



Garlic Insect Management

Rick Weinzierl

University of Illinois
weinzier@illinois.edu

Insect Pests of Garlic

Common

- Onion maggot and seedcorn maggot
- Onion thrips (and western flower thrips)

Sporadic to rare:

- Cutworms and armyworms
- Wireworms

General Information Sources

- 2013 Midwest Vegetable Production Guide
 - <http://www.btny.purdue.edu/pubs/id/id-56/>
- Growing Garlic in Minnesota
 - <http://www.extension.umn.edu/distribution/cropsystems/dc7317.html>
- Growing Garlic for Market (scroll down to webinar link)
 - <http://web.extension.illinois.edu/hkmw/localfoods.html>
- Garlic Production (Penn State)
 - <http://pubs.cas.psu.edu/FreePubs/pdfs/ua435.pdf>
- Onion Maggot Control (OMAFRA fact sheet by Gwen Ritcey)
 - <http://www.omafra.gov.on.ca/english/crops/facts/00-017.htm>
- Onion Thrips (Utah State Univ. fact sheet by Alston and Drost)
 - <http://extension.usu.edu/files/publications/factsheet/ENT-117-08PR.pdf>

Onion maggot and seed corn maggot



- Adults are small flies
- Females lay eggs that hatch to form larvae (maggots)
- Maggots infest bulbs and allow entry of fungi that cause rots / decay
- Larvae pupate in the soil within a hardened reddish-brown puparium
- Pupae overwinter
- Multiple generations per year
- Onion maggot is a pest of onion and garlic; seedcorn maggot has a much broader host range





Cultural control (preventive management)

Onion Maggot

- Rotate crops away from onions, garlic
- Floating row covers that exclude egg-laying flies in spring ... only for onion maggot; no fall infestation
- Destroy culls
- Avoid cultivation damage

Seedcorn Maggot

- Allow time for previous crop or cover crop to decay before planting
- Remove mulch before flies are active in the spring

These insects are not always significant problems. Rotation is always advised; base seedcorn maggot avoidance on prior history.

Timing of adult flights

Onion Maggot

Flight #	Cum DD Base 40 F
1	680
2	1950
3	3230

Seedcorn Maggot

Flight #	Cum DD Base 39 F
1	360
2	1080
3	1800
Additional	At 720 DD intervals

Degree day totals reflect the peak flight of each generation.

Illinois Degree Day Calculator:

<http://www.isws.illinois.edu/warm/pestdata/sqlchoose1.asp?plc=>

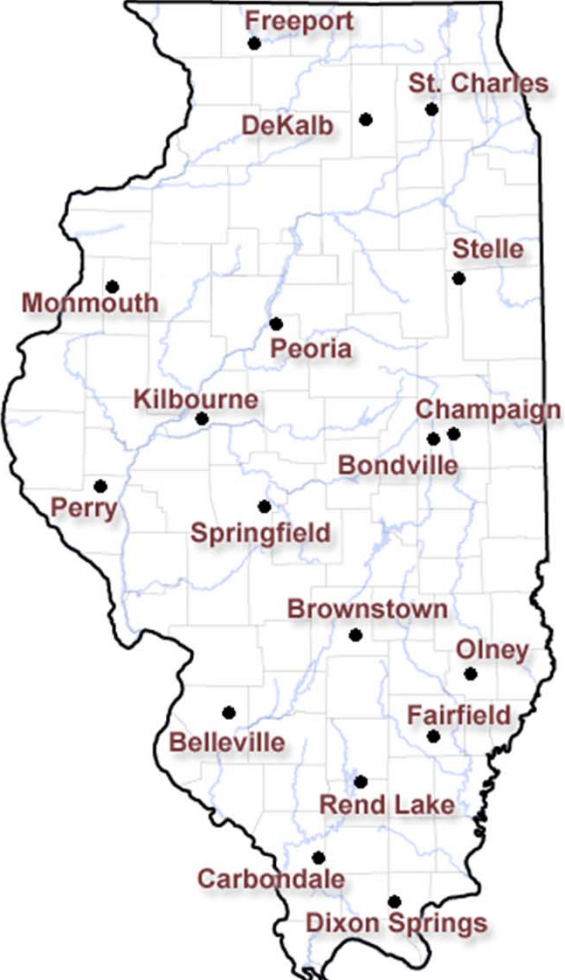
Choose maps, set base temperature

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Choose a pest.

