

Insecticide Programs to Consider for Onion Thrips Control in Onion in 2023

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Guidelines for using insecticides to manage onion thrips in onion fields in the Great Lakes region continue to evolve as we gain more experience using them under various situations. The following guidelines provide multiple scenarios for managing onion thrips over the season. The major factors used to create these guidelines are efficacy of products under varying levels of thrips pressure and the desire to follow insecticide resistance management principles.

Disclaimer: There are other insecticides labeled for use on onion for onion thrips management that also may be effective, but that are not included in these guidelines. These guidelines have been developed based on our personal experience assessing the efficacy of many different products in commercial onion fields or by assessing their performance after application by New York onion growers in their fields.

General Information

- Insecticides that are preferred for onion thrips control should be considered before following these 2023 guidelines. For example, guidelines that include insecticides that no longer provide effective thrips control on your farm should be avoided.
- The same insecticide should not be used more than twice consecutively, typically applied one week apart, in the same field during the season. If the thrips population is below the action threshold, skip an application that week and resume scouting the following week. If the thrips population exceeds the action threshold the following week, select a product belonging to a different class of chemistry than the previous product applied in that field.
- Efficacy of most insecticides are enhanced when a) co-applied with a surfactant, b) not tank mixed with chlorothalonil containing fungicide, c) applied at a moderate to high gallonage (e.g., 20 - 60 gpa), d) applied at a moderate pressure (40-60 psi), and e) applied using twin flat fan nozzles.

How to Use the 2023 Onion Thrips Management Guidelines for Onion

A flow chart [diagram of the following insecticide spray decisions for managing onion thrips](#) is available at CVP.CCE.CORNELL.EDU.

1. **Start with Movento® or Senstar™ Insecticide** – Begin management of onion thrips using two sequential applications of Movento® (spirotetramat) at 5 fl oz per acre. **Movento® is one of the best products to use early in the season for controlling thrips because it kills larvae and may cause females to lay fewer eggs.** Movento® is systemic even when applied to foliage, so it moves to new foliage tight in the neck to kill thrips that might not come in contact with other products. In many cases, two weeks of thrips control occurs after the second application of Movento®. Because Movento® is not as effective after bulbing (e.g., 1-2 inch bulbs), **make sure that Movento® is applied before onions are bulbing or when the thrips population reaches at least 0.6 thrips per leaf.**

An alternative to Movento® is Senstar™ Insecticide, which also contains spirotetramat (the active ingredient on Movento) plus pyriproxyfen (generally used to control whiteflies). While onions are not infested with whiteflies, this product is as effective against onion thrips as Movento®. The Senstar™ label indicates 14 days between applications; however, research has shown that performance of spirotetramat is best when applications are spaced 7-10 days apart. Therefore, starting with Senstar™ and following with Movento® 7-10 days later would be a viable option.

2. **After Movento®, Follow Action Thresholds and Rotate Insecticide Classes** – After Movento® and/or Senstar™ Insecticide applications, there are several options. Knowledge about efficacy of insecticides used previously to manage onion thrips and the relative size of the thrips population will help inform which option might be best. **Based on previous research, action thresholds are determined by how well the insecticide performs against thrips at different infestation levels.** In many research trials conducted in commercial onion fields in New York from 2015-2021, action threshold-based insecticide programs offered the same level of thrips control as weekly insecticide programs, but the action threshold-based insecticide programs used an average of 2.3 fewer insecticide applications as compared to the weekly insecticide program.

3. **The following insecticide options should be considered based on the thrips pressure.** See "Scouting Tips for Onion Thrips in Onions" (on the next page) to learn how to calculate the number of onion thrips per leaf.

Option A: Low thrips pressure (0.6 – 1 thrips per leaf):

Agri-Mek® SC (and generics) is an affordable option that is effective for controlling low to moderate populations of onion thrips when applied at a threshold of 0.6 to 1 per leaf. Also, because Agri-Mek® SC has a 30-day pre-harvest interval, it should be considered as an option earlier in the season. If Agri-Mek® SC has underperformed on your farm in recent years, select one of the other options below. If you are not sure how well Agri-Mek® SC performs on your farm and it performs poorly after one application, consider switching to Minecto® Pro instead of making another application of Agri-Mek® SC. Minecto® Pro is typically more effective than Agri-Mek® SC when thrips infestations are moderate to high (see more below).

A tank mix of Lannate® LV (48 fl oz per acre) and Warrior II with Zeon Technology® (1.92 fl oz/acre) (and generics or other pyrethroids) is an alternative option that also can be effective for controlling low to moderate populations of onion thrips when applied at a threshold of 0.6 to 1 per leaf. Because this option is the weakest choice for thrips management, its use has been recommended near the end of the season when the desire is to hold a thrips population at a non-economically damaging level until the crop lodges and thrips damage is no longer a concern.

