Adoption and Performance of the Cornell Onion Thrips Management Program in 2015

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Cornell Onion Thrips Management Program

“Where the rubber meets the road”

• 2005-2014: Nault & Hoepting et. al. conducted nearly 30 on-farm research projects designed to identify best management practices for onion thrips
• 2006-2014: Hoepting conducted onion “research scouting” program in Elba
  - Providing real-time research-based recommendations
  - Grower-CCE discussion weekly through “Muck Donut Hour”
  - Vigorously tests research-based recommendations
• Specific and strategic recommendations to optimize and sustain onion thrips control in onions

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• Ken Dathyn & Eric Tuttle, Sodus
• Mark & Jack Johnson, Sodus
• Jim Johnson, Sodus
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• David Sorbello, Fulton
• Nick Gianetto, Oswego
• Joe DiSalvio, Phoenix
• Rick Minkus, New Hampton
• Paul Ruszkiewicz, Pine Island
• Alex Kocot, Florida

Onion Scouts:
• Christy Hoepting, CVP
• Missy Call, CVP
• John Gibbons, CVP
• Kevin Besler, CCE-ENYHP
• Ashley Leach, Cornell

Cornell Onion Thrips Management Program

Strategic Sequence - Product #1

Movento
- Works best when plant is actively producing new leaves
- Poor efficacy on adults (higher numbers later in season)
- Thus, efficacy typically is reduced when used on big bulbing plants later in the season (e.g. August)

Momentum of Movento!
- Single or double app(s) can keep OT below threshold > 2 weeks
- If > 3 weeks since 1st app of Movento, skip to next product (to avoid more than 1 OT generation exposed to Movento)

Cornell Onion Thrips Management Program

Strategic Sequence – Product #2a

Agri-Mek SC (or other generic forms of abamectin):
- Follows Movento if:
  - OT < 3.0 per leaf (can’t control higher populations)
  - > 30 days until harvest (30-day PHI)
**Strategic Sequence – Product #2b**

**Radiant SC:**
- Follows Movento if:
  - OT > 3.0 per leaf
- Apply Radiant 6 to 10 fl oz
  (Radiant is the only product with proven ability to knockdown OT pressure > 3.0 per leaf)

**Strategic Sequence – Product #3**

**Radiant SC**
- Follows Agri-Mek if:
  - OT > 1.0 per leaf
  - Apply Radiant 6 to 8 fl oz
  - Use higher rates (8 to 10 fl oz) when OT > 5.0 per leaf

**Cornell Onion Thrips Management Program (OTMP)**

**Success in Elba**
- **2012**: 2 growers saved $14,332 in insecticide costs on 132 acres by reducing number of insecticide applications by 40 to 57%.
- **2014 (cool year)**: 5 growers saved $33,200 in insecticide costs on 166 acres by reducing number of insecticides applications by 74% compared to a standard weekly program.

**2012 Cost per Acre: Standard vs. Cornell Program**

<table>
<thead>
<tr>
<th>No. 1 Yellow Direct-seeded (25 acres)</th>
<th>No. 2 Yellow Transplants (5 acres)</th>
<th>No. 3 Yellow Direct-seeded (26 acres)</th>
<th>No. 4 Red Direct-seeded (48 acres)</th>
<th>No. 5 Yellow Early transplants (28 acres)</th>
<th>No. 6 Yellow transplants (0.33 acres)</th>
<th>No. 7 Yellow Direct-seeded (9.6 acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard weekly program</td>
<td>Cornell program</td>
<td>Standard weekly program</td>
<td>Cornell program</td>
<td>Standard weekly program</td>
<td>Cornell program</td>
<td>Standard weekly program</td>
</tr>
<tr>
<td>$317.16</td>
<td>$332.46</td>
<td>$258.66</td>
<td>$219.78</td>
<td>$363.76</td>
<td>$251.08</td>
<td>$219.78</td>
</tr>
</tbody>
</table>

**2014 Cost per Acre: Standard vs. Cornell Program**

<table>
<thead>
<tr>
<th>No. 1 Yellow &amp; Red in production (25 acres)</th>
<th>No. 2 Yellow transplants (5 acres)</th>
<th>No. 3 Yellow Direct-seeded (9.6 acres)</th>
<th>No. 4 Mixed transplants</th>
<th>No. 5 Yellow early transplants (23 acres)</th>
<th>No. 6 Yellow transplants (48 acres)</th>
<th>No. 7 Yellow Direct-seeded (13.1 acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard weekly program</td>
<td>Cornell program</td>
<td>Standard weekly program</td>
<td>Cornell program</td>
<td>Standard weekly program</td>
<td>Cornell program</td>
<td>Standard weekly program</td>
</tr>
<tr>
<td>$83.90</td>
<td>$39.95</td>
<td>$161.28</td>
<td>$77.15</td>
<td>$99.90</td>
<td>$80.64</td>
<td>No. 7 Yellow Direct-seeded (13.1 acres)</td>
</tr>
</tbody>
</table>
Potentially...

