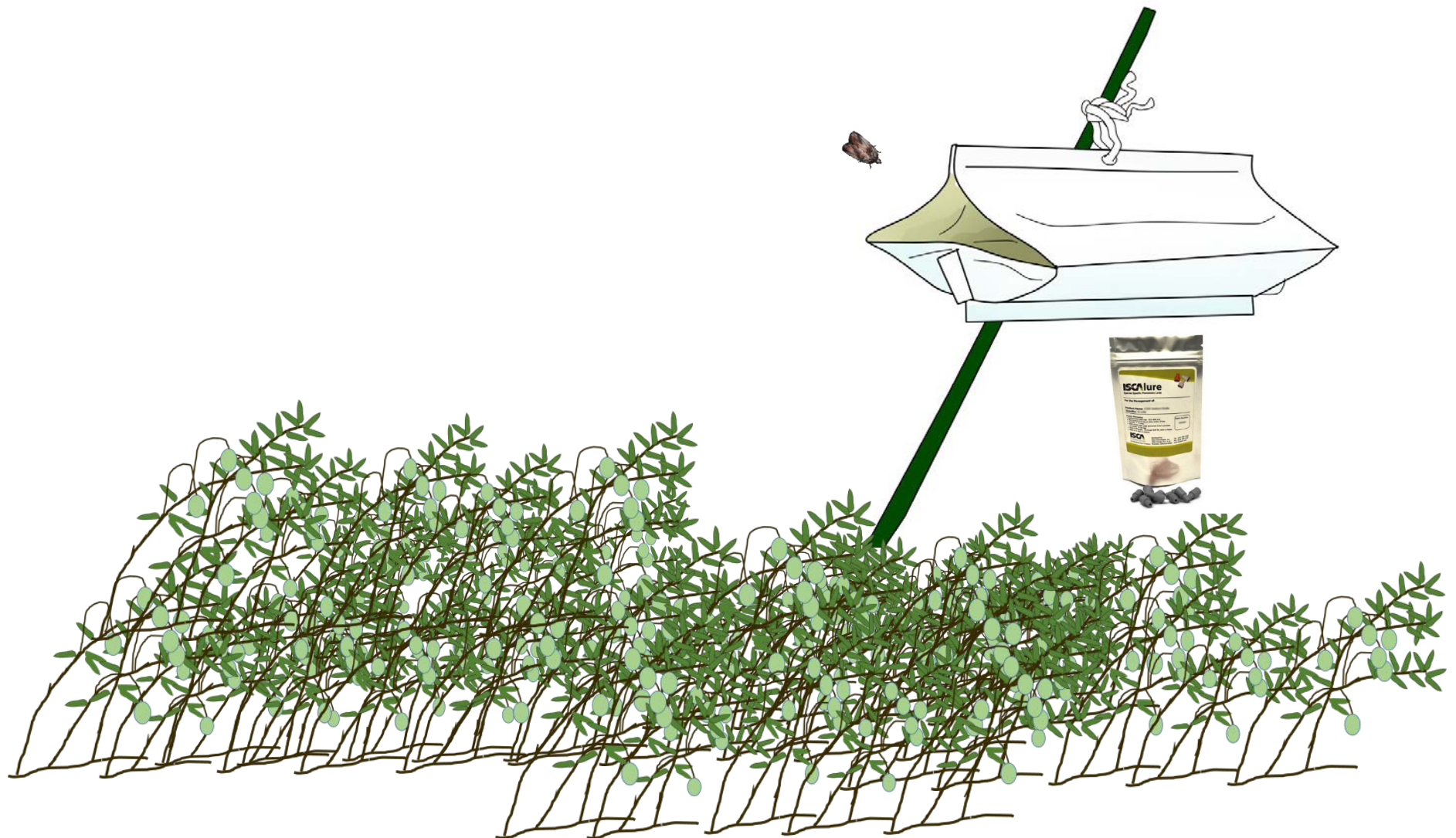


MECHANIZATION PROCESS



