

# Managing Onion Maggot

## (*Delia platura*)

**Integrated  
Crop Protection**  
PROTECTING CROPS

Onion maggot, also known as seed corn maggot, is a species of fly belonging to the family Anthomyiidae. Several species within this family, including *Delia platura*, are agricultural pests, and are commonly referred to as “root-maggots”. Damage to seeds and seedlings associated with *Delia platura* has been recorded in a wide range of crops including corn, beans, onions, garlic, brassicas, potatoes and spinach.

Originating in Europe, *Delia platura* has spread to most temperate areas of the world, including Australia. It is important not to confuse *Delia platura* with *Delia antiqua*, which is also commonly known as onion fly or onion maggot in other parts of the world.



Onion Maggot, *Delia platura* (Source: University of Florida, 2013)

### Damage

The onion fly larvae or maggots live beneath the soil surface and burrow into germinating seeds. Maggots feed on crop seeds, which can result in either the seed failing to germinate or the developing seedlings to become distorted, stunted and/or weak with spindly or few leaves. The maggots can also burrow into seedling stems. While this is unlikely to kill the plant, it may reduce yield and vigour. Wounds caused by the feeding maggots can also become entry sites for disease. Symptoms such as bare patches and distorted growth can be seen about one week after emergence. Damage is more likely to occur in cool, wet conditions when seeds are slow to germinate.

The maggots have a preference for seeds that are damaged, partially decayed or diseased, which in some cases means onion maggots are not considered to be a primary pest.

### Life Cycle

There are approximately four generations of onion maggots a year, with the life cycle of one generation between 16 – 40 days, depending on temperature.

The white coloured eggs are 1mm long and laid in loose clusters on soil that is moist and rich in organic matter. Females lay an average of 250 eggs, which hatch after two or three days. The maggots then burrow down looking for food.

Larvae are yellowish white and typical maggot shape, they have no legs and a pointed head with black mouth parts. The maggots grow from 0.7mm to 7mm before pupating in the soil. The larval stage lasts for about 20 days and development occurs over a temperature range of 11°C to 33°C. The maggots feed on decaying matter, seeds and on developing seedlings. Maggots can be easily seen in infested seeds, roots and stems.

### Key messages

- **Maximise seed health by selecting seed free of damage and disease and delay sowing until the soil is warm to maximise vigour and reduce damage.**
- **Cultural practices recommended for control of onion maggot include ensuring that manures are correctly incorporated and adequate time has lapsed for breakdown prior to planting.**
- **If chemical controls are to be used, treating the seed is likely to be more effective than targeting the adult itself.**

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Pupae can be found in or near plant roots, they are dark brown and barrel shaped, 4-5mm long and 1.5mm wide. At least 10 days is needed for development in the pupal stage. *Delia platura* overwinters as pupae and adults emerge in early spring.

Adults are greyish brown flies that look very similar to house flies, but are only about half the size. Adults are most active in spring and disappear over summer or when temperatures are over 30°C. Activity increases again in autumn. Adults feed on flowers and are attracted to decaying organic matter.



*Late instar larva and pupa damage to seeds  
(Source: University of Florida, 2013)*

## Onion Maggot Management

### Cultural practices

Reports of damage by this pest are usually following cool wet spring conditions, as this favours the development of the maggots and inhibits germination of the seeds. Rapid germination and plant growth will greatly reduce the length of time seeds and seedlings are exposed to the pest. Delaying sowing until the soil is warm will significantly reduce the risk of damage; as will anything that promotes rapid germination and growth. Cultural practices that are good for soil and plant health, such as heavy cover crops and soils rich in organic matter and animal manure, have been associated with high incidence of damage.

Properly incorporating manures and allowing adequate time for organic material to break down before planting can avoid this risk.

Female flies will lay more eggs if they feed on nectar, so removing flowering weeds at the time of sowing is also important, particularly aniseed and carrot weed which are very attractive to flies.

### Biological control

The natural enemies that are most likely to prey on the eggs and small maggots are soil dwelling species. The most common are predatory mites, staphylinid beetles and carabid beetles. They are all favoured by soils that are rich in organic matter.

### Chemical control

Management of this pest should be based primarily on cultural practices that enhance beneficial species and reduce the window of exposure of the seed to the pest. If a chemical intervention is needed, then products that are registered and aim to protect the seed are likely to be more effective than those targeting the adult.



*Damage to soybean seedlings  
(Source: University of Minnesota, 2016)*

## Further information

- **Seedcorn Maggot, University of Florida**  
[http://entnemdept.ufl.edu/creatures/FIELD/CORN/seedcorn\\_maggot.htm](http://entnemdept.ufl.edu/creatures/FIELD/CORN/seedcorn_maggot.htm)
- **Root Maggots, University of Minnesota**  
<http://www.extension.umn.edu/garden/insects/find/root-maggots/>