

# Onion Maggot

K.A. Delahaut



Onion maggot adult and pupae

**Onion maggots** (*Hylemya antiqua*) are tiny maggots that feed below ground on onion bulbs, making tunnels in the bulbs and potentially allowing disease organisms to enter. These maggots are often the most serious pest of onions, especially where continuous production is practiced. Onion maggots are highly host-specific to plants in the onion family, including onions, leeks, shallots, garlic and chives.

## Appearance

Adult onion maggots are slender, grey, large-winged, bristly flies that resemble houseflies, but are only 1/4-inch long. While at rest, their wings overlap their bodies. They lay their white, elongated eggs at the base of the onion plant. Cream-colored onion maggot larvae develop over the course of 3 stages that last a total of 2–3 weeks.

## Symptoms and effects

Onion maggot larvae feed on the hypocotyl (below ground) tissue of seedlings, resulting in various types of damage. Larval feeding may kill seedlings; therefore, poor plant stands may indicate an

onion maggot problem. In larger plants, larvae may tunnel into bulbs, causing plants to become flaccid and yellow. Onion maggot feeding can introduce soft rot bacteria into the plant.

## Life cycle

Onion maggots overwinter as pupae in the soil in onion culls or cull piles. Adults emerge around mid-May and mate over a 3-day period after which they begin laying their tiny, white eggs. When larvae emerge, they crawl beneath the leaf sheath and enter the bulb. The onion maggot pupates in the soil and the next generation of adults appears 3–4 weeks later.

There are 3 generations of onion maggots per year. The first is often the largest and the most damaging. The third generation attacks onions in mid-August shortly before harvest. Damage at this time can lead to storage rot as onion maggots introduce bacteria into wounds caused by their feeding. Cool, wet weather favors the development of onion maggots while hot, dry weather deters their growth.

## Scouting suggestions





After damage has already been detected, it is too late to attempt control. Therefore, action thresholds for foliar insecticide applications are based on the emergence of adults. Peak emergence of each generation can be forecasted using degree-day accumulations. Begin accumulating degree days when the ground thaws in the spring. For an explanation of how to calculate degree days, see page 14 in *Growing Broccoli, Cauliflower, Cabbage and Other Cole Crops in Wisconsin* (A3684) at [www.uwex.edu/ces/pubs](http://www.uwex.edu/ces/pubs). Use a base temperature of 40°F. The first three generations will occur when totals of 680DD<sub>40</sub> (spring), 1950DD<sub>40</sub> (summer), and 3230DD<sub>40</sub> (fall) respectively, have been reached.

## Control

**Cultural:** Effective onion maggot control programs should include the following elements to reduce populations, avoid insecticide resistance and achieve control.

- 1) Rotate onion crops whenever possible to provide at least 1/2 mile between new seedings and previous crops or cull piles. (This may not always be possible on smaller farms.)
- 2) Destroy crop debris and remove culls from the field to reduce numbers of overwintering onion maggot populations.
- 3) Plant onion sets one week before flies are expected to emerge.

**Chemical:** Preventative soil insecticide applications are recommended to control the first generation larvae if damage from the previous year's crop exceeds 5%–10%. Avoid foliar insecticide applications since they are generally ineffective on adult populations that move in and out of fields. Resistance has been documented in onion maggots; therefore, select pesticides that do not exacerbate insecticide resistance. For a list of registered insecticides, consult the University of Wisconsin-Extension publication *Commercial Vegetable Production in Wisconsin* (A3422).

Onion maggot life cycle												
Egg		Larva			Pupa	Adult						
												
When to scout for onion maggot												
April		May		June		July		August		September		
early	mid	late	early	mid	late	early	mid	late	early	mid	late	
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