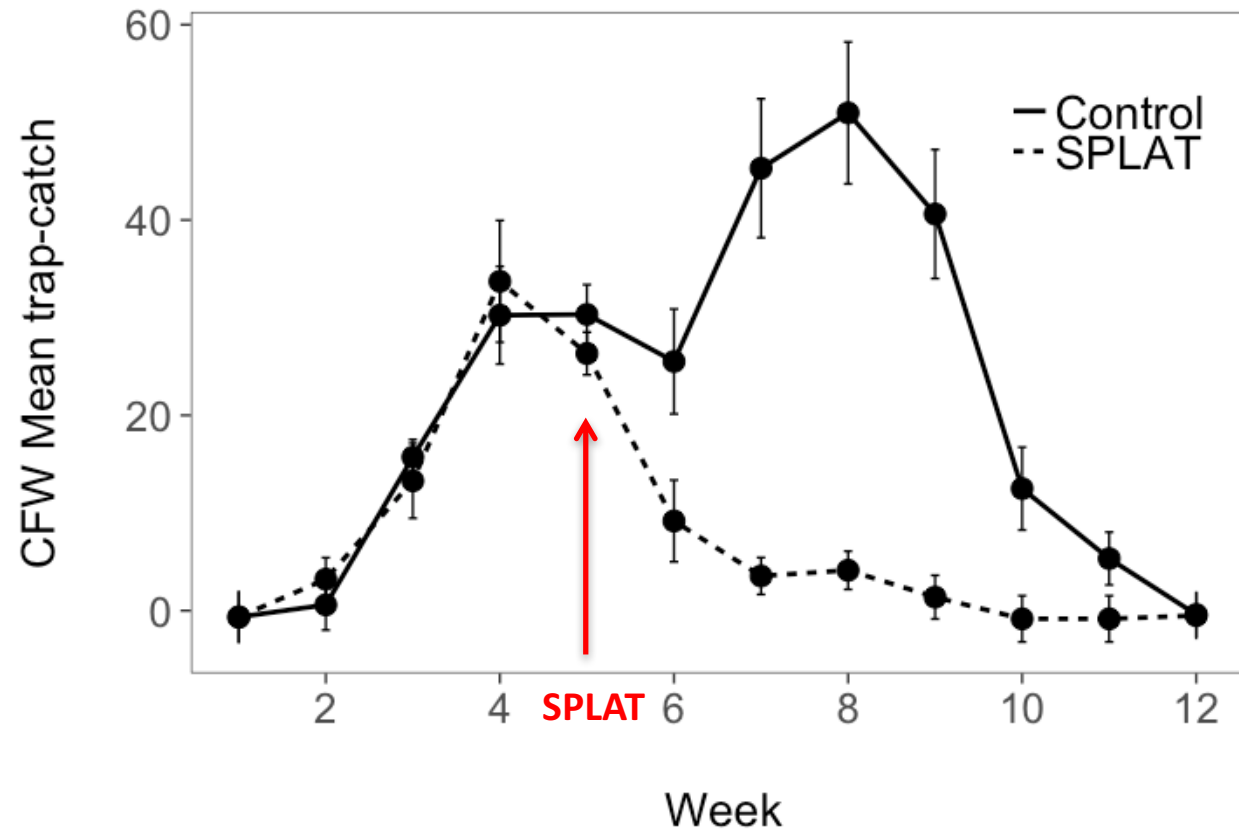
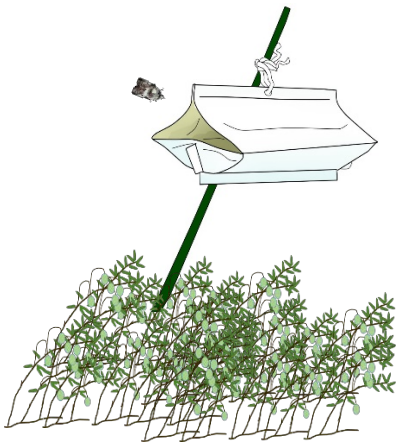