Option B: Moderate thrips pressure (1.1 – 2.0 thrips per leaf):

Minecto® Pro, a pre-mix of Agri-mek® SC (abamectin) and Exirel® (cyantraniliprole), is a good option for a moderate thrips infestation. The cost of Minecto® Pro may be higher than some other options (i.e. Agri-Mek® SC), but Minecto® Pro will likely offer superior control of thrips. Consider applying Minecto® Pro at 7 - 10 fl oz per acre twice early to mid-season because it has a 30-day pre-harvest interval, just like Agri-Mek® SC. **Because Minecto® Pro contains abamectin and cyantraniliprole, neither Agri-Mek® SC nor Exirel® can be used in that field for the remainder of the season because this would violate the label and insecticide resistance management plans.** This can be a serious limitation of using Minecto® Pro in a season-long thrips management program when high thrips infestations span most of the summer.

Option C: Moderate to high thrips pressure (1.5 – ≥4.0 thrips per leaf):

There are two excellent options, **Exirel®** and **Radiant® SC**, that should be considered for managing moderate to high populations of thrips. The cost of Exirel® and Radiant® SC will likely be higher than other insecticide options (i.e., Agri-Mek® SC and Minecto® Pro), but worth the extra cost because of their effectiveness against higher populations of thrips.

- **If the thrips infestation averages 1.5 – 2.5 thrips per leaf:** Exirel® should be used at a low to moderate rate (13.5 – 16 fl oz/acre) and Radiant® SC at a moderate to high rate (8 – 10 fl oz/acre).
- **If the thrips infestation averages 2.6 – ≥4 thrips per leaf,** consider Exirel® at a high rate (20.5 fl oz/acre). Only in fields where Radiant® SC is known to be highly effective should it be considered as a viable option at this higher threshold. Use Radiant® SC at the same moderate to high rate of 8 – 10 fl oz/acre. In fields where the high rate of Radiant® SC no longer effectively controls high populations of thrips, consider using Exirel®.

2023 Insecticides and Action Thresholds Recommended for Onion Thrips Management in Onion

Trade Name	Active Ingredient	Recommended rate/acre (Maximum rate/crop/season)	IRAC ¹ Group	Action Threshold (Average number of thrips per leaf)
Movento®	spirotetramat	5 fl oz (Max: 10 fl oz)	23	0.6 – 1.0; or pre-bulbing ²
Senstar™ ³	spirotetramat + pyriproxyfen	10 fl oz (Max: 20 fl oz)	23 + 7C	0.6 – 1.0; or pre-bulbing ²
Agri-Mek® SC (and generics)	abamectin	3.5 fl oz (Max: 12.25 fl oz)	6	0.6 – 1.0
Minecto® Pro	abamectin + cyantraniliprole	7.5 – 10 fl oz (Max: 20 fl oz)	6 28	1.1 – 2.0
Exirel®	cyantraniliprole	13.5 – 20.5 fl oz (Max: 61.6 fl oz)	28	1.5 – 2.5: 13.5 – 16 fl oz 2.6 – ≥4.0: 20.5 fl oz
Radiant® SC	spinetoram	8-10 fl oz (Max: 30 fl oz)	5	1.5 – ≥4.0 ⁴
Warrior II w/ Zeon Technology (and generics or other pyrethroids)	lambda-cyhalothrin	1.92 fl oz (Max: 15.36 fl oz)	3A	0.6 – 1.0 Only use in tank mix with Lannate LV
Lannate® LV	methomyl	48 fl oz (Max: 12 pt)	1A	0.6 – 1.0 Only use in tank mix with a pyrethroid like lambda-cyhalothrin

1 IRAC: Insecticide Resistance Action Committee – Mode of Action

2 **Movento** and **Senstar** do not work very well when the onion plant is bulbing. To take advantage of this highly effective chemistry, make the first application either at threshold or at the pre-bulbing crop stage, whichever comes first.

3 **Senstar** requires 14 days between applications, whereas Movento applications can be spaced 7-10 days apart

4 **Radiant** should be used at a moderate to high rate (8 – 10 fl oz/acre) when population averages 1.5 – 2.5 thrips per leaf; for populations known to be highly susceptible to Radiant SC, the same rate can be used at a threshold of 2.6 – ≥ 4.0 per leaf.

Scouting Tips for Onion Thrips in Onions

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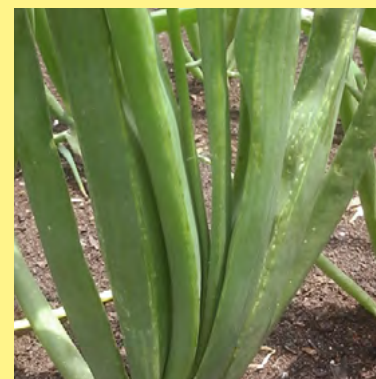
To find the first thrips of the season, look deep into the leaf axils. Inspect 20 to 30 plants and count the total number of onion thrips (OT) per plant and divide by the average number of leaves per plant to get the number of OT per leaf. Thrips feeding causes silvery streaking along the leaves. If you can already see thrips feeding damage that is also a good indication that it is time to spray. If there is a lot of feeding damage, than you likely missed a timely first spray.



Adult onion thrips are the first thrips of the season. They are tiny brown, sliver-like insects up to 2 mm in length. Photo by C. Hoepting, CCE Cornell Vegetable Program



Onion thrips nymphs are yellow and 0.5 to 1.2 mm in length. Photo by Whitney Cranshaw, Colorado State University.



Subtle streaking along leaves is an early indication of early onion thrips feeding. This plant has reached the spray threshold. Photo by C. Hoepting, CCE CVP