

# Thrips Management on Veg & Fruit Crops



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THE OHIO STATE UNIVERSITY

# Thrips species

- **Eastern flower thrips**
  - Strawberry
- **Western flower thrips**
  - Greenhouse & high tunnel
- **Onion thrips**
  - Onion
  - Cabbage



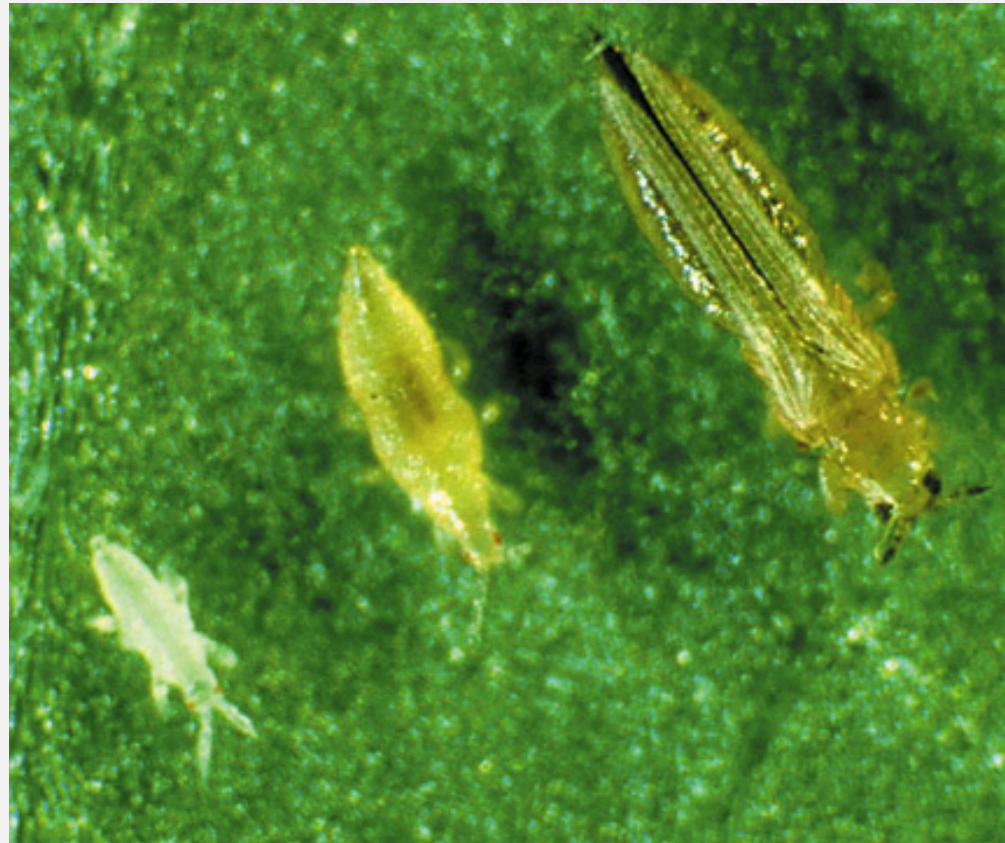
# Thrips appearance



- **Small (1/16" long)**
- **Narrow oblong body**
- **Yellow-brown**
- **Active; run fast**
- **Weak fliers**

# Thrips life stages

Younger larva      Older larva      Adult



2. First and second larval instars plus adult of western flower thrips.

# Eastern flower thrips: injury on strawberry

- Berries dull color
- Berries small, seedy, fail to enlarge or ripen
- Uneven maturity



