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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 Eisner<sup>1</sup>, Elissa Chasen<sup>1,2</sup>, Brian Luck<sup>1</sup> and Shawn Steffan<sup>1,2</sup>

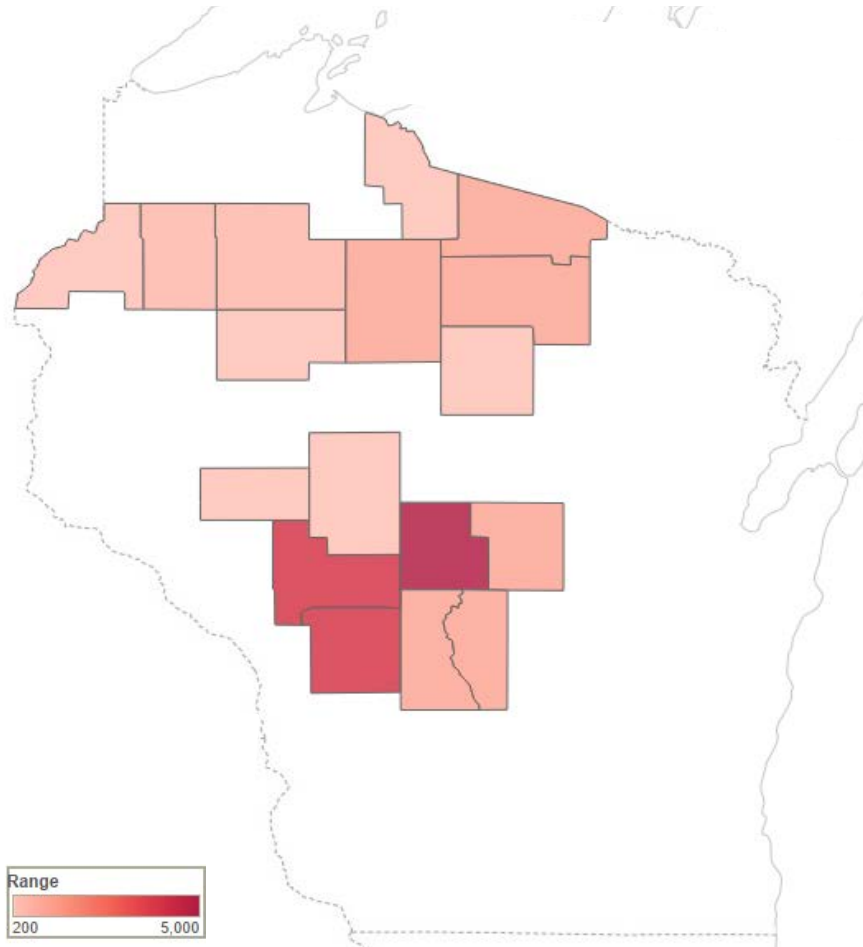
August 30, 2017

<sup>1</sup>University of Wisconsin, Madison, <sup>2</sup>USDA - ARS





# WISCONSIN CRANBERRY PRODUCTION



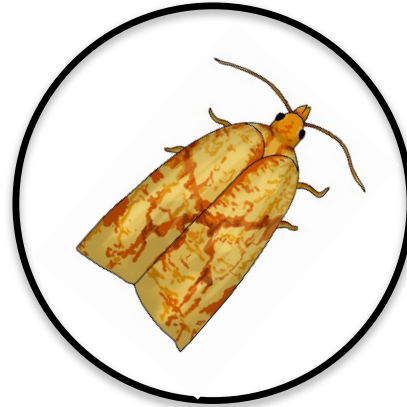
Cranberries are Wisconsin's most important fruit crop in terms of quantity and economic value



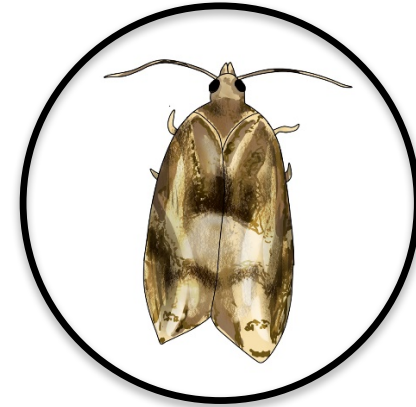
# MAJOR PESTS IN WISCONSIN



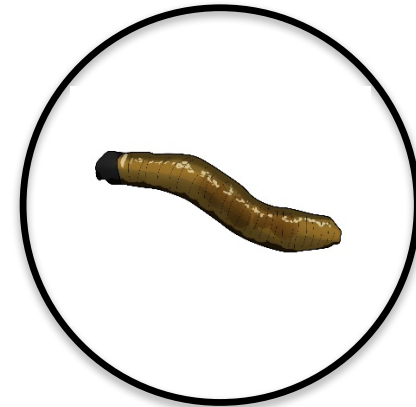
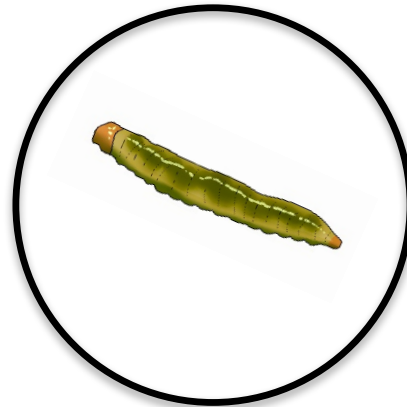
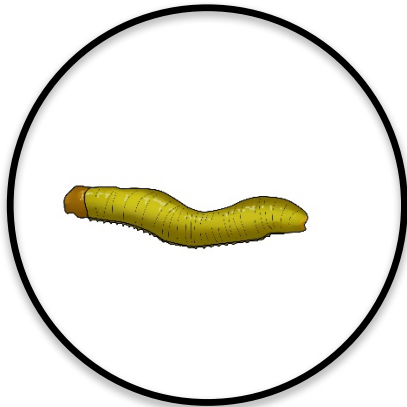
**CRANBERRY FRUITWORM**  
*ACROBASIS VACINII* (PYRALIDAE)



