

# Thrips Control: Revisiting the Old and Embracing the New

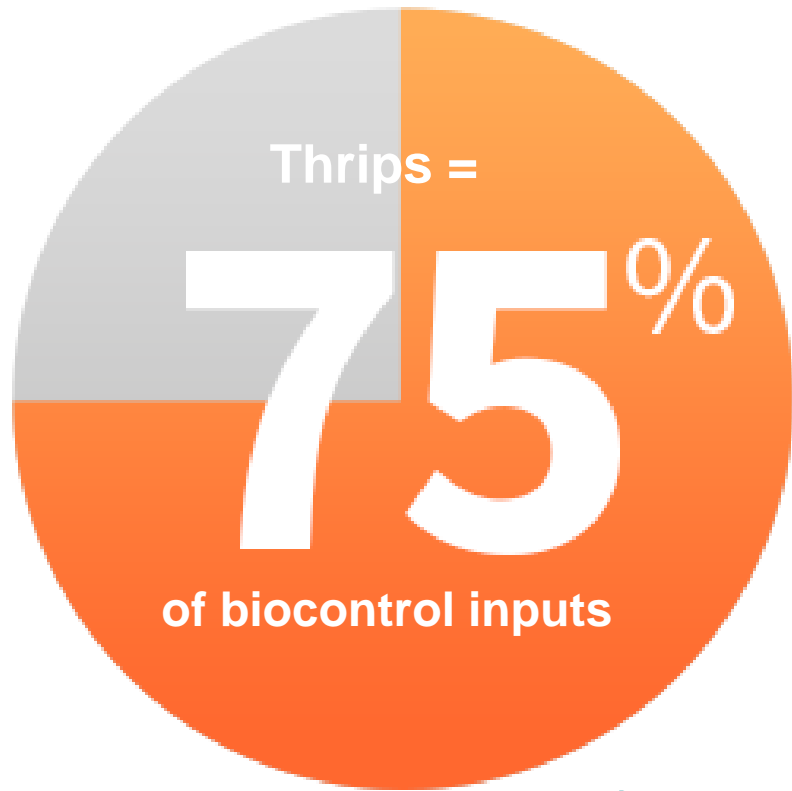


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# Thrips Control Then and Now

- Most growers in Canada relying entirely on biological control

1990s: “Kitchen Sink”



2018: “Boiled Down”



# Thrips Control Then and Now

- Most growers in Canada relying entirely on biological control

## 1990s: “Kitchen Sink”

- **Mass trapping**

- Hypoaspis miles
- Hypoaspis aculeifer
- Swirski
- Cucumeris
- Atheta
- Beauveria
- Met 52 in the soil
- Nematodes
- Orius
- Exclusion screen

## 2018: “Boiled Down”



Mite Broadcasts



Mite sachets

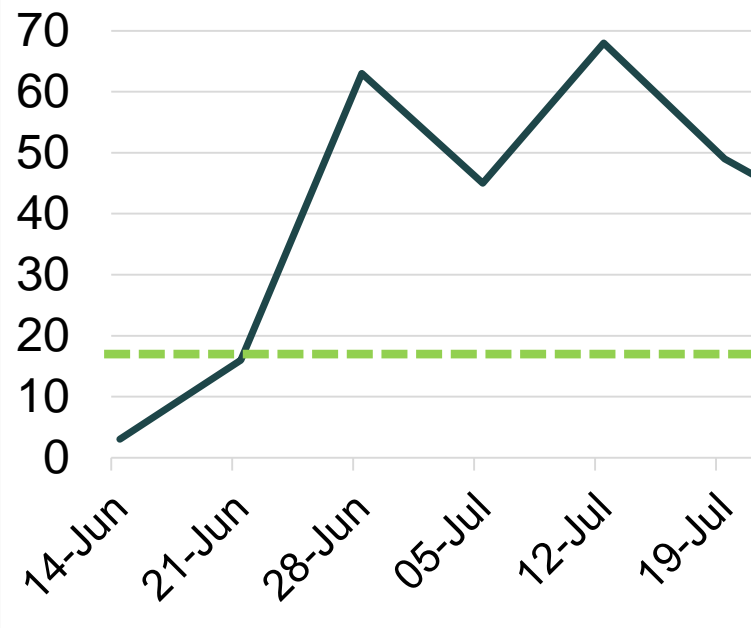


*Beauveria*

# Case Study

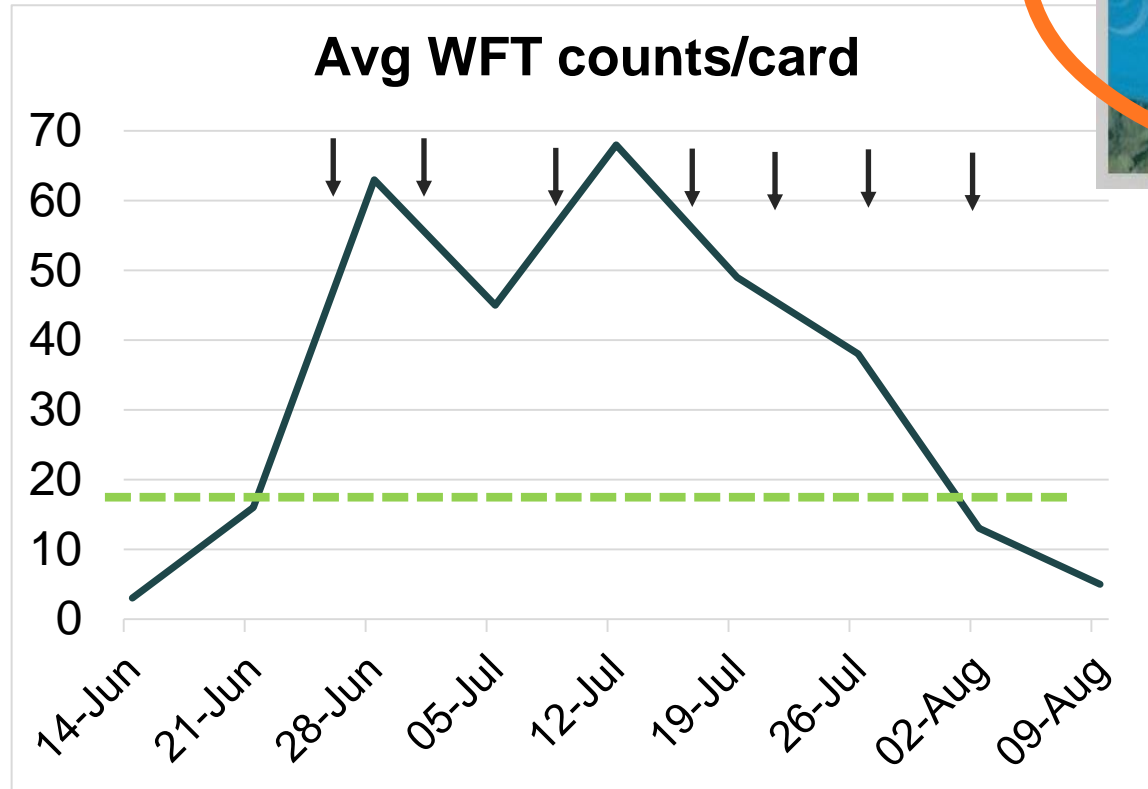
- 2016: hot, extremely dry summer → Major **WFT FLY IN**
- Mite-based bio program overwhelmed

