Cornell Cooperative Extension
Vegetable Program

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

Christy Hoepting[1], Ashley Leach[2] and Brian Nault[2]
[1]Cornell Cooperative Extension Vegetable Program
[2]Dept. of Entomology, NYSAES, Cornell

Empire Expo, Syracuse, NY: January 21, 2016

Acknowledgements

Funding for this project was provided by:
New York Farm Viability Institute (NYFVI)

Grower Cooperators:
- Matt Mortellaro, Elba
- Guy Smith, Elba
- Chuck Barie & Emma Long, Elba
- Mark & Max Torrey, Elba
- Kevin Datthyn & Mike Johnson, Sodus
- Ken Datthyn & Eric Tuttle, Sodus
- Mark & Jack Johnson, Sodus
- Jim Johnson, Sodus
- John Dunsmoor, Oswego
- 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

"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

Cornell Onion Thrips Management Program

Recommendations

- ***Do NOT make more than two weekly sequential applications of an insecticide before switching to another insecticide with a different mode of action.***
  - Unless, > 2 weeks since 1st app
- ***Movento, Agri-Mek, Radiant and Exirel must be used with a penetrating surfactant*** for optimum performance of these systemic and translaminar materials.
- ***Do NOT tank mix Movento, Agri-Mek or Radiant with Bravo Weatherstik (or generic versions of chlorothalonil),*** because efficacy of insecticide is reduced by 12 to 35%.
- ***Only make insecticide application when thrips counts exceed spray threshold***
  - Varies by product (minimum: > 0.6 OT per leaf)

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)

Cornell Onion Thrips Management Program

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)

Cornell Onion Thrips Management Program

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

Strategic Sequence – Product #4

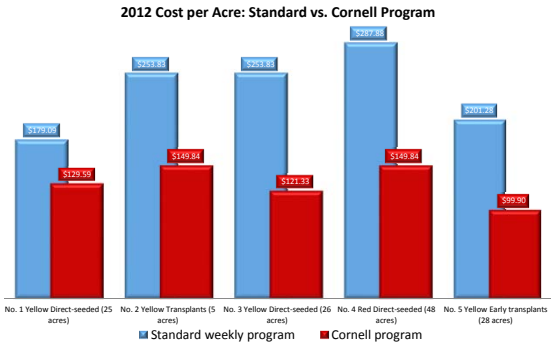
- Other options (threshold: 1.0 OT per leaf)
  - **Lannate 3 pt + Warrior**
  - **Exirel 13.5 fl oz**

Cornell Onion Thrips Management Program (OTMP)

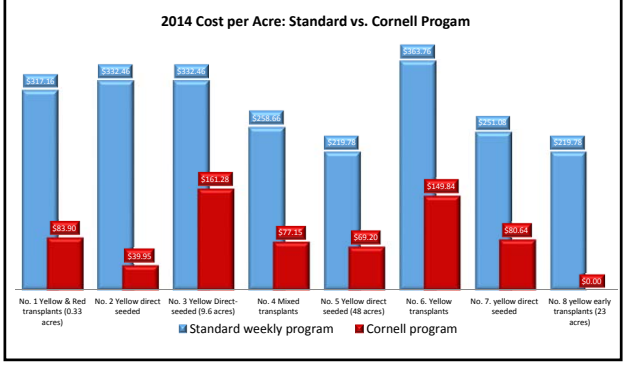
Success in Elba

- **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.

Cornell Onion Thrips Management Program (OTMP)



Cornell Onion Thrips Management Program (OTMP)



Cornell Onion Thrips Management Program (OTMP)

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:

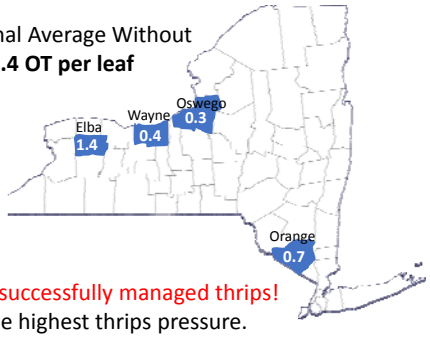
Region	No. Growers	Total No. Fields	Scouting provided by:	Recommendations provided by:
Elba	4	7 (+2)	Christy Hoepting Missy Call	Christy
Wayne	4	4	John Gibbons	Christy
Potter	1	1	John Gibbons	N/A
Oswego	4	4	Ashley Leach	Brian Nault
Orange	3	3	Kevin Besler	Brian Nault
TOTAL	**16**	**21**		

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.