**SPARGANTHIS FRUITWORM**  
*SPARGANTHIS SULFUREANA*  
(*TORTRICIDAE*)

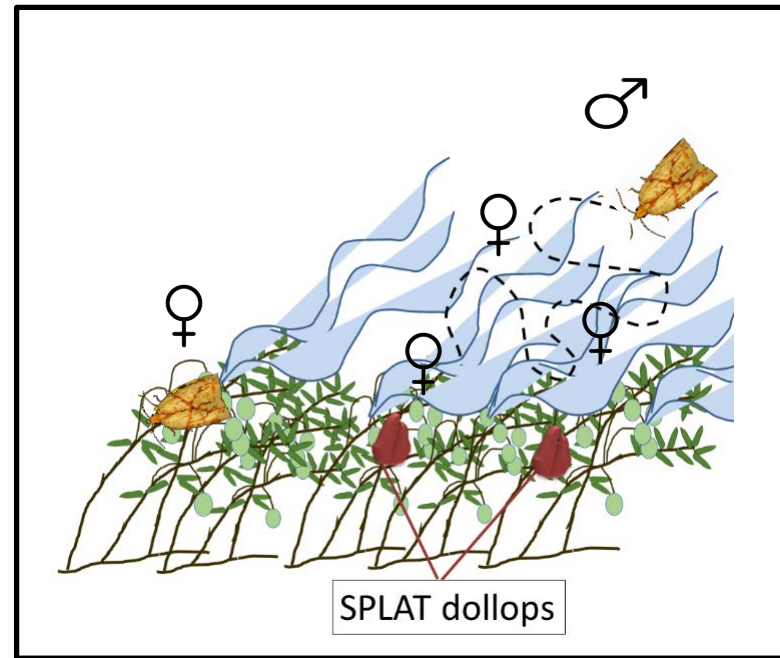
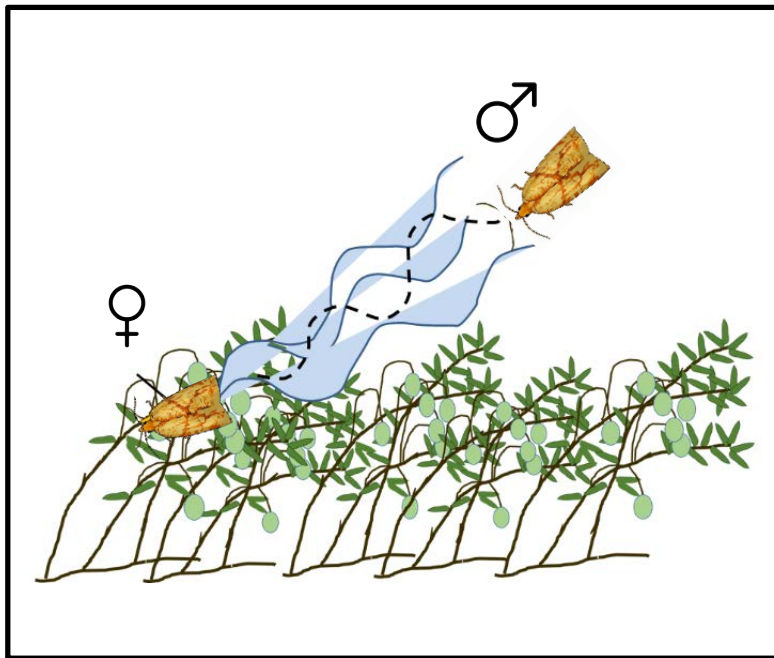


