

Illinois Pest Alert: European Pepper Moth (*Duponchelia fovealis*)

European pepper moth (*Duponchelia fovealis*) has the potential to become a significant greenhouse pest in Illinois. This pest is not likely to survive winter temperatures in Illinois, but it can live and reproduce in greenhouses year-round on a broad range of host plants (a list of host plants is provided on page 3). It is transported in infested plant stock, so incoming stock should be closely inspected.

Report:

If you find an insect you suspect to be European pepper moth, please contact your local Extension office and do not sell or distribute infested plants.

Find your local extension office online:

<http://extension.illinois.edu/global/where-we-serve>

Life Cycle and Damage:

Adults are active for 1 - 2 weeks. Adult females deposit whiteish eggs on the undersides of leaves. Eggs turn red as they develop, hatching in 4 - 9 days.

Larvae feed on the roots, leaves, flowers and plant debris of host plants. They chew crescent shaped holes in leaves growing near the base of the plant, eventually consuming whole leaves. Larvae can also bore into the stems of host plants, causing instability or collapse of the plant and facilitating infection by fungal pathogens. Damage by this pest can be easily misidentified as fungal disease.

After 3 - 4 weeks of feeding, larvae will produce silk and build cocoons in which they pupate. Cocoons and webbing can be found on the undersides of leaves, along the edges of pots near the soil surface or on the outside or underside of pots. They pupate for 1 - 2 weeks.

The entire life cycle can be completed in 6 - 8 weeks at 68° F, making it possible for a greenhouse to support 8 or 9 generations per year.



Figure 1. European pepper moth (*Duponchelia fovealis*), Mark Dreiling, Bugwood.org

Identification:

Moths are 0.35 - 0.5 inches long and have a wingspan of 0.75 - 0.83 inches. The wings are gray to brown with two white to yellow transverse lines. The rearmost line has a distinct rear-facing U-bend (noted with an arrow in Fig. 1) The abdomen is often upturned at the rear end.

Each larva has a dark head capsule and a cream-colored body with dark spots on each segment. The larva has a hard plate on the segment directly behind the head (noted with an arrow in Fig. 2), which distinguishes the larva from species that are similar in appearance, such as sod webworm.

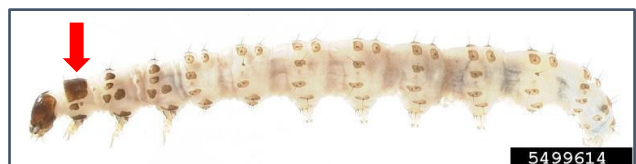


Figure 2. European pepper moth (*Duponchelia fovealis*) larva, Kurt Ahlmark, Microlepidoptera on Solanaceae, USDA APHIS PPQ, Bugwood.org

Where to Look:

Inspect plants for:

- Crescent shaped holes and defoliation of leaves near the base of the plant
- Unstable or collapsing stems
- Cocoons and webbing on the undersides of leaves, where leaves meet the soil, along the edges of pots, or on the underside of pots
- Adult moths or eggs on the undersides of leaves

Monitoring traps:

- Species specific pheromone lures can be placed inside aquatic traps or delta traps to monitor moth populations.

Cultural and Mechanical Controls:

Exclusion is the most effective way to prevent or limit infestation. Inspect plants for signs of infestation and isolate infested plants to prevent moths from infesting additional plants.

If infested plants are found, freezing temperatures can kill insects within the plants. Pots and greenhouse surfaces can be sanitized to remove larvae or cocoons.

Plant debris and lower leaves can be removed and the media can be allowed to dry to reduce preferred habitat.

Biological Controls:

Treatments containing Bt (*Bacillus thuringiensis*) microbes are effective in controlling the larvae of many moth species. Bt treatments are most effective on young larvae but are not effective in treating pupae or adult moths. Bt products are applied to the surface of plants and will not reach larvae that have bored into plant stems.