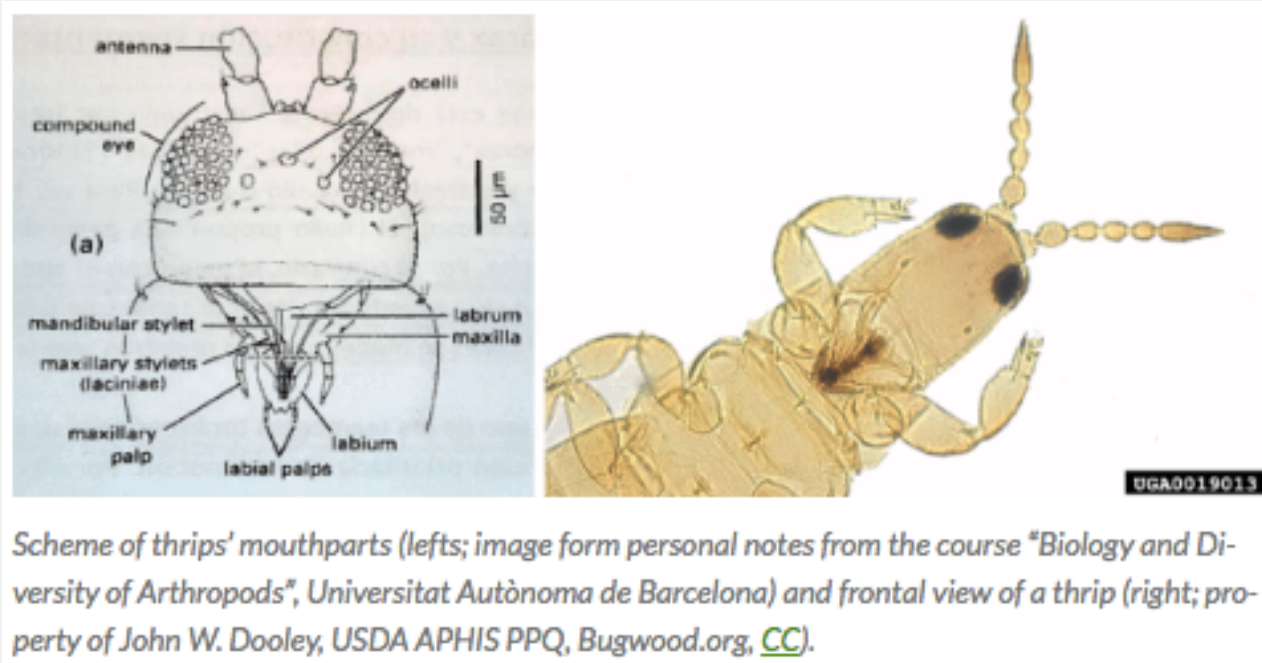
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# Eastern flower thrips: feeding



*Scheme of thrips' mouthparts (lefts; image form personal notes from the course "Biology and Diversity of Arthropods", Universitat Autònoma de Barcelona) and frontal view of a thrip (right; property of John W. Dooley, USDA APHIS PPQ, Bugwood.org, [CC](#)).*

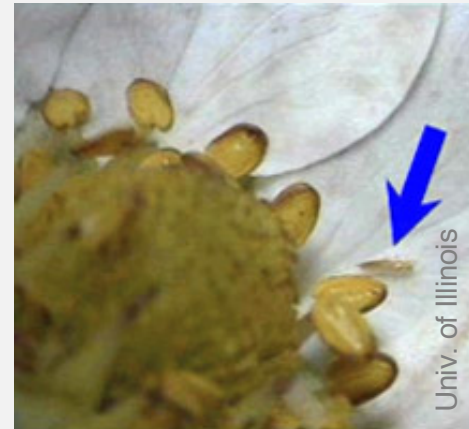
- **By rasping & sucking**
- **On strawberry:**
  - During bloom & fruit set
  - Feed on seeds, tissue between seeds
  - Prefer protected sites: under calyx (cap)

# **Eastern flower thrips: Life history**

- **Do not overwinter well in North**
- **Long-distance migration via wind from South in spring**
- **Many generations per year**

# Eastern flower thrips: Monitoring on strawberry

- **Begin when first blossoms open**
- **Sample 5 to 10 areas within a planting**
- **Method:**
  - In each area, **collect 5 to 10 blossoms**
  - **Tap** 5 to 10 blossoms onto white pan or cup  
OR
  - Place 5 to 10 blossoms in zip-top bag, **shake**
  - **Count** the thrips in pan or bag
  - Calculate **average** number of thrips / blossom
- **Repeat weekly until all berries reach diameter of a dime**





# Eastern flower thrips: Action threshold on strawberry

- **Counts in many plantings will be less than 1 thrips per flower, and control will not be needed**
- **Treat if > 2 thrips per flower**
- **Time treatment to avoid killing pollinators!**

# **Insecticides & thrips**

## **Beware...**

- **Few are highly effective at killing thrips**
- **Some products provide only suppression, not control**
- **Some products known to have activity on thrips, but thrips are not listed as target pests for a crop of interest**

# Eastern flower thrips:

## insecticides for **strawberry**



<i>Thrips control</i>	<i>Thrips suppression</i>	<i>Allowed on strawberry; thrips not listed for strawberry but thrips listed for other crops</i>
<b>Apta</b>	<b>Closer</b>	<b>Admire</b>
<b>Assail</b>	<b>Exirel</b>	<b>Brigade</b>
<b>Entrust #</b>	<b>Transform</b>	<b>Danitol</b>
<b>Neemix # &amp; Aza-Direct #</b>		<b>Harvanta</b>
<b>Radiant</b>		<b>Lorsban</b>
<b>Sivanto</b>		

# OMRI-listed

# Flower thrips on tomato



Figure 8. Thrips egg-laying scars on tomato



# Flower thrips on pepper



Figure 5. Thrips feeding damage on pepper leaves.



Figure 7. Egg-laying scars and feeding damage on sweet pepper.



# Flower thrips on cucumber



Figure 4. Thrips feeding damage on cucumber leaves.