**BLACKHEADED FIREWORM**  
*RHOPOBATA NAEVANA* (*TORTRICIDAE*)





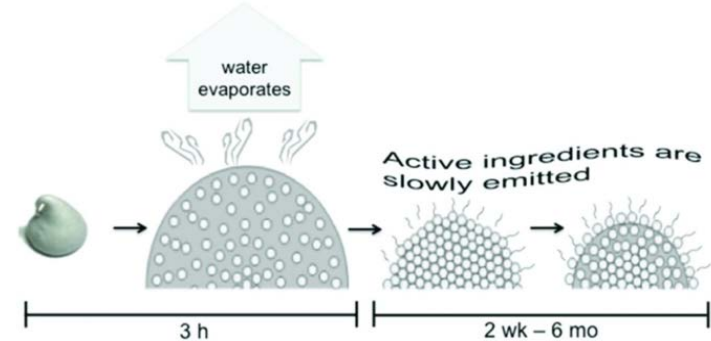
# MATING DISRUPTION





# WHAT IS SPLAT<sup>®</sup>?

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



**ISCA**

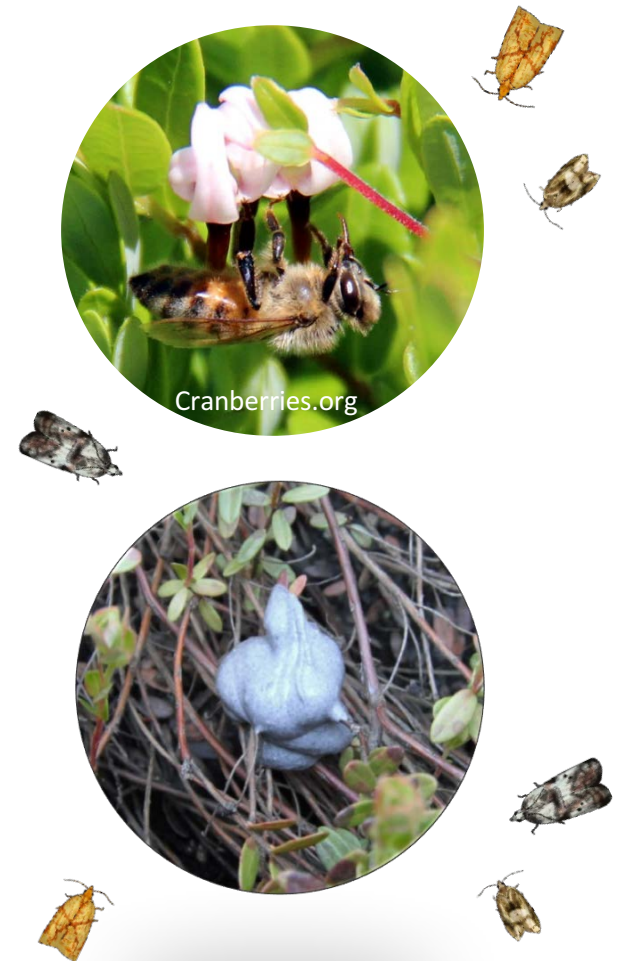
TECHNOLOGIES

Pest Management Tools & Solutions