Avg WFT counts/card throughout farm



# Case Study

- 2016: hot, extremely dry summer → Major WFT FLY IN
- Shifted to **TAPE** and **Orius**



# Current Thinking: Mass trapping

## Colours

- Catch thrips and **other pests**
- BUT trap **TOO MANY natural enemies**

- Catch even **MORE thrips**
- Catch **fewer** natural enemies

- Adding patterns to blues could catch **even more** thrips

## Kinds

### Cards:

- Easier to put up
- **Too expensive**
- Need to be **put in crop**

### Tape:

- Cheap but **too messy**

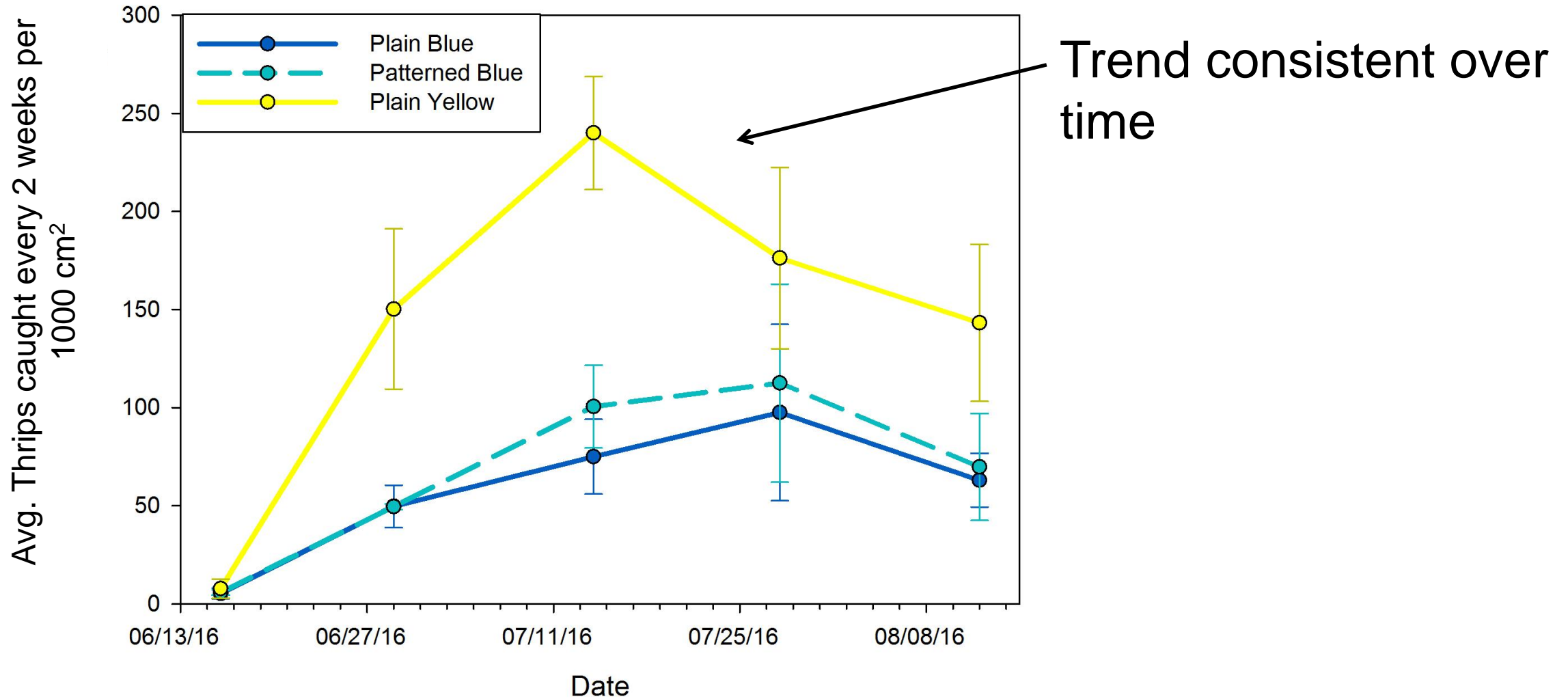
# 2016 OMAFRA Trials: PATTERNED Tape



- **Treatments:** plain yellow, plain blue, patterned yellow, patterned blue (+ backs of patterns)
- Set up on post rows counted thrips **every 2 wks over summer**
- Trial replicated in **3 commercial** chrysanthemum operations (4 potted, 1 cut)

# 2016 OMAFRA Trials: PATTERNED Tape

Q: Does this trend hold up across other trap types?



# 2017 OMAFRA Trials: Yellow vs Blue

- Trials set up in 2 commercial pot mum GHs; 4 week trials



## Questions to Answer

- Q1 : Which yellow mass traps are best for thrips, **cards or tape**?
- Q2: Are **blue traps better** than yellow traps?
- Q3? Does **placement** of the cards matter?
- Q4? Does mass trapping affect **natural enemies**?