Biocontrol agents such as predatory mites (*Gaeolaelaps aculeifer*, *Stratiolaelaps scimitus*), rove beetles (*Dalotia coriaria*), entomopathogenic nematodes (*Heterorhabditis spp.*, *Steinernema spp.*) or parasitoid wasps (*Trichogramma spp.*) can be effective in controlling larvae.

Chemical Controls:

European pepper moths have shown no resistance to common insecticides. Contact insecticides applied to the surface of plants are most effective in treating young larvae but will not reach mature larvae that have bored into plant stems. It is sometimes helpful to lay plant pots on their sides so spray treatments can easily be applied to the undersides of leaves.

Always be sure to read and follow all directions on the pesticide label. Do not apply a treatment that is not labeled for your target pest or application site.

References:

Gill, S. University of Maryland Extension. 2013. Greenhouse IPM Pest Alert: European Pepper Moth. <https://extension.umd.edu/learn/greenhouse-ipm-pest-alert-european-pepper-moth>

University of Florida, Institute of Food and Agricultural Sciences. 2011. Featured creatures: European pepper moth or southern European marsh pyralid. http://entnemdept.ufl.edu/creatures/veg/leps/european_pepper_moth.htm

White, J. Cooperative Extension, University of Kentucky College of Agriculture. 2012. Greenhouse Pest Alert: The European Pepper Moth (*Duponchelia fovealis*). <https://entomology.ca.uky.edu/files/efpdf2/ef324.pdf>

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Host Plants of European Pepper Moth:

- *Alternanthera splendid*, an aquatic plant
- *Alternanthera rosaefolia*, an aquatic plant
- *Apium graveolens*, celery
- *Bacopa lanigera*, water hyssop
- *Begonia tuberosa*
- *Begonia elatior*
- *Bellis perennis*, English daisy
- *Beta vulgaris*, beets
- *Capsicum annuum*, pepper
- *Chenopodium album*, lamb's quarters
- *Convolvulus arvensis*, bindweed
- *Cuphea hyssopifolia*, false heather
- *Echinodorus tropica*, sword plant
- *Echinodorus parviflorus*, sword plant
- *Euphorbia pulcherrima*, poinsettia
- *Eustoma grandiflorum*, Lisianthus
- *Ficus triangularis*, fig
- *Hyeronima alchorneoides*, a tropical tree of South American origin
- *Hygrophila rubella*, an aquatic plant
- *Ludwigia glandulosa*, an aquatic plant
- *Ludwigia perennis*, an aquatic plant
- *Malva sylvestris*, mallow
- *Mentha pulegium*, penny royal
- *Nesaea pedicellata*, an aquatic plant
- *Ocimum basilicum*, basil
- *Origanum majorana*, majorum
- *Oxalis acetosella*, common wood sorrel
- *Plantago lanceolata*, plantain
- *Portulaca oleracea*, common purslane
- *Punica granatum*, pomegranate
- *Ranunculus repens*, creeping buttercup
- *Rotala macranda*, an aquatic plant
- *Rotala wallichii*, an aquatic plant
- *Rubus fruticosus*, blackberry
- *Solanum lycopersicum*, tomatoes
- *Amaranthus*
- *Anemone*
- *Annona*
- *Anthurium*
- *Bouvardia*
- *Calathea*
- *Chrysanthemum*
- *Cineraria*
- *Codiaeum*
- *Coleus*
- *Cucumis*, cucumbers
- *Cucurbita*, squash
- *Cyclamen*
- *Fragaria*, strawberries
- *Gerbera*, African daisies
- *Heuchera*, coral bells
- *Impatiens*
- *Kalanchoe*
- *Lactuca*, lettuce
- *Limonium*, sea lavender
- *Lysimachia*
- *Ophiopogon*, mondo grass
- *Pelargonium*, geranium
- *Paeon*
- *Phalaenopsis*, orchids
- *Rhododendron*, azalea
- *Rosa*, roses
- *Rumex*
- *Sambucus*, elderberry
- *Sarracenia*
- *Senecio*
- *Tanacetum*
- *Thymus*, thyme
- *Ulmus*, elm
- *Zea*, corn