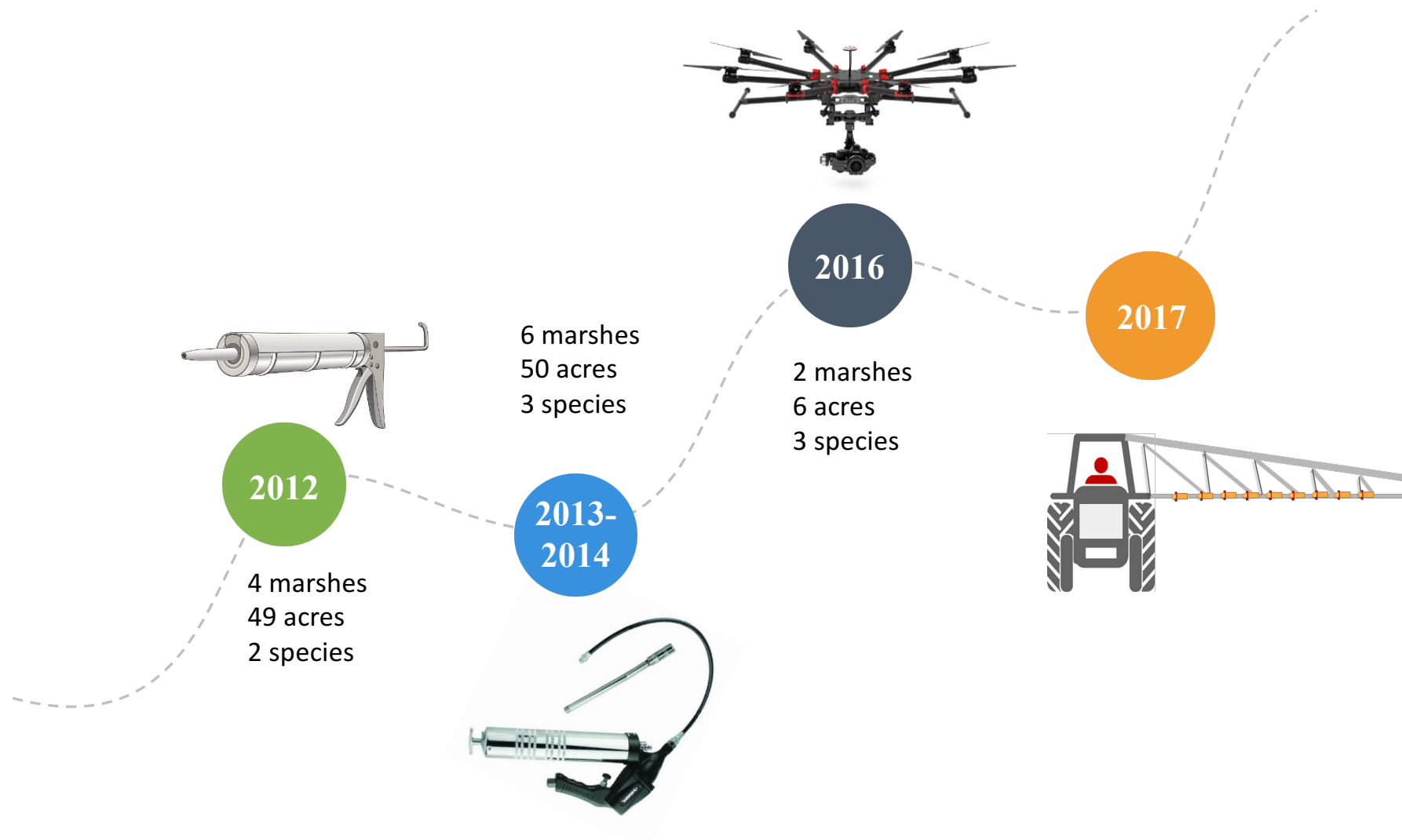
# ADVANTAGES OF SPLAT

- **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





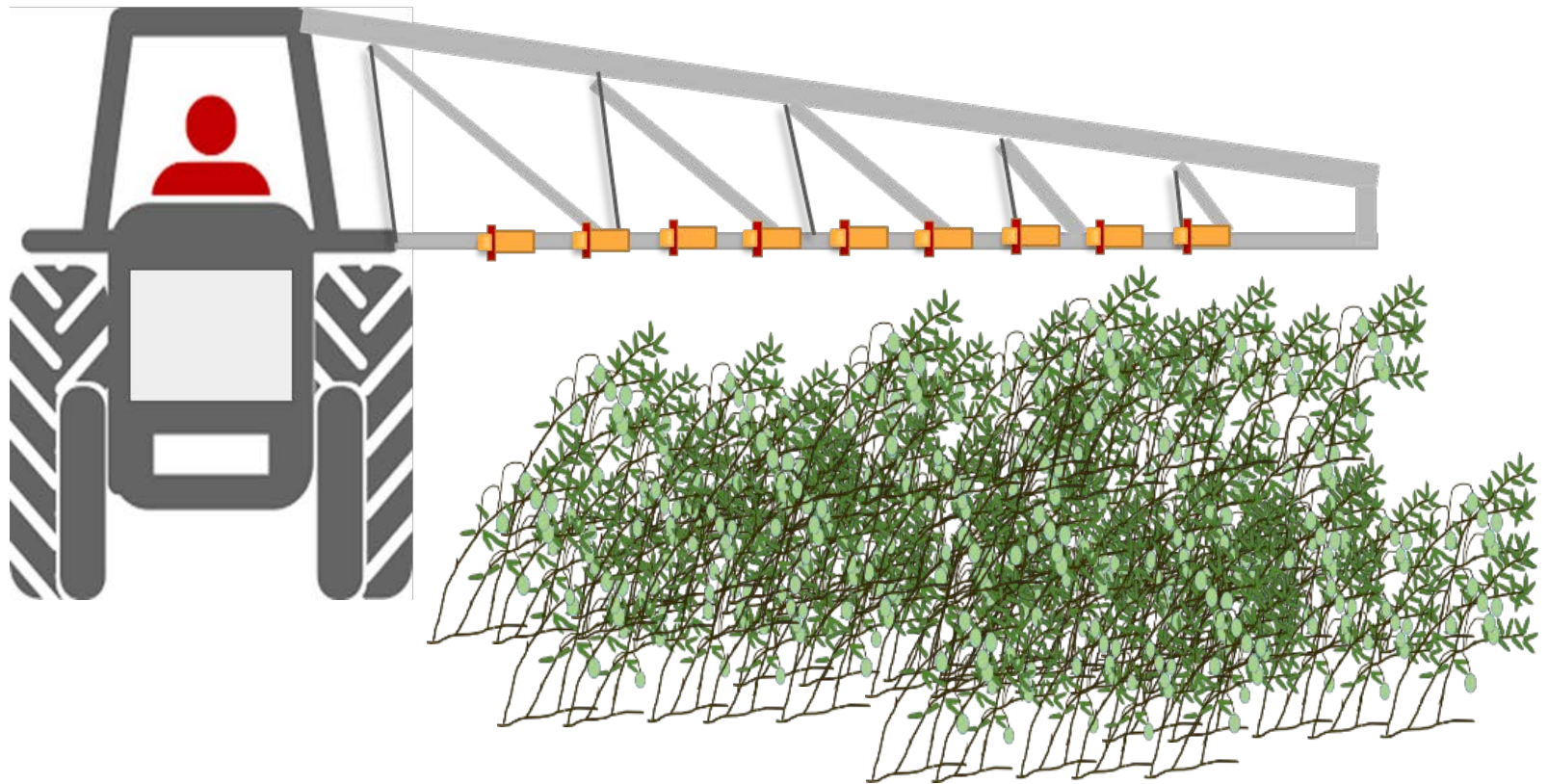
# BACKGROUND







# BOOM SPRAYER MOUNTED APPLICATOR





# MECHANIZATION PROCESS

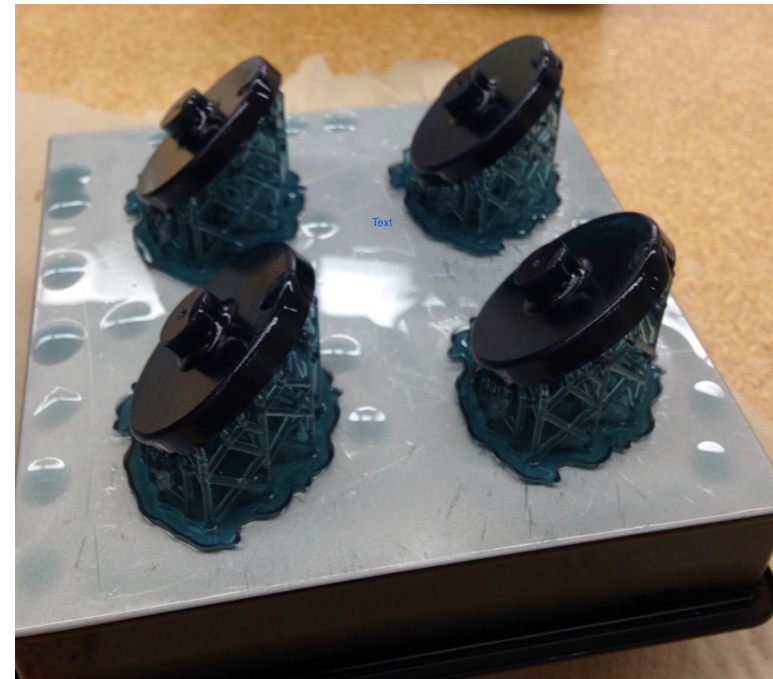