# Q1: YELLOW vs. YELLOWS

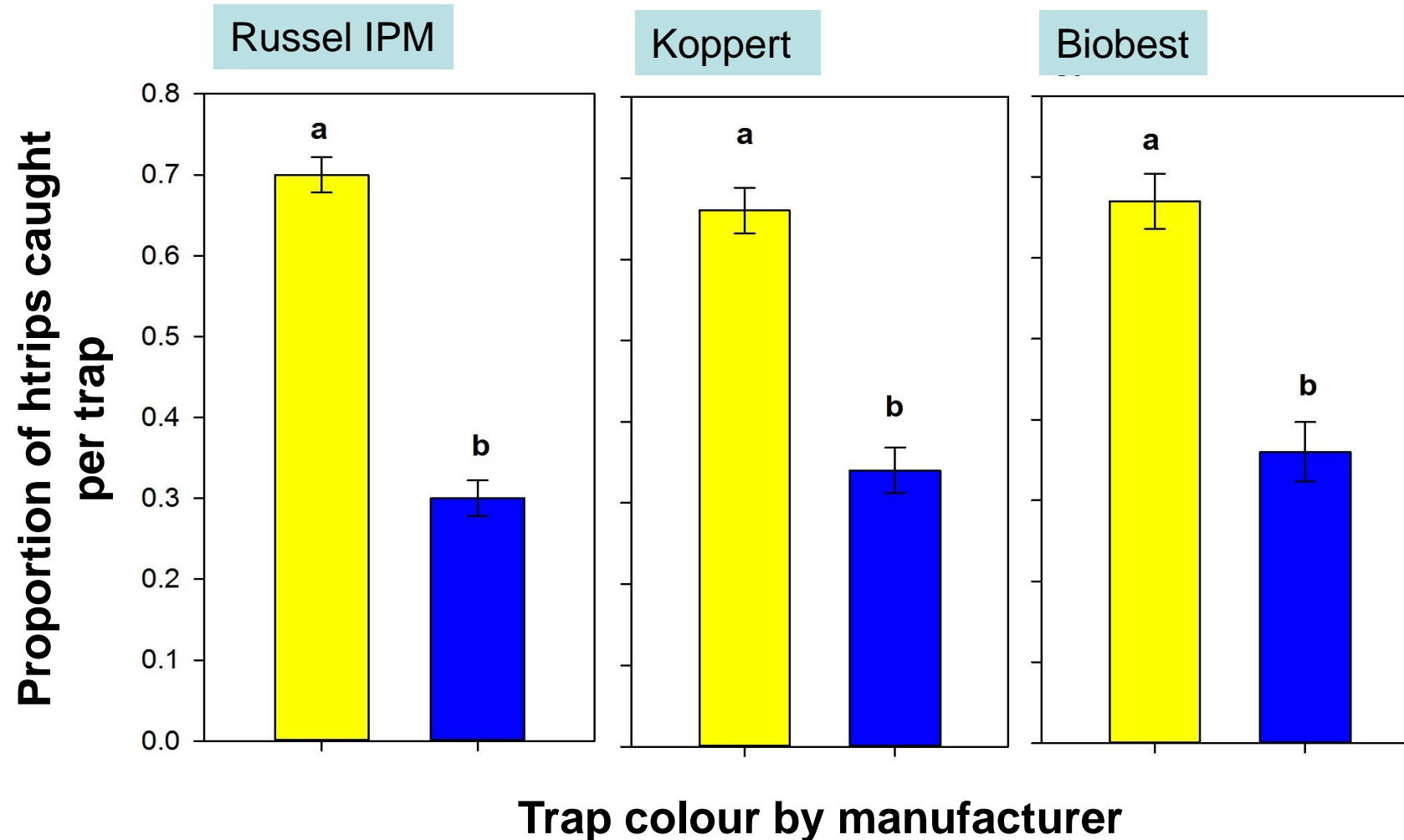


## Q2: YELLOWS vs BLUES

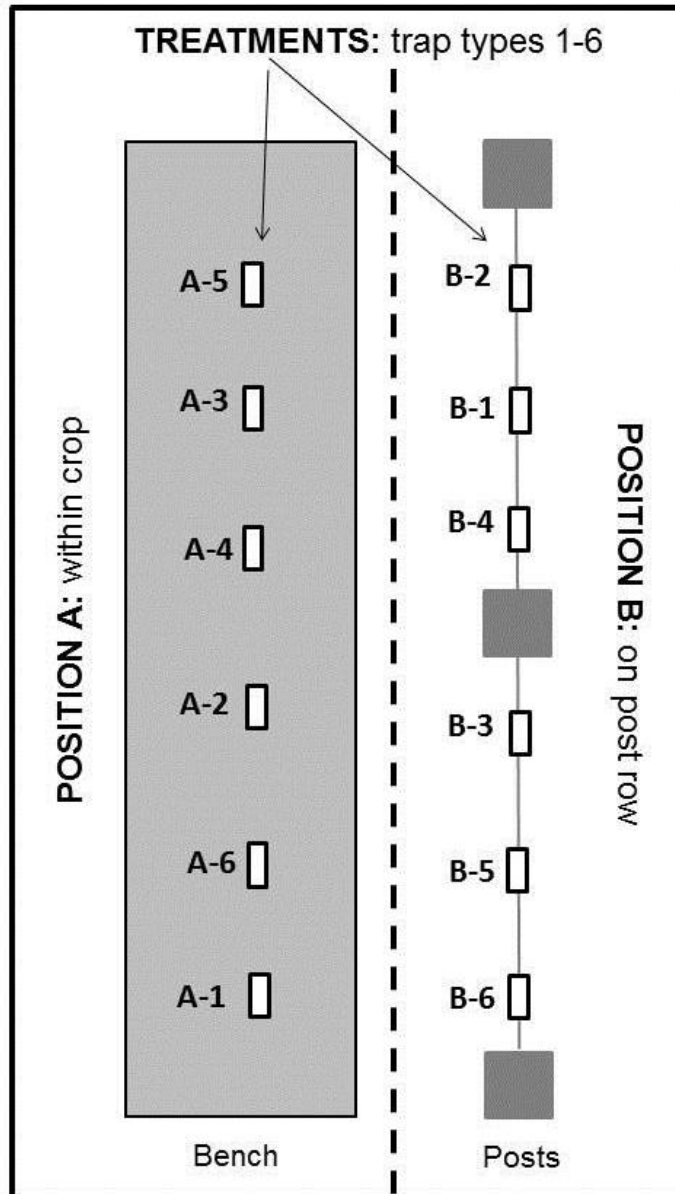


## Q2: THE FINAL VERDICT

- In **NO** tests was **blue ever best** when it came to capturing thrips
- When we compared Y vs B within each company, **YELLOW ALWAYS WON**



