

Recipe for a cost-effective onion thrips control program

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This factsheet will help you...

- Use the right product and surfactant
- Apply products at the right time in a planned, season-long rotation
- Use thresholds to save money

The Midwest and Northeast onion industry has an excellent toolbox of chemistries with different modes of action that—if used right—could provide durable control of onion thrips into the future. By using the right products with the right surfactants, at the right time, you can accomplish this goal while minimizing cost.



Figure 1. Onion thrips, *Thrips tabaci*, produce silvery damage on onion leaves.

The right products. Research has identified a short-list of effective insecticides from the many formulations labelled for thrips control in onions, including Radiant, Lannate, Movento and Agri-Mek (Table 1). Recent work shows that Exirel—an insecticide with a distinct mode of action—can be an effective addition to your insecticide rotation. This

means there are five distinct modes of action which, if used in rotation at the right time, will reduce chances that our industry will face the resistance-related control failures that have occurred in the past.

Table 1. Products for thrips control along with their insecticide resistance action code (IRAC).

Product	a.i.	IRAC
Radiant SC	spinetoram	5
Lannate LV	methomyl	1A
Agri-Mek SC	abamectin	6
Movento	spirotetramat	23
Exirel	cyantraniliprole	28

The right surfactants and tank mix partners. The right surfactant can make the difference between excellent control and economic damage. Past work showed that a non-ionic surfactant applied at 0.5% v/v (percent surfactant out of total solution volume) greatly improved Movento's ability to control thrips. Recent work has shown that a variety of other surfactants can accomplish this task (Table 2). As important as your choice of surfactant, research has shown that tank-mixing chlorothalonil-based fungicides with Agri-Mek and Movento reduces their efficacy. However, fungicides such as Dithane, Rovral, Scala and Quadris can be tank-mixed without loss of efficacy.

Table 2. Examples of surfactants and rates for use with onion thrips insecticides.

Product	Chemical	Rate
JMS Stylet Oil	mineral oil	1.5% v/v
Purespray Green	mineral oil	1 gal/acre
MSO	methylated spray oil	0.25% v/v
Requiem 75EC	terpene	1 qt/acre
Dyne-Amic	non-ionic surfactant	0.25% v/v
Induce	non-ionic surfactant	0.5% v/v
M-Pede	K-salts of fatty acids	2% v/v
Silwet L-77	organosilicone	0.25% v/v

The right timing. Applying onion thrips insecticides at the right time is critical to ensure success and delay

resistance. Products need to be applied when they are most effective during the roughly 8 weeks thrips are active from mid-June to mid-August (Table 3).

EXAMPLE SEASON LONG SPRAY PLAN

Table 3. Example of an 8-week insecticide rotation for onion thrips with thresholds for each product. Note, only apply a product in a max of two back to back applications during the season.

Week	Product	Action threshold
1	Movento	1 thrips/leaf
2	Movento	1 thrips/leaf
3	Agri-Mek or Exirel	1 thrips/leaf
4	Agri-Mek or Exirel	1 thrips/leaf
5	Radiant	3 thrips/leaf
6	Radiant	3 thrips/leaf
7	Lannate or Exirel	1 thrips/leaf
8	Lannate or Exirel	1 thrips/leaf

Importantly, for all products the same active ingredient should be applied in back to back applications in two consecutive weeks to minimize selection for resistance. Movento is more effective at reducing early-season thrips populations than other products but is not effective later in the season. Agri-Mek is a good product to follow Movento during early to mid-summer. In addition to Agri-Mek, recent research shows that a newly labelled product – Exirel—can provide effective control of thrips when applied at this time. Radiant is a good product to reserve for the next spot in the rotation; it is not as effective as Movento early but is extremely effective during the hottest part of the growing season for quelling rapid thrips increases. Experience in New York suggests that—if the momentum of Movento allows you to skip 2-4 weeks of sprays—thrips can increase afterwards, and Radiant is a good product to stop them in their tracks. If thrips are still a problem after Radiant is used, consider using Exirel or Lannate. If you have experienced poor control with Lannate, consider tank mixing a high rate of this product with a high rate of Warrior. Recent work from Cornell University suggests that Warrior + Lannate could provide better control than either product alone. Note, in general tank mixing two

modes of action together is not advisable as it could select for resistance to two classes of chemical at the same time. However, pyrethroids like Warrior are already ineffective on their own for onion thrips control in many areas.

Many of these products are costly, which means you will save significant money by only applying product when thrips damage could reduce yield. This requires using scouting data and thresholds. To make good decisions, onion thrips counts should be in terms of the number of thrips per leaf, not per plant. For Radiant, a threshold of 3 thrips/leaf can be used, while 1/thrips per leaf can be used for other products (Table 3). Each week of the season, you can decide whether or not to make the next application in your planned rotation: if thrips exceed threshold, apply the product as planned, if not, skip the product and reevaluate the following week. Research at MSU and Cornell has shown significant cost savings associated with using thresholds, with only two early-season applications of Movento providing control comparable to 8 weekly sprays in 2014 MSU trials. Overall, data collected over multiple years by Cornell University show that use of thresholds can reduce the number of applications by an average of 50%.

By using the right products, at the right time, with the right scouting data, you can control onion thrips cost effectively and conserve useful products for the future.

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Other resources:

MSU vegetable entomology website:
<http://vegetable.ent.msu.edu/>

Thrips scouting video:
<http://youtu.be/aUuNNSFxuZg>

To contact an expert in your area, visit msue.anr.msu.edu/experts, or call 888-MSUE4MI (888-678-3364).

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