- SPLAT delivered in 750 gram tubes
- Application rate is 1000 grams/acre



# MECHANIZATION PROCESS

## HARDWARE





# MECHANIZATION PROCESS

## HARDWARE





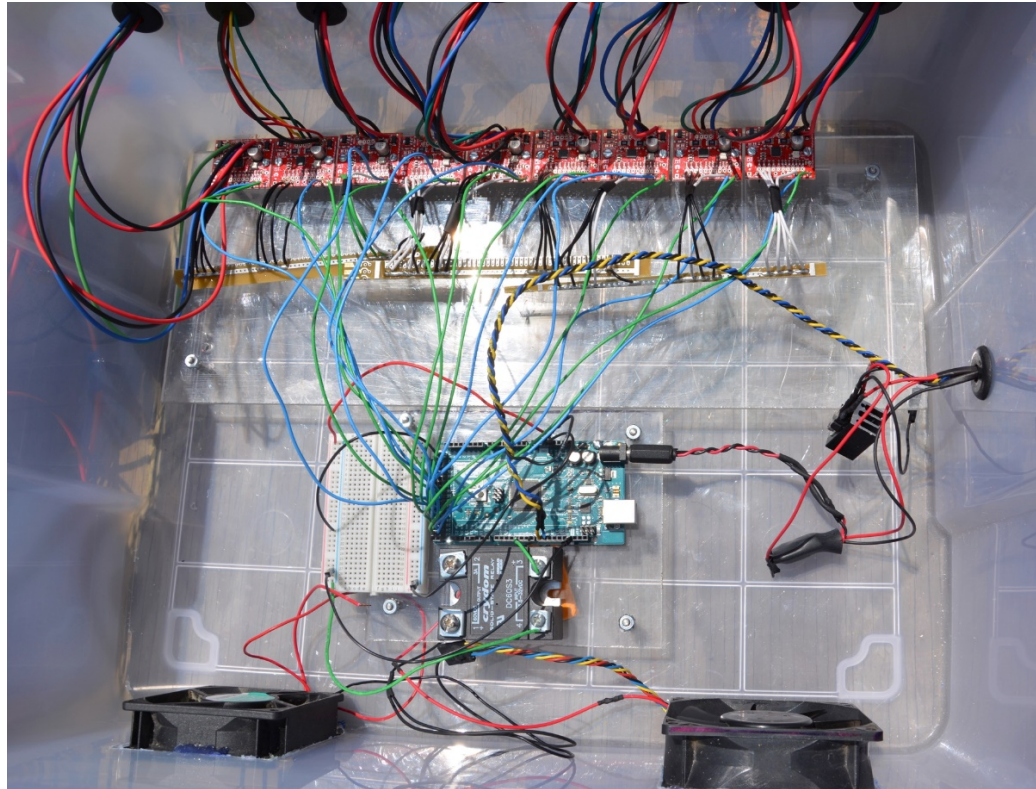
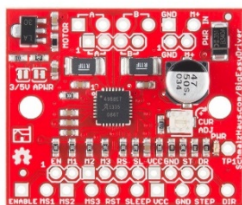
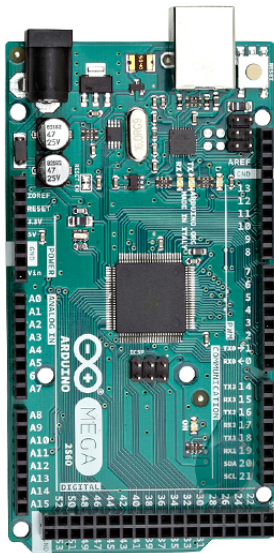
# MECHANIZATION PROCESS