- [Alfalfa weevil](#)
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- [Cereal leaf beetle](#)
- [Codling moth](#)
- [Colorado potato beetle](#)
- [Corn earworm](#)
- [Corn flea beetle](#)
- [Corn leaf aphid](#)
- [Corn rootworm](#)
- [Emerald Ash Borer](#)
- [European corn borer](#)
- [European red mite](#)
- [Fruit tree leafroller](#)
- [Green cloverworm](#)
- [Lilac borer](#)
- [Mexican bean beetle](#)
- [Oriental fruit moth](#)
- [Peachtree borer](#)
- [Potato leafhopper](#)
- [San Jose scale](#)
- [Seedcorn maggot](#)
- [Southwestern corn borer](#)
- [Spotted tentiform leafminer](#)
- [Squash vine borer](#)
- [Stalk borer](#)
- [Tufted apple bud moth](#)
- [Two-spotted spider mite](#)
- [Western bean cutworm](#)

Click the nearest station (dot).





2-5 flies (onion maggot adults) per trap per day is sometimes used as a threshold for sprays intended to provide adult control in onions.



Insecticides for onion maggot and seedcorn maggot control

- Lorsban, in-furrow drench at planting (onion maggot)
- Diazinon, broadcast or in-furrow drench at planting (onion maggot) (Restricted Use)
- Pyrethroids for adult control (onion maggot)
 - See Midwest Vegetable Production Guide
- Insect-infecting nematodes (biological control; OMRI-approved)
 - Not consistently effective against onion maggot

Onion thrips

- All life stages infest additional crops such as winter grains and alfalfa ... adults move to onion family plants when these crops dry down or are cut
- Females lay eggs into leaf tissue; immatures and adults feed on foliage and reduce plant growth; infested leaves look silvery, then yellow. (Onion thrips transmit iris yellow spot virus in the western US)
- Populations thrive in hot, dry weather
- Examine plants by looking under leaf folds
- Thresholds in garlic?: 30 thrips per plant in early summer (fewer on smaller plants; more on larger plants)





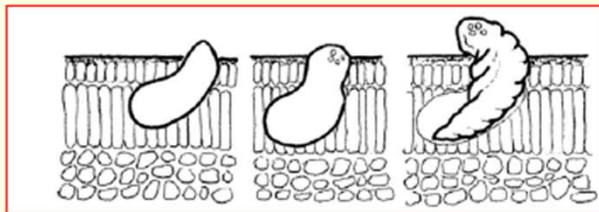
From: Thrips Identification, Biology and Management in Garlic and Onions. Eric Natwick, Univ. of California Cooperative Extension.

<http://cetulare.ucanr.edu/files/33344.pdf>

Thrips Life Cycle

Thrips pass through six developmental stages: **an egg, two larval stages, a prepupal and pupal stage, and an adult.** Generation time varies with temperature and the species but generally takes about a month. Most species insert eggs into plant tissue and most species pupate in or on soil.

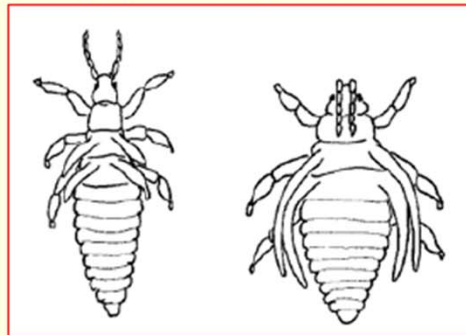
a) Hatching Eggs:



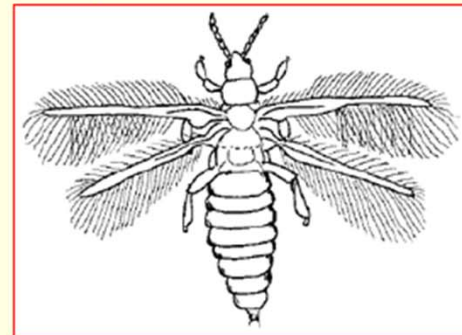
b) Emerging Larvae:



c) Prepupae & Pupae



d) Adults:

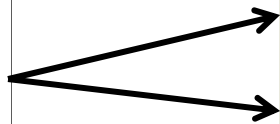


Cultural control (preventive management)

- Do not plant garlic next to (winter grains), alfalfa, or clover
- Sprinkler irrigation can suppress populations (but may not be advised)
- Remove crop debris after harvest to reduce movement to alternate hosts

Insecticides for thrips control (from Natwick, Univ. of California). Also see 2013 Midwest Vegetable Production Guide

Least toxic of effective insecticides to natural enemies



THRIPS CONTROL INSECTICIDES				
Product	MOA Group	Rate as Oz/acre	P.H.I. days	Special Considerations
Radiant SC	5	6 - 10	1	5 - 9 pH; no more than 2 consecutive group 5 insecticides
Entrust	5	4 - 8	1	OMRI; No more than 9 oz /acre/season; pH>7
Mustang	3A	3.2 - 4.3	7	No more than 21 oz /acre/season. Other pyrethroids may be used, e.g. Warrior or Pounce.
Lannate SP	1A	Garlic – 8 Onion- 16	7	May tank mix with a pyrethroid
Vydate L	1A	2-4 pt	14	Dry bulb onion only under SL R-1053; garlic & onions in Modoc & Siskiyou counties
Assail	4A	30SG 5-8 & 70 WP 2.1-3.4	7	No less than 7 days between treatments. No more than 4 applications or more than 13.7 oz /acre/season.
Aza-Direct; Ecozin Plus	UN	16 – 32; 15 - 30	0	OMRI; Opt pH 5.5-6.5; don't exceed pH 7.0 May be mixed with other insecticides.

Currently available insecticides are mostly ineffective for management of IYSV

Cutworms and Armyworms (uncommon)

- Larvae feed on foliage; may damage bulbs as well
- Pyrethroids or products containing *Bacillus thuringiensis* are effective




Wireworms

- Larvae of “click beetles”
- Most common where crops are planted after perennial grasses (pasture or sod)
- Control:
 - Do not plant garlic within one year of turning over perennial grass
 - Lorsban or diazinon as labeled for onion maggot




Illinois Fruit and Vegetable News (newsletter)

- <http://ipm.illinois.edu/ifvn/>



Illinois Fruit and Vegetable News

A Newsletter for Commercial Growers of Fruit and Vegetable Crops
A Publication of University of Illinois Extension and the College of Agricultural, Consumer, and Environmental Sciences



Click here for the current issue: **Vol. 18, No. 17, December 13, 2012**
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Download the **2012 Subscription Form** (Adobe PDF, 61 kb)

Presentations from the **2012 Illinois Specialty Crops, Agritourism, and Organics Conference** are now available online. The **presentations from 2011** are still available as well.

Switch to Another Volume of Fruit and Vegetable News:

Other Information Sources

Newsletters:

- [Midwest Vegetable IPM Newsletters](#)
- [Purdue's Facts for Fancy Fruit](#)
- [Scaffolds \(from New York\)](#)
- [Mid-Atlantic Regional Fruit Loop](#)
- [Michigan State University's Vegetable News](#)
- [Michigan State University's Fruit News](#)
- [New Jersey's Plant and Pest Advisory Alert](#)
- [Illinois Pest Management & Crop Development Bulletin \(field crops\)](#)

Spray Guides, Handbooks, Etc.:

- [2012 Midwest Small Fruit and Grape Spray Guide \(Adobe PDF\)](#)