# Q3: Placement

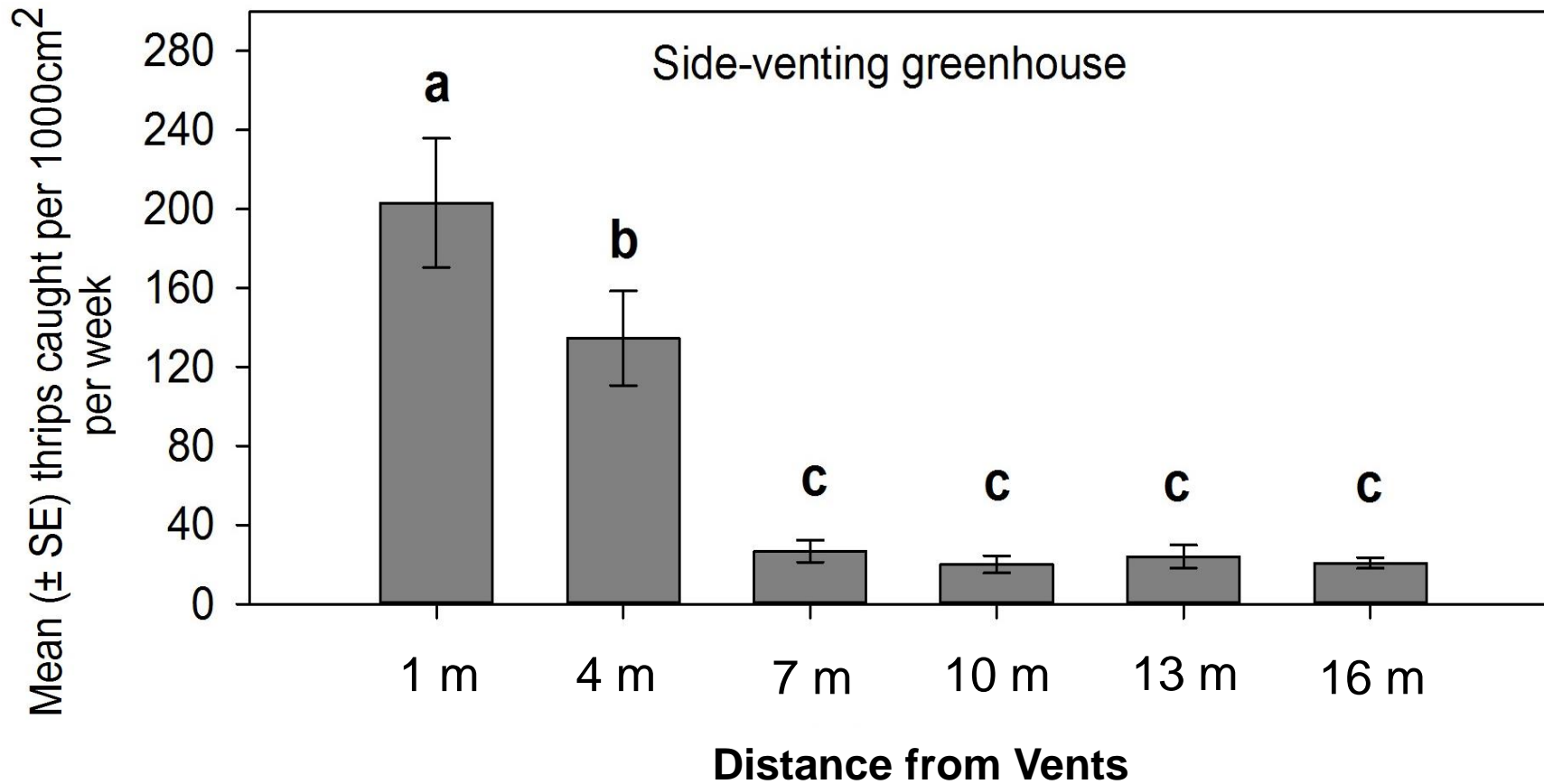


- **NO difference** in any trials when cards set up in crop vs. post rows



# Q3: Placement

- BUT: Top Venting vs Side Venting plays a HUGE role!**

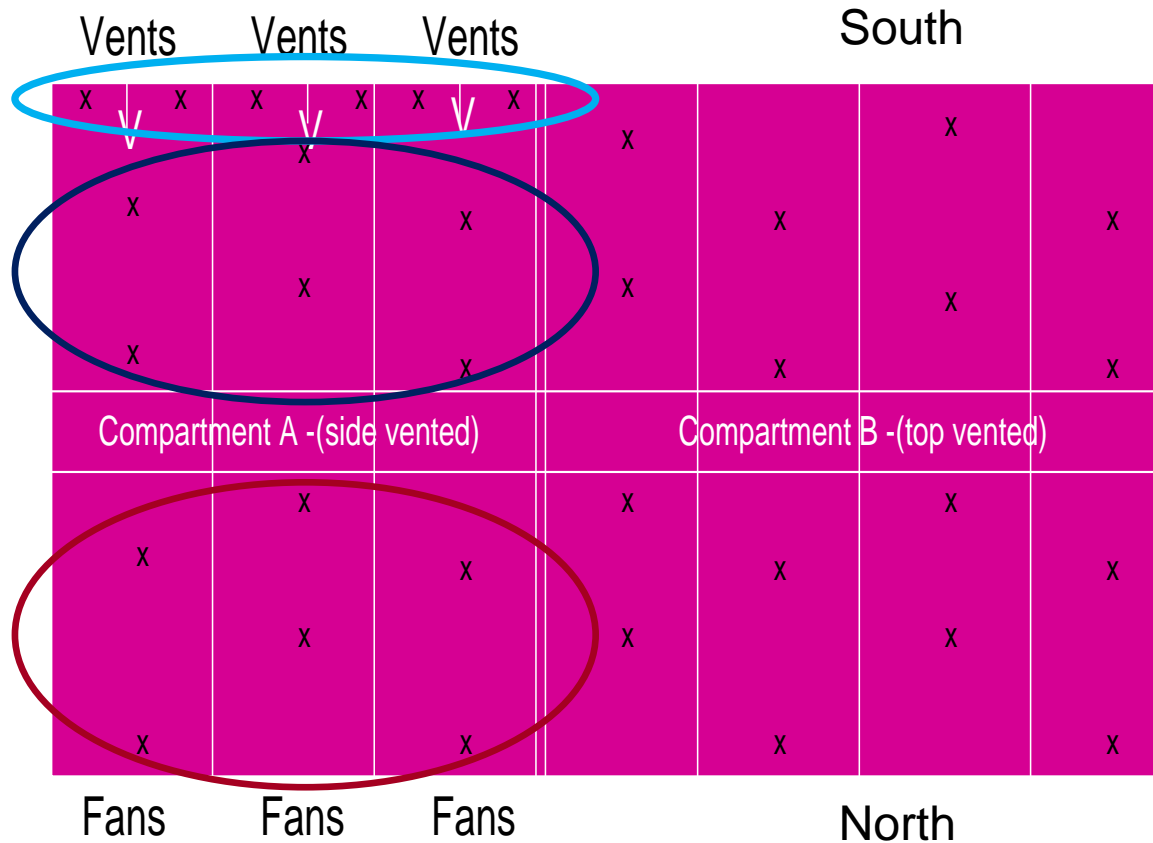


**ONLY distance from the vent was significant! NOT colour**

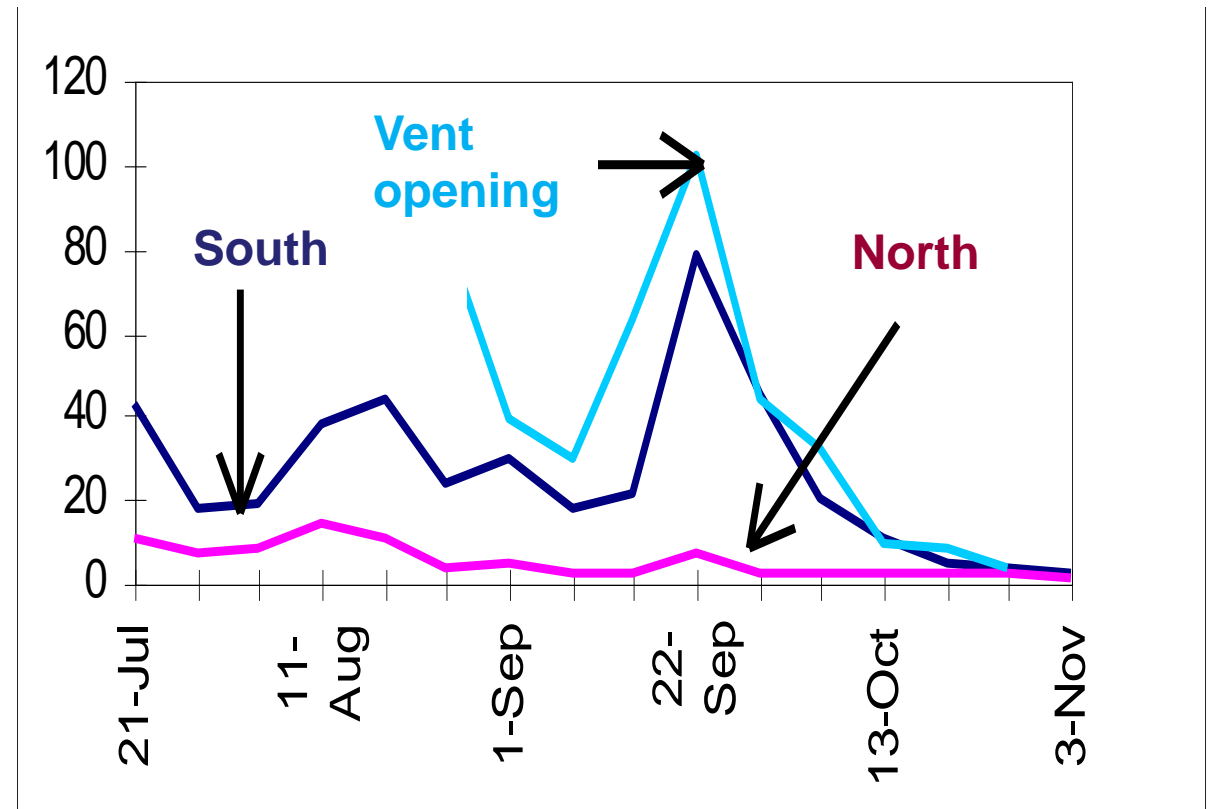
# Q3: Placement

- Similar data from Rose Greenhouse in 1990's: little efficacy past midpoint