- **Statewide**, this translates into an average 50% reduction in annual insecticide use and a savings of $1.1 million in insecticide costs.

- Let’s go statewide!

### Objectives

1. To **effectively manage** thrips using the OTMP
2. To assess adoption rates of the OTMP
3. To reduce number of sprays for managing onion thrips by applying insecticides according to spray thresholds; this will **preserve longevity** of effective insecticides by managing resistance.
4. To reduce costs of insecticides and surfactants for managing thrips infestations.

### Procedures

- Provide weekly scouting and recommendations:

<table>
<thead>
<tr>
<th>Region</th>
<th>No. Growers</th>
<th>Total No. Fields</th>
<th>Scouting provided by:</th>
<th>Recommendations provided by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elba</td>
<td>4</td>
<td>7 (+2)</td>
<td>Christy Hoepting Missy Call</td>
<td>Christy</td>
</tr>
<tr>
<td>Wayne</td>
<td>4</td>
<td>4</td>
<td>John Gibbons</td>
<td>Christy</td>
</tr>
<tr>
<td>Potter</td>
<td>1</td>
<td>1</td>
<td>John Gibbons</td>
<td>N/A</td>
</tr>
<tr>
<td>Oswego</td>
<td>4</td>
<td>4</td>
<td>Ashley Leach</td>
<td>Brian Nault</td>
</tr>
<tr>
<td>Orange</td>
<td>3</td>
<td>3</td>
<td>Kevin Besler</td>
<td>Brian Nault</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16</td>
<td>21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Objectives

1. To **effectively manage** thrips using the OTMP
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### Obj. 1 Results: Seasonal Thrips Averages (OT per leaf) Per Region

Target Seasonal Average Without Yield Loss: ~2.4 OT per leaf

- All regions successfully managed thrips!
- Elba had the highest thrips pressure.

### Objectives

1. To **effectively manage** thrips using the OTMP
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4. To reduce costs of insecticides and surfactants for managing thrips infestations.
Results: Implementation of Cornell OTMP

- Use of adjuvant when applying Movento, Agri-Mek and Radiant:
  - 100% of growers in Elba, Wayne and Orange
  - 75% in Oswego
- Avoid tank-mixing Bravo with Movento, Agri-Mek and Radiant:
  - 100% in Elba and Wayne
  - 25% in Oswego
  - 43% in Orange

**Optional**

Excellent!

- **Follow strategic sequence of insecticides:**
  - 89% in Elba
  - 75% in Wayne
  - 100% in Oswego
  - 66% in Orange

**Excellent!**

Note: Frequent use of Radiant at 8 to 10 fl oz (was 6 fl oz)

- Implement resistance management recommendations (expose only 1 OT generation to a chemical class)
  - 100% in Elba
  - 75% in Wayne & Oswego
  - 66% in Orange

**Excellent!**

Room for Improvement!

**Criteria for Adoption of OTMP**

1. **Complete adoption** – only sprayed when thrips were at or above an action threshold of 1 thrips per leaf (accepted >0.6 thrips per leaf because of lag between sampling and spraying)
2. **Partial adoption** – sprayed when thrips were at or above the action threshold, except for 1 spray applied below threshold
3. **No adoption** – typically sprayed when thrips were below threshold; applied 2 or more sprays below threshold

Note: only focused on # sprays, not on other elements of OTMP

**Obj. 2 Results: Complete Adoption of Cornell OTMP**

New York State Average: 26%

- Elba (71%) lead NY for complete implementation of the Cornell OTMP

**Obj. 2 Results: Partial Adoption of Cornell OTMP**

New York State Average: 34%

- Wayne (75%) partially implemented the Cornell OTMP.

**Obj. 2 Results: No Adoption of Cornell OTMP**

New York State Average: 40%

- Oswego (100%) did not implement Cornell OTMP.
Results: Complete Adoption of Cornell OTMP

Elba Yellow Transformed Onion: Completed Followed

Average per season (No. OT per leaf) 0.6
Spray Program Cost: $139.35
6 sprays made out of possible 9 = 40% reduction

Results: Cornell OTMP Partial Adoption

Wayne Co. Yellow Direct Seeded: Mostly Followed

Average per season (No. OT per leaf) 0.5
Spray Program Cost: $165.57
4 sprays made out of possible 9 = 55% reduction

Results: Cornell OTMP Not Adopted

Onego Yellow Direct Seeded: Not Followed

Average per season (No. OT per leaf) 0.3
Spray Program Cost: $244.41
9 sprays made out of possible 9 = 10% reduction
No use of spray thresholds!