METRICS OF SUCCESS



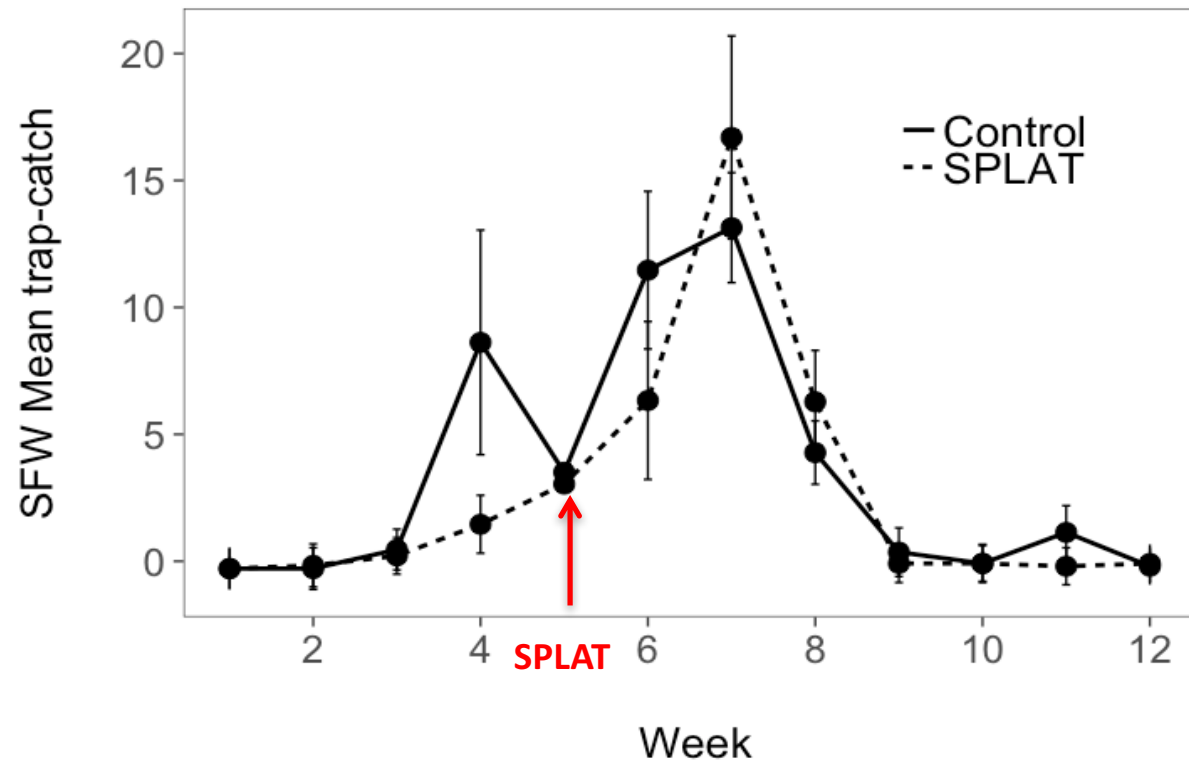
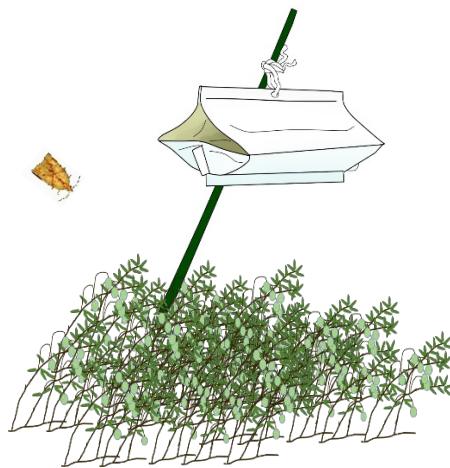


CRANBERRY FRUITWORM TRAPS



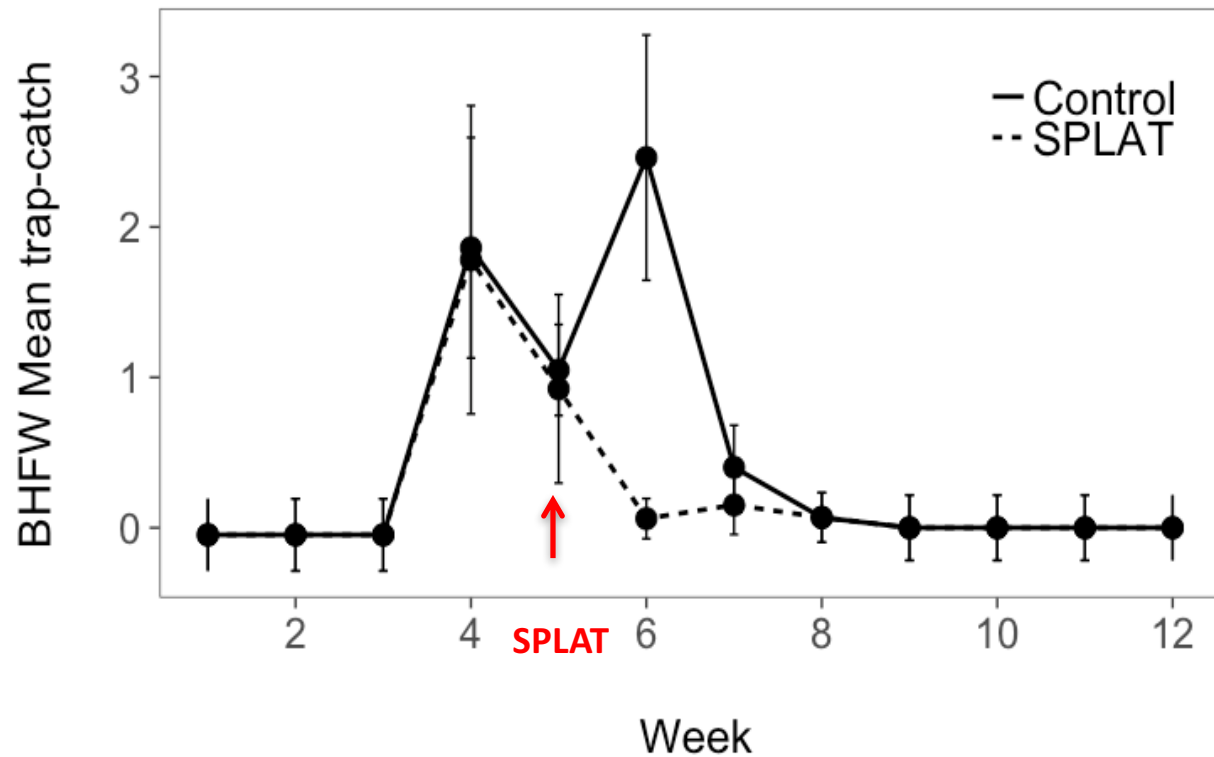
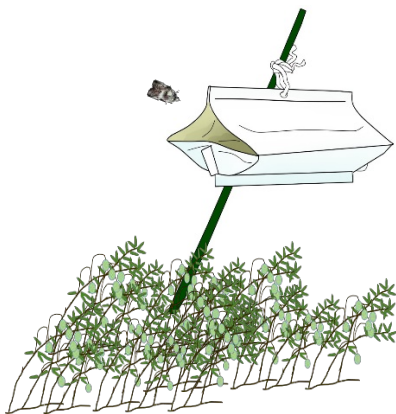