# MECHANIZATION PROCESS

## HARDWARE



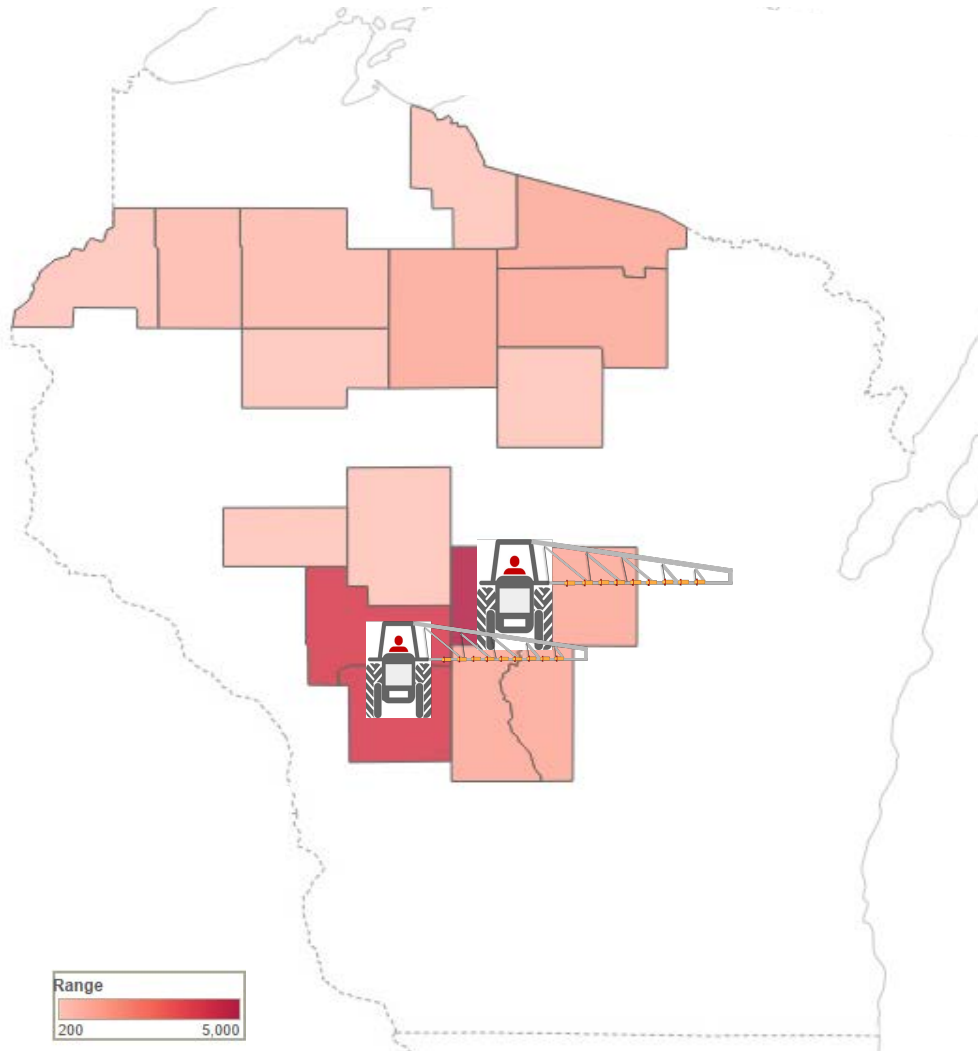



# FROM THE CONTROL DECK





# 2017 SPLAT APPLICATION



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





# MECHANIZATION PROCESS



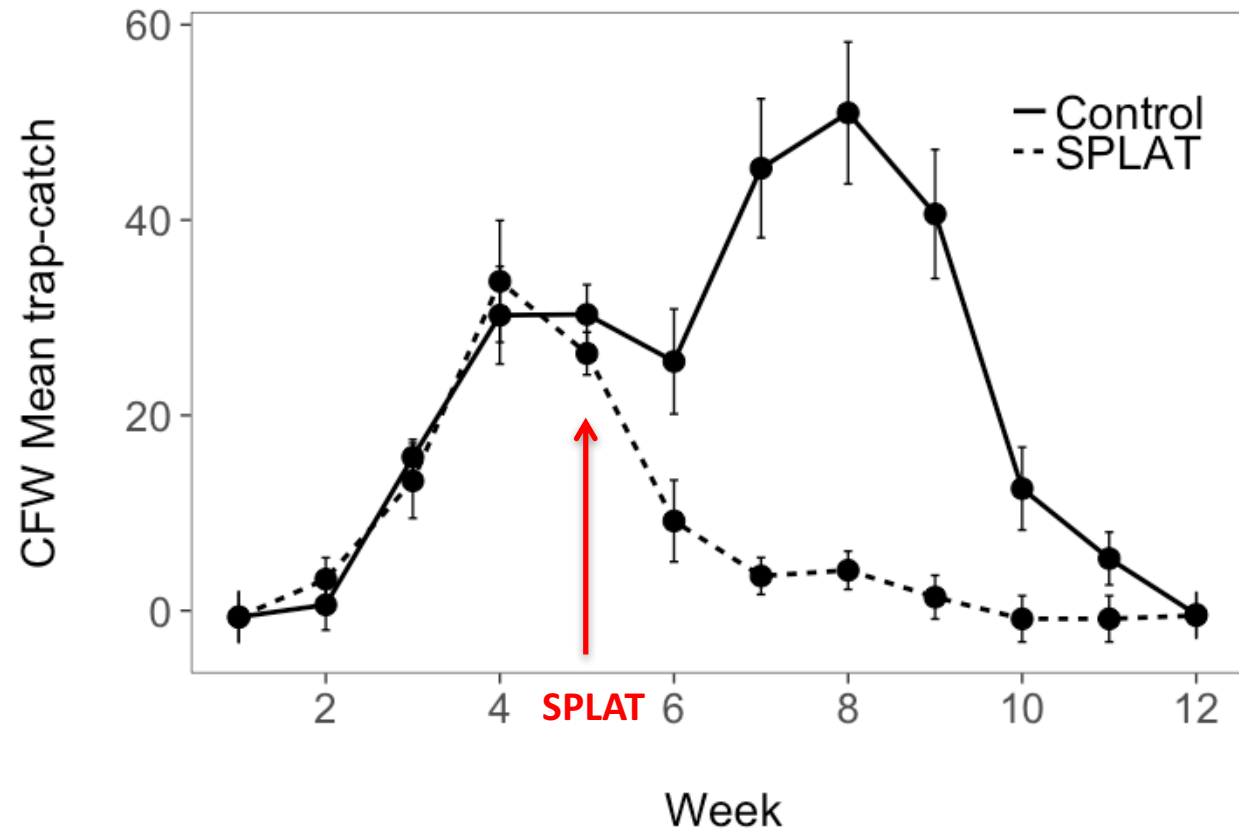
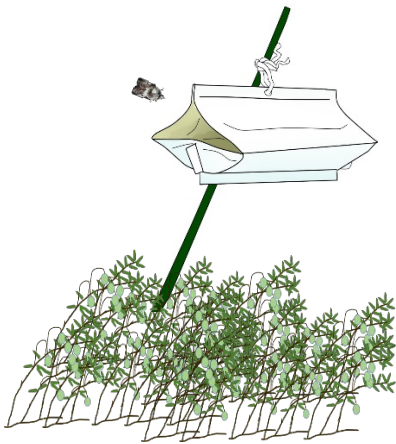