Layout of a Rose Greenhouse



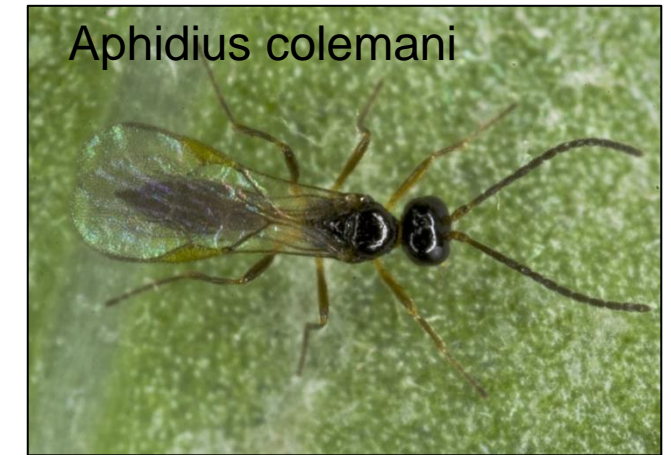
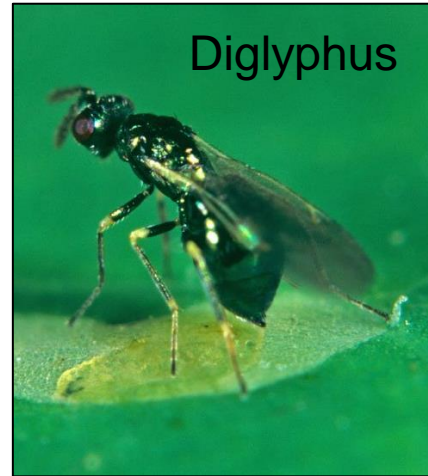
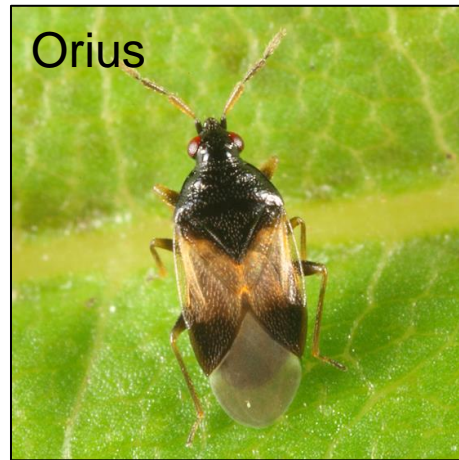
Avg. sticky card counts, side vented compartment



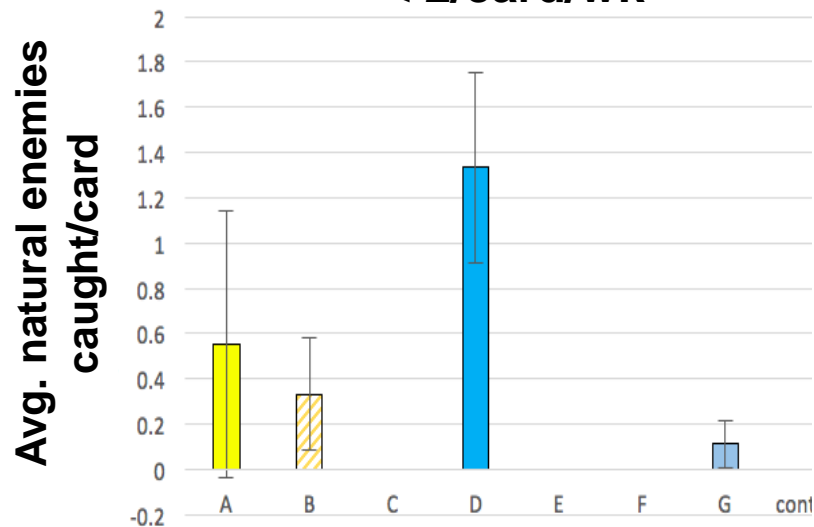
Data courtesy Graeme Murphy, formerly OMAFRA

# Q4: Effects on Natural Enemies

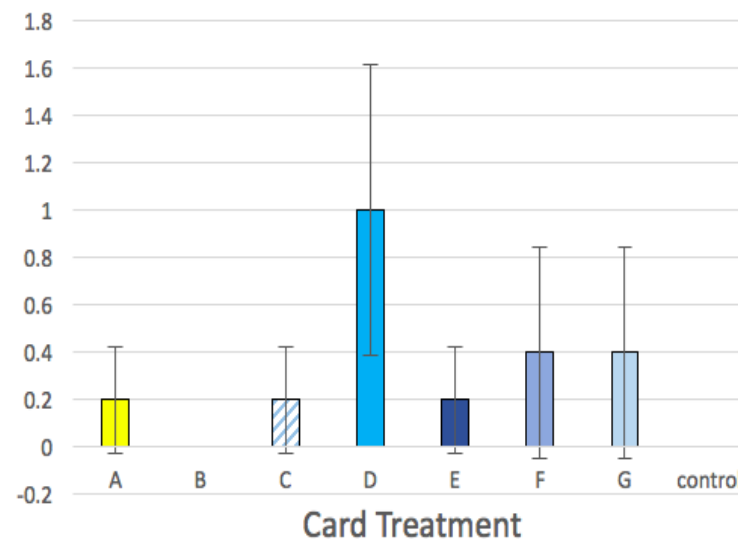
- Released rate: **500 per 10,000 sq ft (1/m<sup>2</sup>)** + *Aphidius colemani* banker plants