SPARGANOTHIS FRUITWORM TRAPS





BLACKHEADED FIREWORM TRAPS





KEY CHALLENGES

- Timing of application – needs to be before moth flight begins
- Consistency of product – thicker product strains applicators and changes application rate
- Possible ideas – encapsulation



ACKNOWLEDGEMENTS

Grower Collaborators

Habelman Brothers
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Cutler Cranberry



Luck Lab

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Calvin Winkel
Morgan Adkins
Tabatha Davis



Steffan Lab

Shane Foye
Stephanie Rink



COLLEGE OF
AGRICULTURAL & LIFE SCIENCES
University of Wisconsin-Madison



QUESTIONS



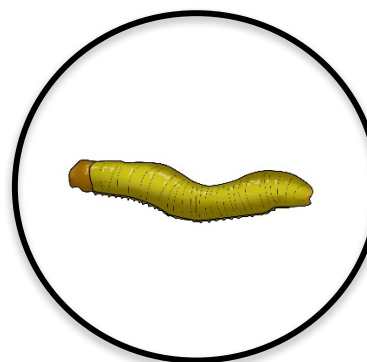
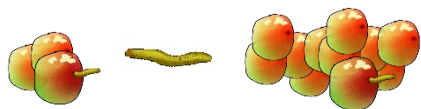


MAJOR PESTS IN WISCONSIN

CRANBERRY FRUITWORM

ACROBASIS VACCINII (PYRALIDAE)

- One generation per year
- Adults fly from June through August
- Single caterpillar may damage 3 to 11 berries



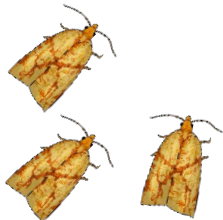
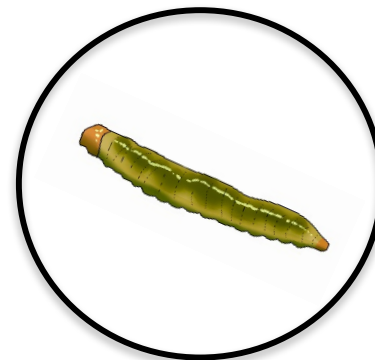
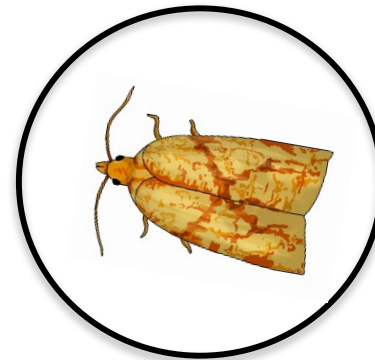


MAJOR PESTS IN WISCONSIN

SPARGANOTHIS FRUITWORM

SPARGANOTHIS SULFUREANA (*TORTRICIDAE*)

- Two generations per year
- Adults fly from June through August
- Caterpillar feeds on foliage, flowers and berries.





MAJOR PESTS IN WISCONSIN

BLACKHEADED FIREWORM

RHOPOBATA NAEVANA (*TORTRICIDAE*)

- Two generations per year
- Adults fly from June through August
- Caterpillar feeds predominantly on new leaves