# METRICS OF SUCCESS



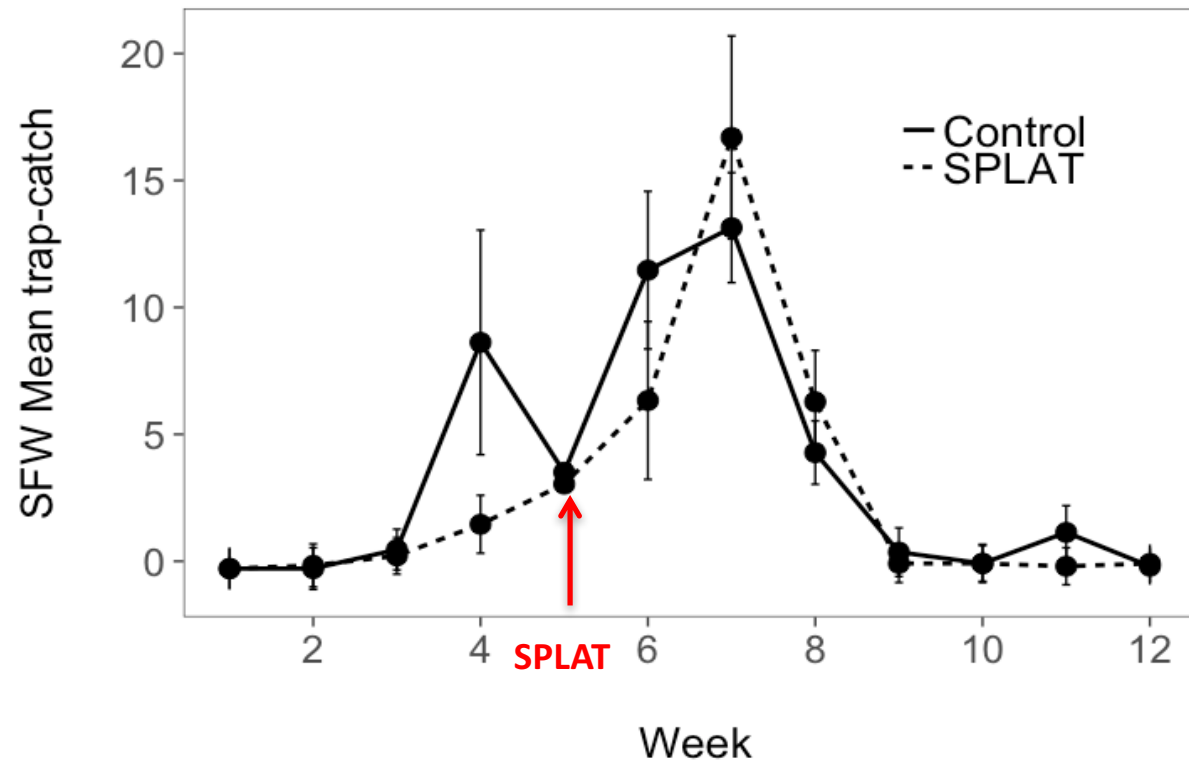
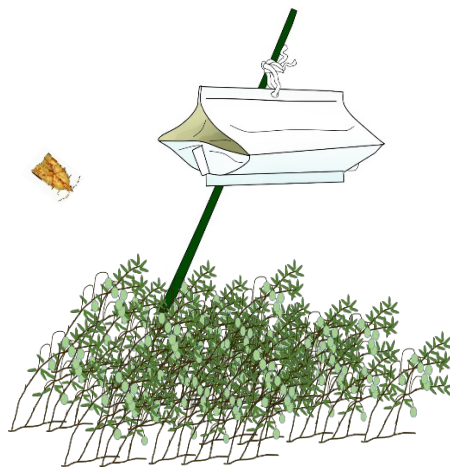