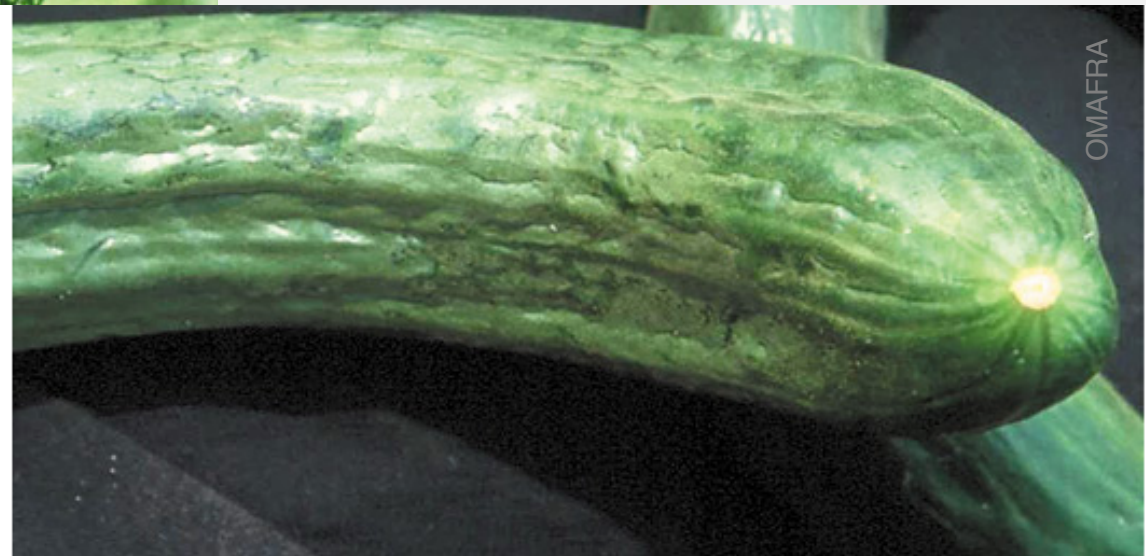


Figure 6. Thrips feeding damage on cucumber fruit.



# **Insecticides & thrips**

## **Beware...**

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- **Some products provide only suppression, not control**
- **Some products known to have activity on thrips, but thrips are not listed as target pests for a crop of interest**
- **Some allowed on outdoor crops but not in greenhouses or high tunnels**

# Thrips:

## insecticides for **pepper & tomato**



control	suppression	Allowed but thrips not specified for pepper, tomato
Assail #	Closer #	Admire
Brigade, Warrior	Exirel	Lannate
Entrust ##	Harvanta #	
Neemix # & Aza-Direct #	Movento #	
Radiant #	Sivanto #	
Torac	Transform #	
Venom	Baythroid, Mustang Maxx	
Vydate		

# OMRI listed

# not allowed in greenhouse or high tunnel

# Onion thrips

on onion



on cabbage



# Onion thrips:

## insecticides for **onion**

control	suppression
Admire	Entrust #
Assail	Exirel
Lannate	Transform
Movento	
Neemix # & Aza-Direct #	
Radiant	
Torac	
Mustang Maxx & Warrior	
Venom	

# OMRI listed



# Onion thrips:

## insecticides for **cabbage**



control	suppression	Allowed but thrips not listed as target for cabbage
Admire	Closer	Lannate
Assail	Exirel	Sivanto
Baythroid	Harvanta	Venom
Brigade	Movento	
Entrust #	Warrior	
Mustang Maxx		
Neemix # & Aza-Direct #		
Radiant		
Torac		

# OMRI listed



# Natural enemies of thrips



Figure 1. Adult *Amblyseius swirskii* feeding on thrips larvae. Photograph by Steven Arthurs, University of Florida.

- **Orius** (predatory flower bugs)
- **Predatory mites**
  - *Amblyseius swirskii*
  - *Amblyseius cucumeris*
- **Available for purchase**

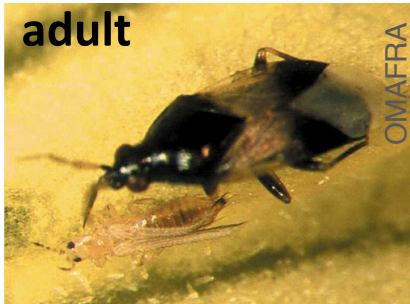


Figure 24. Adult Orius preying on western flower thrips.





# Thrips biocontrol by predators

- **Not realistic once thrips population is large**
- **If thrips problem every year:**
  - **Consider biocontrol at start of season**
  - **Buy *Orius* bugs or predatory mites from a commercial insectary**

the end



Alton N. Sparks, Jr.,  
University of Georgia,  
Bugwood.org

**Info on fruit & veg. pests**  
**[u.osu.edu/pestmanagement](http://u.osu.edu/pestmanagement)**

**Questions?**

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