Thrips Control in Drip Irrigated Onions

December 11, 2014
Drip Irrigation

Used on ~50% of onion acreage in the Treasure Valley
Benefits to thrips/IYSV control with drip irrigation

• Less water and nutrient stress, reduced symptom expression.
• Less reliance on air application of insecticides.
• Opportunity to target thrips with systemic products
High IYS Incidence

Significant relationship between IYS and:

- Salinity (positive)
  - EC, SAR, Base Saturation, K

- Soil Color (negative)
  - Only with moderately resistant variety

- Texture
  - Heavier soils associated with higher IYS

- Soil Nitrogen (positive)
  - Ammonium N and Total N
Influence of spray volume on thrips populations at Parma, ID during 2007 growing season

Values are means of 3 foliar insecticide treatments and 4 reps

1st application
June 22

2nd application
July 5
How and when we apply insecticides may be more critical than what we apply.

- To be successful you must understand your target and where it is located.

Getting insecticides down close to the thrips is difficult!
Both dyes highly soluble, red dye binds to the soil
Strategies

- Drip applications replace foliar program
- Drip applications plus foliar program*
- Seed treatments plus foliar program*

* Need to increase net returns above cost of foliar program
# Treatment Schedule

<table>
<thead>
<tr>
<th>Treatment</th>
<th>May 18th</th>
<th>June 4th</th>
<th>June 14th</th>
<th>June 23rd</th>
<th>July 1st</th>
<th>July 8th</th>
<th>July 11th</th>
<th>July 15th</th>
<th>July 21st</th>
<th>July 22nd</th>
<th>July 28th</th>
<th>Aug 1st</th>
<th>Aug 5th</th>
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</thead>
<tbody>
<tr>
<td>Grower Standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Movento @ 5oz/ac</td>
<td>Movento @ 5oz/ac</td>
<td>Agri-Mek @ 16oz/ac</td>
<td>Agri-Mek @ 16oz/ac</td>
<td>Radiant @ 8oz/ac</td>
<td>Radiant @ 8oz/ac</td>
<td>Lannate @ 3pts/ac</td>
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<tr>
<td>Admire drip + Grower Standard</td>
<td>Admire @ 14oz/ac</td>
<td>Move @ 5oz</td>
<td>Move @ 5oz</td>
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<tr>
<td>Non-Treated Check</td>
<td>No Spray all season</td>
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<td>Movento drip + Grower Standard</td>
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<tr>
<td>Lannate-drip</td>
<td>Lannate @ 3pts/ac</td>
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<td>Vydate fb Lannate-drip</td>
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<tr>
<td>Sepresto + Grower Standard</td>
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<td>Lannate @ 3pts/ac</td>
<td>Move @ 5oz</td>
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<td>Lannate @ 3pts/ac</td>
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**Drip + foliar program**

**Drip substituted into foliar program**

**Drip instead of foliar program**

**Seed treatment + foliar program**
The only way to control IYSV is to control thrips populations.
Average thrips populations compared to iris yellow spot severity, Malheur Experiment Station, Oregon State University, Ontario, OR, 2005.
Programs with the best thrips and IYSV control have the highest yields.

You lose 8 cwt/acre for each increase in one thrips per plant over the season.
Programs with the best thrips and IYSV control have better size.

You lose 11 cwt/acre for each increase in one thrips per plant over the season.
How can that be?

- 1 thrips per plant is about 150,000 per acre

- On July 21, 2011 the check had 9.5 million thrips per acre

- On July 21, 2011 the best treatment had 4.4 million thrips per acre
Thrips populations by date

Establishment

Expansion

Crash

Thrips populations (#/plant)

29-May
5-Jun
12-Jun
19-Jun
26-Jun
3-Jul
10-Jul
17-Jul
24-Jul
31-Jul
7-Aug
Thrips populations by date

IYSV symptoms appear during this period.
Options for early season control

- **Furrow**
  - Sepresto seed treatment (Clothianadin + Imidacloprid)
  - Farmore seed treatment (Thiamethoxin + Spinosad)
  - Early foliar applications

- **Drip**
  - Seed treatments
  - Admire (Imidacloprid)
  - Vydate (Oxamyl)
  - Lannate (Methomyl)
  - Early foliar applications
Do seed treatments and Admire improve thrips control?
Seed treatments

Early season thrips (#/plant)

- Check
- Sepresto
- Farmore
- Admire
- Foliar

Colors:
- 2011
- 2012
- 2013
Seed treatments

[Bar chart showing infection percentages for different treatments: Check, Sepresto, Farmore, Admire, Foliar for the years 2011, 2012, and 2013.]
Can we control thrips and IYSV with drip applications?
Can we target drip applications better?
How much do these strategies improve thrips control?

![Bar chart showing thrips population with percentage changes for different strategies.]

- **Check program (GS)**: (-32%)
- **Foliar program + GS**: (-42%)
- **Admire + GS**: (-47%)
- **Seed trt + GS**: (-31%)
- **Check program**: (-18%)
- **Drip program**: (+22%)

*Average for 2011-13*
How much do these strategies improve IYSV control?

Average for 2011-13
What is the impact on yield and size?

Average for 2011-13

- Check: (+8%)
- Foliar program (GS): (+14%)
- Admire + GS: (+9%)
- Seed trt + GS: (+2%)

Yield (cwt/ac)

Diagram showing yield comparison with categories: Super, Colossal, Jumbo, Medium.
What is the impact on your bottom line?

Average for 2011-13

- Foliar program (GS): $743
- Admire + GS: $1434
- Seed trt + GS: $803
- Drip program: $180
Acknowledgements

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