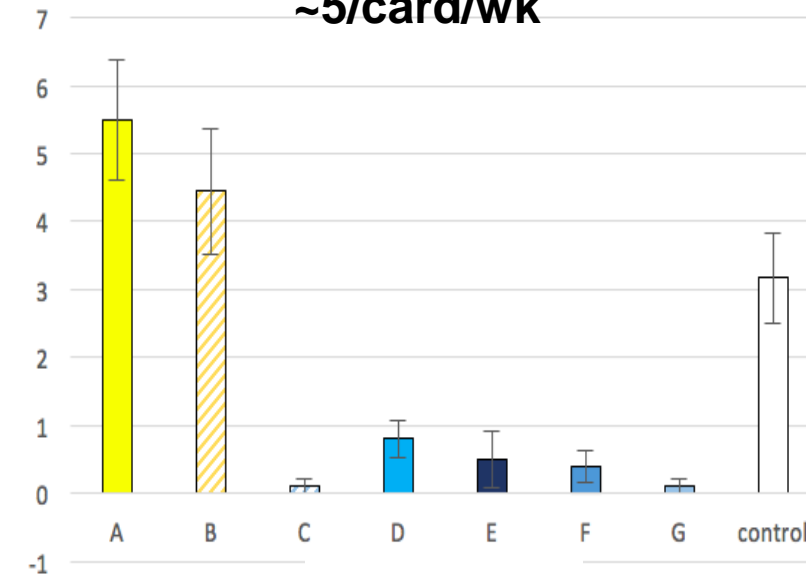
< 2/card/wk



< 1/card/wk



~5/card/wk



# Mass Trapping Myths Busted!

## Colours

- Yellow catches **1.6-3.6X more thrips** than any available blue
- **Minimal effects on NEs** tested
- Effective **control for other pests** like fungus gnats, shoreflies

- Catch **FEWER thrips** regardless of manufacturer
- Catch fewer Aphidius but more Orius & Diglyphus
- **ARE NOT effective for other pests** besides thrips

## Patterns

- Patterned blues **NOT EFFECTIVE** for thrips in Ontario GHs

- **Patterned yellows:**  
  
- **REDUCE thrips catches**

## Kinds

### Cards:

- Catches **3.5X more thrips** than tape

### Tape:

- Cheap but **less effective**

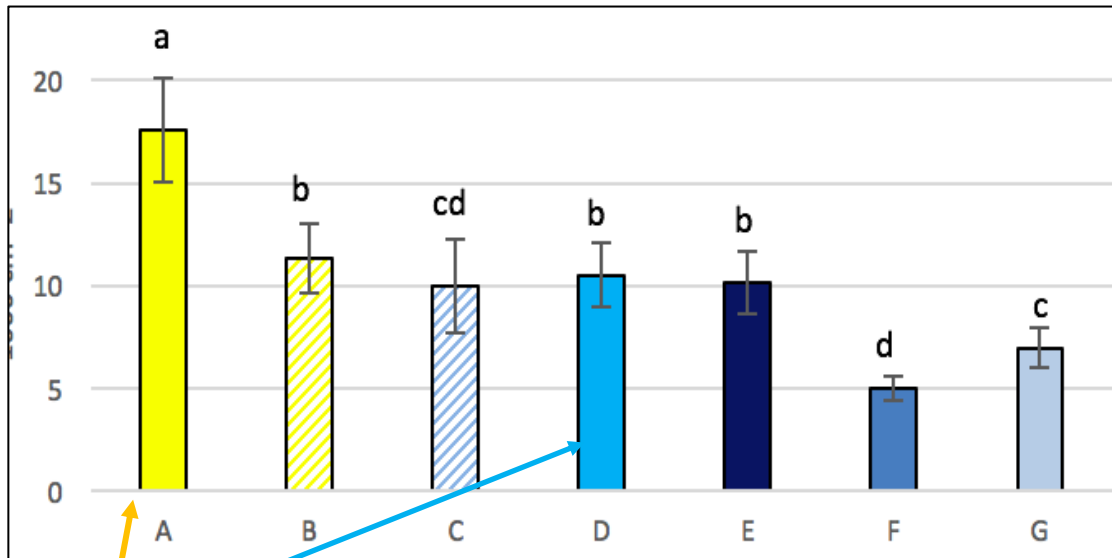
## Placement:

- Top Venting – Place cards on post rows
- Side Venting – Place cards near vents (colour less important!)

# How Much Does this REALLY matter?

- Over crop cycle, **card differences add up** for thrips control:
- Can make an especially big difference in **years with high pressure**

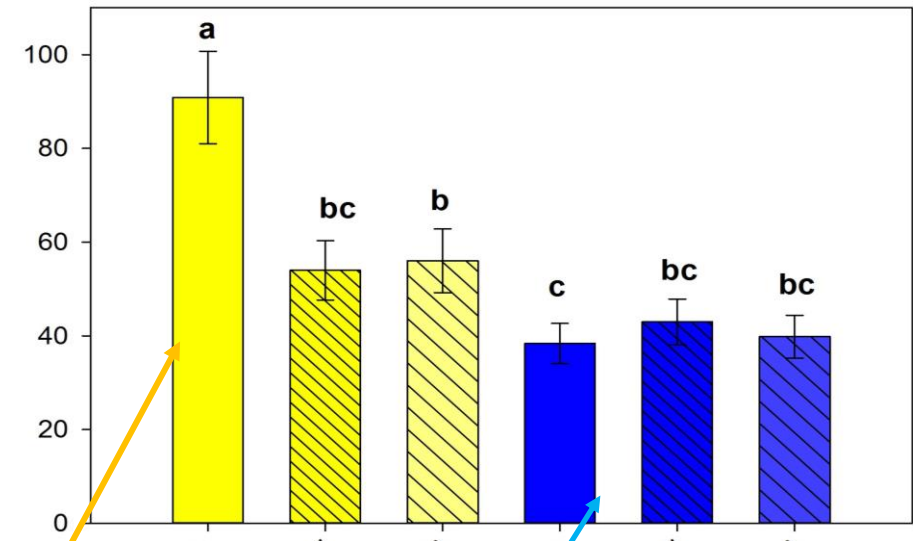
**2017: “Low” WFT Year:** max. 20 thrips/card/wk