Results: Momentum of Movento

Movento (1st bulb) 3 sprays made out of possible 5 = 60% reduction

Results: Movento After Bulbing

<table>
<thead>
<tr>
<th>No. of apps</th>
<th>No. OT per leaf prior to:</th>
<th>Crop Stage</th>
<th>No. weeks of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st app</td>
<td>2nd app</td>
<td></td>
</tr>
<tr>
<td>single</td>
<td>0.8</td>
<td>--</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>single</td>
<td>&lt; 0.1</td>
<td>--</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>double</td>
<td>1.5</td>
<td>1.6</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>double</td>
<td>0.6</td>
<td>0.4</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>double</td>
<td>0.7</td>
<td>2.4</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>double</td>
<td>&lt; 0.6</td>
<td>&lt; 0.6</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>double</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>Pre-bulb</td>
</tr>
<tr>
<td>double</td>
<td>0.8</td>
<td>0.9</td>
<td>Early-bulb</td>
</tr>
</tbody>
</table>

Objectives

1. To effectively reduce thrips using the OTMP
2. To assess adoption rates of the OTMP
3. To reduce number of sprays
4. To reduce costs of insecticides and surfactants for managing thrips infestations.
**Obj. 3. Results: Reducing Sprays for Onion Thrips Control**

<table>
<thead>
<tr>
<th>Degree of Implementation of Cornell OTMP</th>
<th>Average No. Insecticide Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely</td>
<td>5</td>
</tr>
<tr>
<td>Partially</td>
<td>4</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
</tr>
</tbody>
</table>

Reduction in number of insecticide applications for those who completely followed and partially followed the OTMP.

**Results: Cost of Onion Thrips Control**

<table>
<thead>
<tr>
<th>Degree of Implementation of Cornell OTMP</th>
<th>Average No. Insecticide Applications</th>
<th>Average Cost of Insecticides (per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely</td>
<td>5</td>
<td>$192</td>
</tr>
<tr>
<td>Partially</td>
<td>4</td>
<td>$171</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
<td>$192</td>
</tr>
</tbody>
</table>

Reduction in number of insecticide applications, but no difference in cost between implementing and not implementing Cornell OTMP.

**Obj. 1 Results: Seasonal Thrips Averages (OT per leaf) Per Region**

- Elba had the highest thrips pressure.

**Results: Complete Implementation of Cornell OTMP**

New York State Average: 26%

- Elba (71%) leads NY in complete implementation of the Cornell OTMP.

**Results: Effect of Cornell OTMP on Insecticide Use**

- Actual insecticide use compared to weekly spray program (start OT ≥ 0.1 per leaf and every week thereafter):
  - 50% completely
  - 33% partially
  - 20% none

**Objectives**

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4. To reduce costs of insecticides and surfactants for managing thrips infestations.

**What?**

- Elba (71%) leads NY in complete implementation of the Cornell OTMP.
If Elba Did Not Implement Cornell OTMP...

- In Elba, Complete implementation of Cornell OTMP resulted in:
  - Average 48% reduction in insecticide sprays
  - Average 5.4 insecticide applications per season
  - $199 per acre

- In Elba, No implementation of Cornell OTMP could result in:
  - 10% reduction in insecticides sprays (state average)
  - 10 insecticide applications per season
  - $373 per acre
  - Savings of $174 per acre

If Oswego Completely Implemented Cornell OTMP...

- In Oswego, No implementation of Cornell OTMP resulted in:
  - Average 12.5% reduction in insecticide sprays
  - Average 10 insecticide applications per season
  - $203.65 per acre

- In Oswego, Complete implementation of Cornell OTMP could result in:
  - 0 sprays = $203.65 per acre in savings
  - 1 spray (Movento) = $42.57 = 87% reduction in apps
  - 2 sprays (2 Movento) = $85.14 = 74% reduction in apps
  - 3 sprays (2 Movento + 1 Radiant) = $96.19 = 61% reduction
  - $0 to $96 per acre
  - 61 to 100% reduction in insecticide apps
  - Savings of $107 to $204 per acre

Challenge to Implementing Cornell OTMP

- Muck Donut Hour instrumental to implementation of Cornell OTMP in Elba
- Thrips pressure different among fields on same farm
  - How many spray programs can you manage?
- You need to know your numbers!
  - Who will scout?
  - Cost of scouting?

“Spray by Number” in 2016

Cornell OTMP Scouting project will continue in 2016

- Take Advantage of Us!!
  - Free weekly scouting and recommendations
  - Includes diseases and weeds

Muck Donut Hour

Tuesday’s 8:30 am to 9:30 am at the corner of Transit & Spoilbank