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~~

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.

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

  ⟵ **Excellent!**
- Avoid tank-mixing Bravo with Movento, AgriMek and Radiant:
  - 100% in Elba and Wayne ⟵ **Excellent!**
  - 25% In Oswego
  - 43% In Orange

  ⟵ **Optional**

Results: Implementation of Cornell OTMP

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

  ⟵ **Excellent!**
  - 66 % in Orange ⟵ **Room for Improvement!**

  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

  ⟵ **Excellent!**
  - 66% in Orange ⟵ **Room for Improvement!**

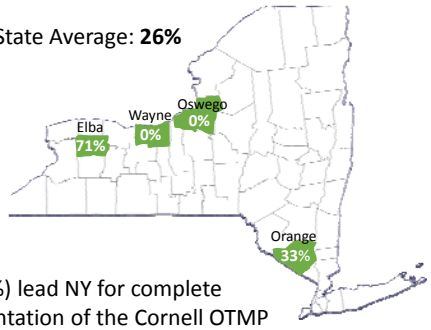
Criteria for Adoption of OTMP

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

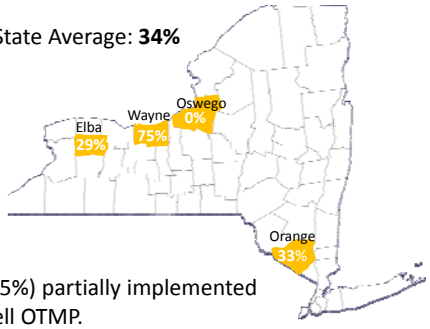
New York State Average: **26%**



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

Obj. 2 Results: Partial Adoption of Cornell OTMP

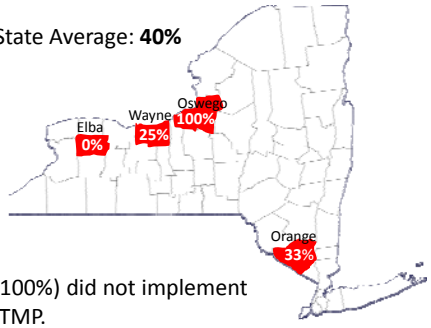
New York State Average: **34%**



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

Obj. 2 Results: No Adoption of Cornell OTMP

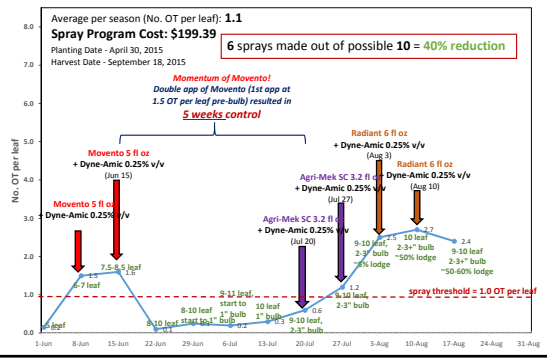
New York State Average: **40%**



- Oswego (100%) did not implement Cornell OTMP.

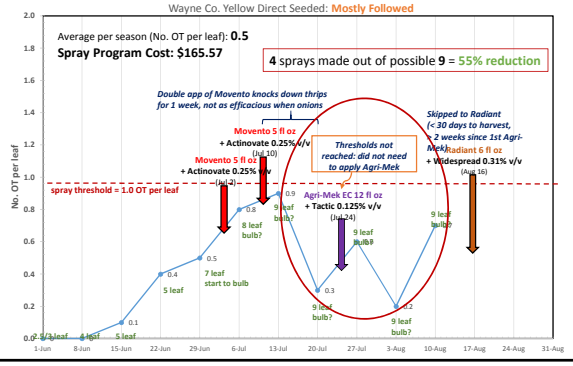
Results: Complete Adoption of Cornell OTMP