~ 75,000 thrips removed / crop cycle /  
10,000 sq ft compartment

~ 125,000 thrips removed / crop cycle

**2016: “High” WFT Year:** max. 90 thrips/card/wk



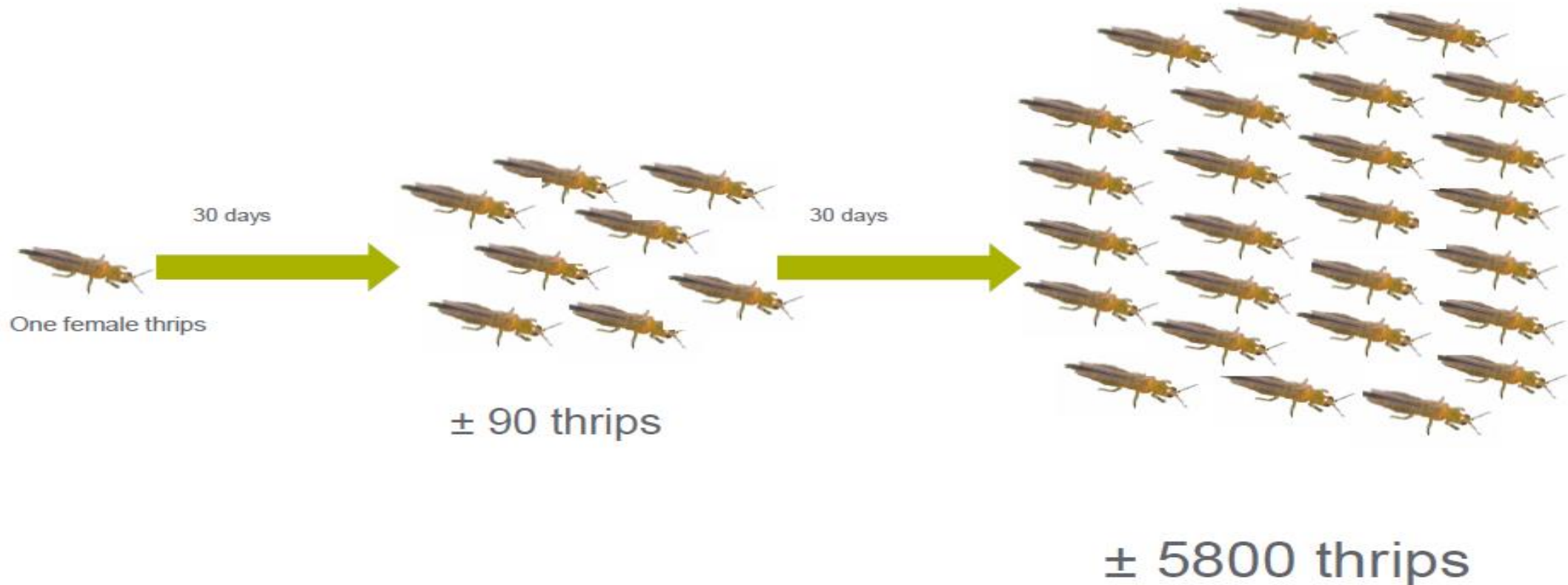
~ 275,000 thrips removed / crop cycle

~ 625,000 thrips removed / crop cycle

# How Much Does this REALLY matter?

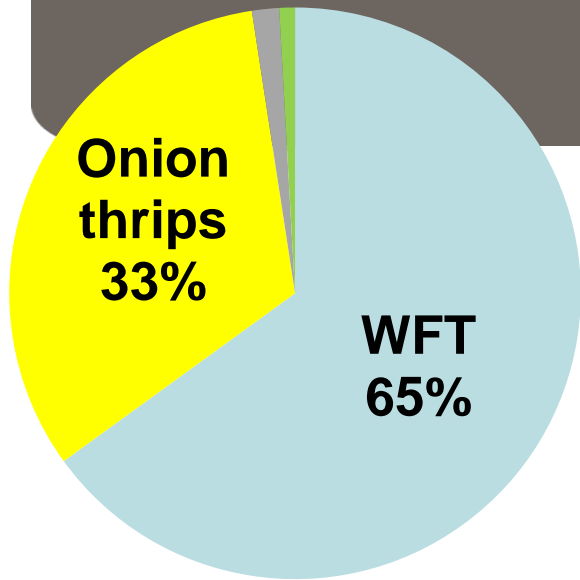
## **BUT Mass trapping will never be all you need:**

- Proven to INTERCEPT migrating thrips, but not pull them off the crop
- populations grow rapidly
- Even 1 female that escapes trapping will be trouble



