Thrips Control: Revisiting the Old and Embracing the New

Dr. Sarah Jandricic • Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
Most growers in Canada relying entirely on biological control.

1990s: “Kitchen Sink”

2018: “Boiled Down”

- Thrips = 75% of biocontrol inputs
- Mite sachets
- Beauveria
- Nematodes
- Orius
- Exclusion screen
- Met 52 in the soil
- Hypoaspis miles
- Hypoaspis aculeifer
- Swirski
- Cucumeris
- Atheta
- Beuveria
Most growers in Canada relying entirely on biological control

1990s: “Kitchen Sink”
- Mass trapping
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  - Hypoaspis aculeifer
  - Swirski
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  - Met 52 in the soil
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2018: “Boiled Down”
- Mite sachets
- Beauveria
- Mite Broadcasts

Exclusion screen
Case Study

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

**Graph:**

Avg WFT counts/card throughout farm

- Y-axis: Avg WFT counts/card

- Line graph showing a significant increase in WFT counts from 14-Jun to 21-Jun, followed by fluctuations until 19-Jul.

**Image:**

A plant showing symptoms of WFT damage.
Case Study

- 2016: hot, extremely dry summer $\rightarrow$ 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 **4 commercial** chrysanthemum operations (3 potted, 1 cut)
Q: Does this trend hold up across other trap types?

Trend consistent over time
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

• Cards generally better than tape for thrips catches; preferred by growers.
Q2: YELLOWS vs BLUEs

- “Worst” Yellow as effective as “Best” Blue for thrips catches…
- “Best” Yellow 3.6 X as effective as “worst” Blue
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

![Diagram of Rose Greenhouse layout](image)

Avg. sticky card counts, side vented compartment

![Graph showing sticky card counts](image)

Data courtesy Graeme Murphy, formerly OMAFRA
Q4: Effects on Natural Enemies

- Released rate: **500 per 10,000 sq ft (1/m²)** + *Aphidius colemani* banker plants

**Avg. natural enemies caught/card**

- **Orius**
  - < 2/card/wk

- **Diglyphus**
  - < 1/card/wk

- **Aphidius colemani**
  - ~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.

**Patterns**
- Catch **FEWER thrips** regardless of manufacturer.
- Catch fewer Aphidius but more Orius & Diglyphus.
- ARE **NOT effective for other pests** besides thrips.
- Patterned blues **NOT EFFECTIVE for thrips** in Ontario GHs.
- Patterened 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

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

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

~ 125,000 thrips removed / crop cycle

~ 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
- Even 1 female that escapes trapping will be trouble

![Diagram showing the growth of thrips over 30 days starting from one female to ± 90 thrips and then to ± 5800 thrips.]

Graphic courtesy of Ronald Valentin, BioLine
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!

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