# CRANBERRY FRUITWORM TRAPS



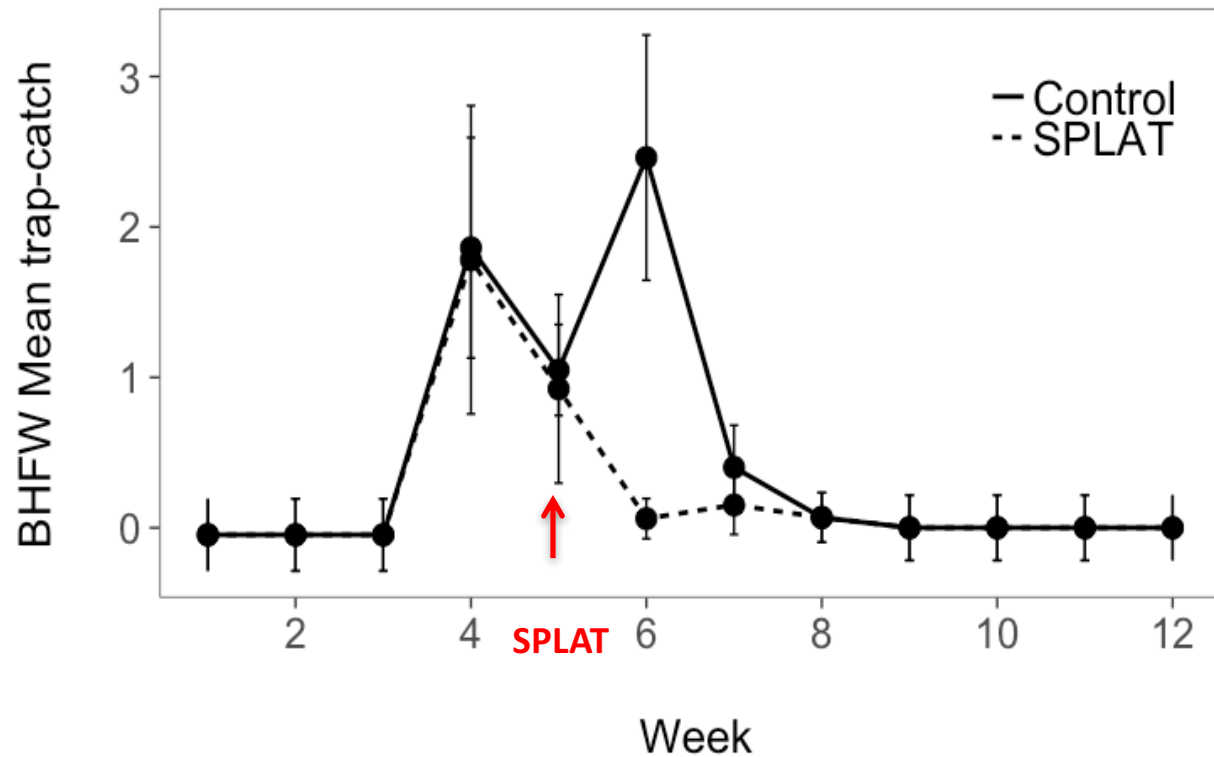
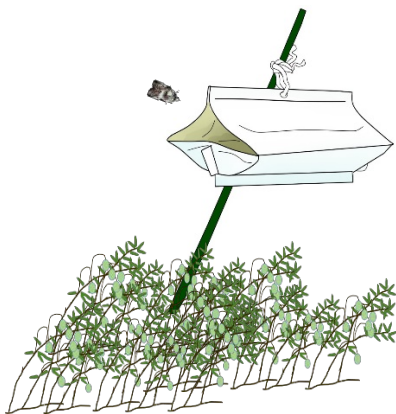


# SPARGANOTHIS FRUITWORM TRAPS





# 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  
Elm Lake  
Bennett  
Cutler Cranberry



## **Luck Lab**

Parker Williams  
Calvin Winkel  
Morgan Adkins  
Tabatha Davis



## **Steffan Lab**

Shane Foye  
Stephanie Rink



COLLEGE OF  
**AGRICULTURAL & LIFE SCIENCES**  
University of Wisconsin-Madison



# QUESTIONS





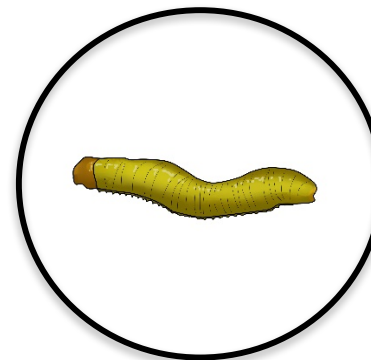


# MAJOR PESTS IN WISCONSIN

## CRANBERRY FRUITWORM

*ACROBASIS VACCINII* (PYRALIDAE)

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



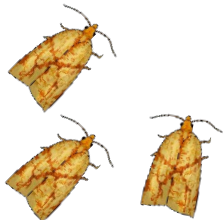
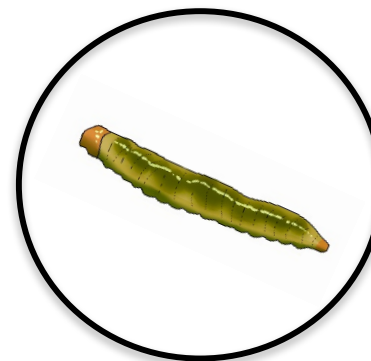
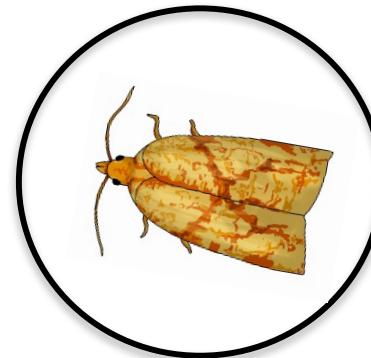


# MAJOR PESTS IN WISCONSIN

## 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

