

Apple Maggot

(*Rhagoletis pomonella*)



Fig. 1. Adult apple maggot fly. Photo by: Joseph Berger, Bugwood.org #5402802

Apple maggot, *Rhagoletis pomonella* (Walsh) (Diptera: Tephritidae), is native to North America and an important apple pest in northern Illinois. Besides apples, it attacks pears, plums, apricots, crabapples, and hawthorns.

The adult is a fly that lays an egg inside the developing fruit. The larvae hatch and create tunnels inside the fruit. The maggot is white to yellowish in color with a narrow, pointed front end and a blunt, broader rear end. In Illinois, they have a single generation. Adults emerge starting late June through September from the overwintering sites, with peak adult activity in late July through early August.



Fig. 2. Female apple maggot on fruit. Photo by: Daniel Mahr, University of Wisconsin-Madison

Identification and Lifecycle

The adult fly is $\frac{1}{4}$ inch long and smaller in size than a common housefly. The wings are clear with black bands and an obvious white spot on the rear end of the thorax (Figs. 1 and 2). The adult male has three whitish stripes (Fig. 1) while the female has four stripes on the abdomen (Fig. 2). Each female can lay hundreds of eggs in their lifecycle. The egg hatches into a maggot, which feeds and tunnels into the fruit for 3 to 4 weeks, causing the fruit to drop (Fig. 3). The larvae come out of fallen fruit and pupate in the soil (Fig. 4), where they live until their emergence next summer.

Damage

Egg laying results in the formation of pits and dimples on the surface, leading to misshapen fruit. The larval feeding in the flesh leaves large brown trails, causing discoloration and rotting of the fruit (Fig. 5). The infested fruit drops prematurely, causing yield loss.

Monitoring Sticky Traps

Apple maggot traps are red spheres, which mimic a ripe apple, covered with sticky material, hung on the trees (Fig. 6). These traps can be baited with a lure that smells like a ripe fruit to enhance effectiveness. Additionally, yellow sticky traps (Fig. 7) baited with an attractant can also be used as a monitoring trap. The economic threshold for these traps is one fly per non-baited trap per week and five flies per baited trap per week.

Traps should be installed at about head height in mid-June before their emergence. Make sure the traps are not touching any leaves or fruit. Remember to correctly identify the apple maggot fly, as many other insects will also get trapped in the sticky material.



Fig. 3. Apple maggot larva(e). Photo by: Whitney Cranshaw, Colorado State University, Bugwood.org #5506402



Fig. 4. Apple maggot pupa(e). Photo by: Michael Klaus, Washington State Department of Agriculture, Bugwood.org #5630799

Control

Non-Chemical Control

Orchard Sanitation

One of the best controls for apple maggot is orchard sanitation. This involves keeping an orchard clean and free from infested fruits. Remove all infested and dropped fruits from the orchard to prevent them from overwintering in the soil under the trees. This will help minimize the infestation in the next season.

Bagging

If the location has a few backyard trees, growers can bag the fruit when they are young to prevent apple maggot egg laying. This is labor-intensive, but plastic sandwich bags can be used. Make sure to cut a small slit at the bottom corner to leave an opening to drain water. There will be no change in its maturity and taste. Plan to remove the bags at harvest.

Chemical Control

There are different pesticides available for controlling apple maggots, and they should be targeted before the egg laying starts. Some commonly available pesticides for apple maggot control are esfenvalerate, carbaryl, and imidacloprid.

Growers might have to spray for apple maggot three or four times per season, depending on their severity. The details on the insecticides available can be found in the [Midwest Fruit Pest Management Guide](#). It is always recommended to contact a local [Extension office](#) for expert advising.



Fig. 5. Maggot tunneling inside fruit. Photo by: Daniel Mahr, University of Wisconsin-Madison



Fig. 6: A red sphere-style apple maggot trap in a tree. Photo by: Daniel Mahr, University of Wisconsin-Madison



Fig. 7: Apple maggot yellow sticky trap. Photo by: Daniel Mahr, University of Wisconsin-Madison

Some Internal Fruit Feeders of Tree Fruits and Their Differences

	Apple Maggot	Oriental Fruit Moth	Plum Curculio	Codling Moth
Scientific Name	<i>Rhagoletis pomonella</i> (Walsh)	<i>Grapholita molesta</i> (Busck)	<i>Conotrachelus nenuphar</i> (Herbst)	<i>Cydia pomonella</i> (L.)
What is it?	A fly	A moth	A beetle/weevil	A moth
Adult	Small 1/4 inch long fly, clear wings with black bands, and an obvious white spot on the rear end of thorax	Small 1/4-inch gray moth, wings with a mottled appearance	Small 1/4-inch snout weevil, humped back, and brownish black in appearance	1/2-inch-long mottled grey moth, wings with alternate gray and white bands, and a bronze-colored spot on the tip
Larvae	Typical maggot, cream color, legless, and no distinct head, 1/4 to 3/8 inch long	White with a black head, 1/2 inch when fully grown	Whitish body, brown heads, and no legs, 3/8 in when fully grown	Pinkish white with a black head and 1/2 to 3/4 inch when fully grown
Number of Generations	1	4 to 5	1 to 2	2 to 3
Signs of Damage	Sunken and dark spots on the fruit skin	Wilting, shoot flagging	Crescent-shaped scar, small round holes on fruit skin	Stings and deep entries
Crop Damage	Apples and crab apple	Peach and other stone fruit	Plum, peaches, apples, cherry, apricot, blueberry	Apples, crabapple, pears
Monitoring	Yellow sticky trap and red sphere mimicking a ripe apple	Pheromone trap and mating disruption	Fruit volatile and aggregation pheromone	Pheromone trap and mating disruption

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