Graphic courtesy of Ronald Valentin, BioLine

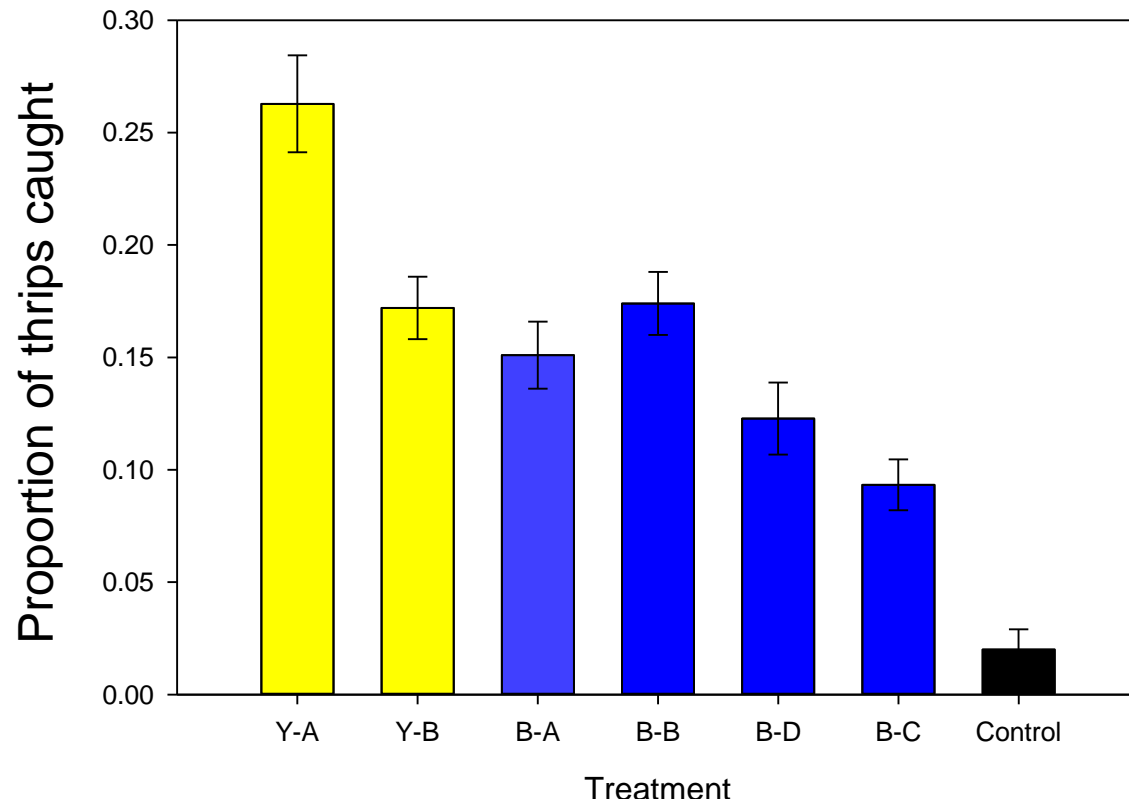
# Where we Go From Here



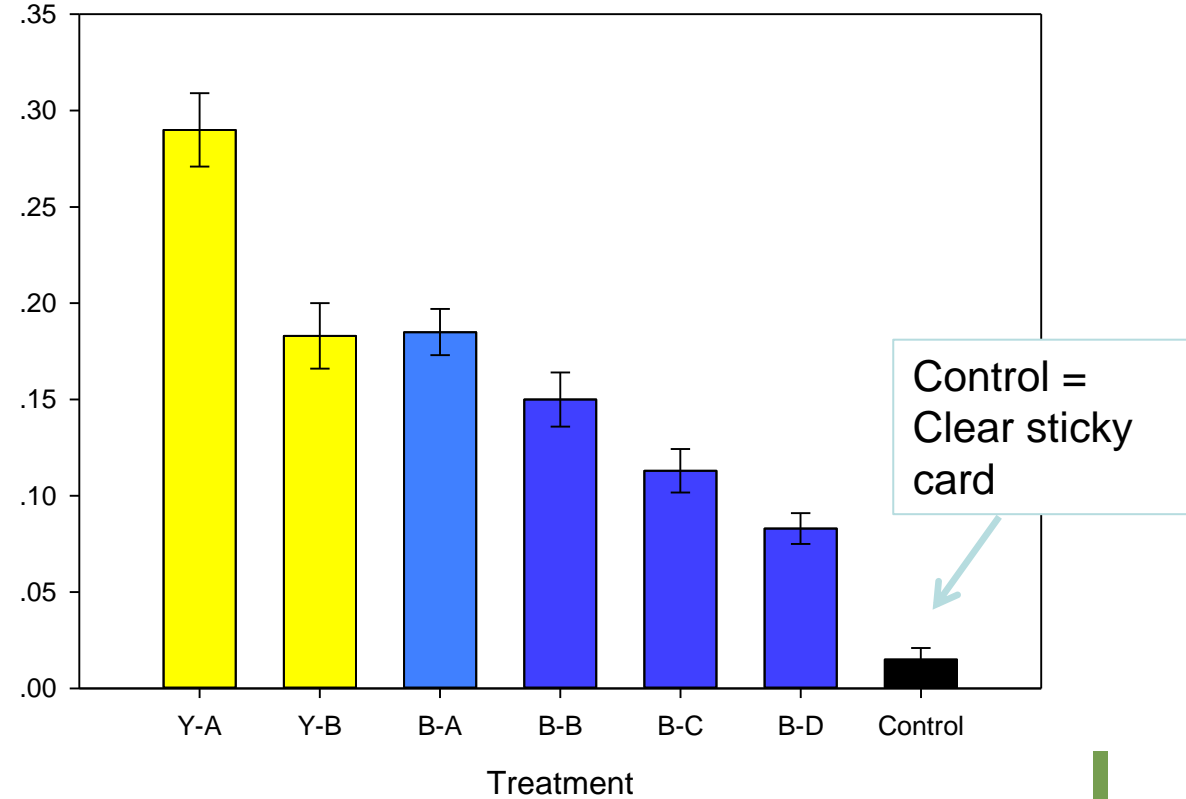
## 1. Does Mass Trapping Work for OT?

Results similar in GH's with different species ratios – WHY?

A. 95% Western flower thrips



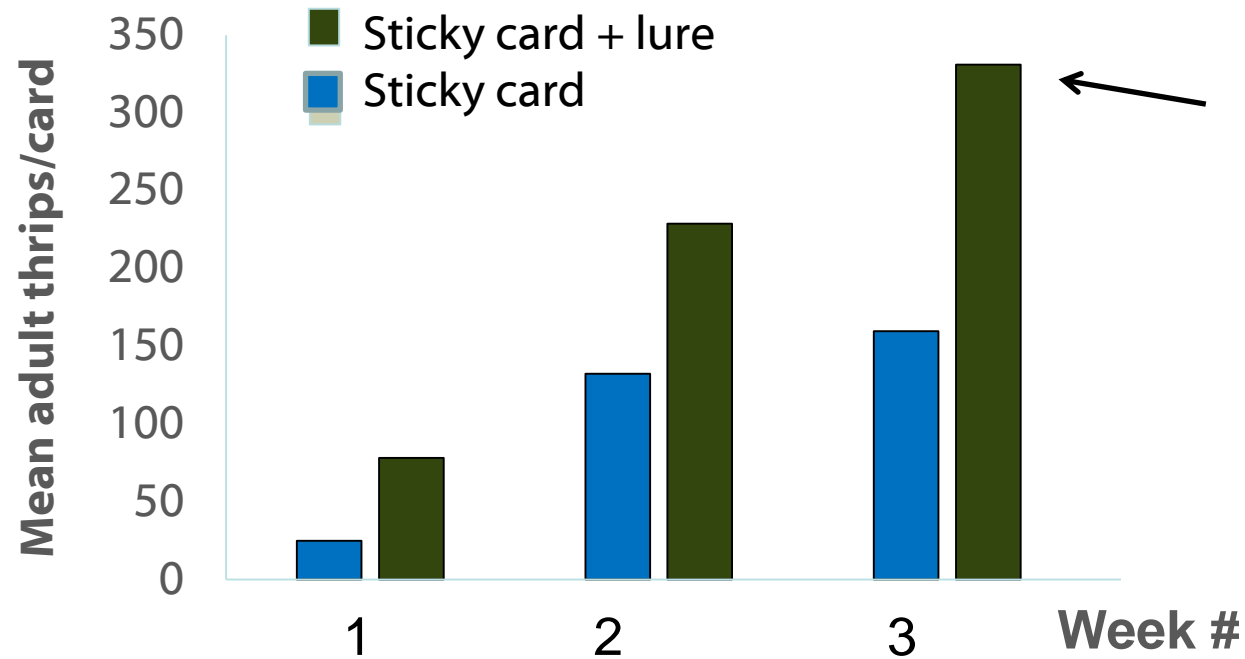
B. 33% Western flower thrips



# Where we Go From Here

## 2. Boosting Trap Efficacy with Other Stimuli

- Floral scents
- Aggregation pheromones
- LED lights



Adding scents boosts performance

- Which thrips are attracted?
- Impregnated tape vs. adding lures to cards?
- Where /how are they best used?
- Costs?

Data courtesy the Buitenhuis Lab, VRIC

# Thanks for listening!



Acknowledgments:

- **Growers** who donated their space for this research
- **Undergraduate students:** Caitlin MacDonald, Mitchell Eicher-Sodo, Lauren Vanderlingen, Elizabeth Huber-Kidby, Brendan Cullen
- **Borrowed Lab Techs:** Ashley Summerfield (VRIC)
- **Help and Guidance:** Mike Short, Sebastian Jacob