Elba Yellow Transplanted Onions: Completely Followed



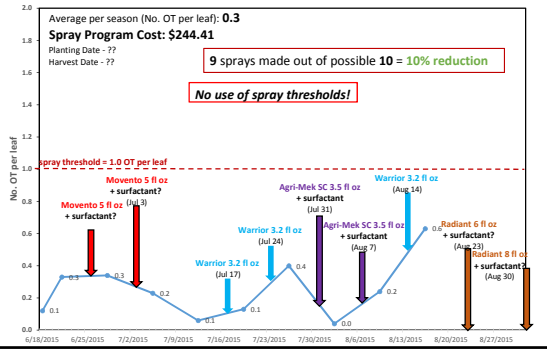
Results: Cornell OTMP Partial Adoption

Wayne Co. Yellow Direct Seeded: Mostly Followed



Results: Cornell OTMP Not Adopted

Oswego Yellow Direct Seeded: Not Followed



Results: Momento After Bulbing

No. of apps	No. OT per leaf prior to: 1st app	2nd app	Crop Stage	No. weeks of Control
single	0.8	--	Pre-bulb	4 weeks
single	< 0.1	--	Pre-bulb	3 weeks
double	1.5	1.6	Pre-bulb	5 weeks
double	0.6	0.4	Pre-bulb	4 weeks
double	0.7	2.4	Pre-bulb	3 weeks
double	< 0.6	< 0.6	Pre-bulb	At least 5 weeks
double	< 0.1	< 0.1	Pre-bulb	At least 5 weeks
double	0.8	0.9	**Early-bulb**	1 week

Results: Momento of Movento

No. of apps	No. OT per leaf prior to: 1st app	2nd app	Crop Stage	No. weeks of Control
single	0.8	--	Pre-bulb	4 weeks
single	< 0.1	--	Pre-bulb	3 weeks
double	1.5	1.6	Pre-bulb	5 weeks
double	0.6	0.4	Pre-bulb	4 weeks
double	0.7	2.4	Pre-bulb	3 weeks
double	< 0.6	< 0.6	Pre-bulb	At least 5 weeks
double	< 0.1	< 0.1	Pre-bulb	At least 5 weeks
double	0.8	0.9	Early-bulb	1 week

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.

Obj. 3. Results: Reducing Sprays for Onion Thrips Control

Degree of Implementation of Cornell OTMP	Average No. Insecticide Applications
Completely	5
Partially	4
None	7

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

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.

Results: Cost of Onion Thrips Control

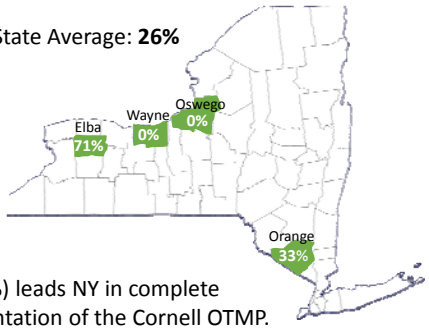
Degree of Implementation of Cornell OTMP	Average No. Insecticide Applications	Average Cost of Insecticides (per acre)
Completely	5	**$192**
Partially	4	$171
None	7	**$192**

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

What?

Results: Complete Implementation of Cornell OTMP

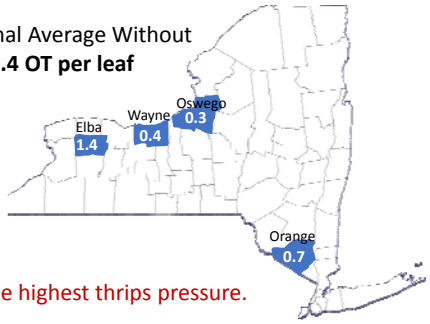
New York State Average: **26%**



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

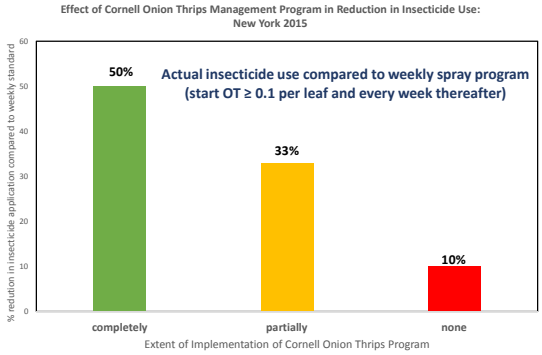
Obj. 1 Results: Seasonal Thrips Averages (OT per leaf) Per Region

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



- Elba had the highest thrips pressure.

Results: Effect of Cornell OTMP on Insecticide Use



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 Cornel 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 **7.7** insecticide applications per season
  - **$203.65 per acre**
- In Oswego, Complete implementation of Cornel 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