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Lily Leaf Beetle, *Lilioceris lili* Coleoptera: Chrysomelidae

The lily leaf beetle is an exotic pest that was introduced to Connecticut around 1995. It was found in the early 1990's in the Boston area. Most likely this insect arrived in the United States from Europe in a shipment of lily bulbs. Both adults and larvae do serious damage to lily plants.



Figure 1. Adult lily leaf beetle feeding on lily leaf.
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Description

The 6 – 10 mm (1/4 to 3/8") long adult beetle has brilliant red wing covers with black legs, head, antennae and body (Figure 1). Adults have a defense mechanism of squeaking when they are lightly squeezed. They also drop to the ground and play dead.

Gelatinous eggs, laid in a single row, are orange to red. A dark head develops as the eggs mature (Figure 2).

Larvae are red-orange and sac-like but appear darker because of the feces they usually carry on their backs. The head is black (Figure 3).

The 12 mm long pupa, which is rarely seen because it is in the soil, is bright orange (Figure 4).

Life Cycle

Adults overwinter in protected areas around the garden. Beetles emerge over a few weeks in April and begin feeding on emerging lily foliage. Mating takes place in May and June. Females can lay up to 450 eggs each over a period of several weeks from June into July. Gelatinous eggs are laid only on true lily. Rows of eggs are found near the underside midrib on older leaves. Depending on temperature, eggs hatch in seven to ten days. Larvae tend to feed gregariously on the underside of leaves from the tip inward to the stem. After feeding for two to three weeks in July and August, mature larvae drop to the soil, burrow down and pupate. Pupae do not feed. New, bright red adults emerge 15 – 20 days later and feed on foliage until cold weather.



Figure 2. Lily leaf beetle eggs on leaf underside.
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Figure 3. Lily leaf beetle larva with feces beside it.
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Figure 4. Lily leaf beetle pupa.
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There is one generation per year. However, adults may live for two years. Adults appearing in the spring will be those that emerged the previous August and second year adults. Thus, adults may be present from April through October and it can seem that there is more than one generation per year.

Hosts and Damage

Leaves of all true lilies: Asiatic, Oriental, tiger lilies and hybrids are eaten first. As the population grows, buds, flowers and stems are also eaten. Populations can build so quickly that entire plantings seem to disappear overnight. Adults also will feed on *Fritillaria*, *Polygonatum*, *Solanum*, *Smilax*, *Nicotiana* and other plants but are not able to complete their life cycle on these hosts. They do not feed on daylilies.

Management

There are mechanical, biological and chemical options for managing this pest. Handpicking larvae and adults, while wearing gloves, can be effective in a small planting. Two parasitic wasps have been researched for biological control of this pest in Connecticut:

Tetrastichus setifer (Hymenoptera: Eulophidae) and *Diaparsis jucunda* (Hymenoptera: Ichneumonidae). These endoparasites lay their eggs in lily leaf beetle larvae. Wasp larval feeding kills the lily leaf beetle larvae. The wasps are established in Connecticut and have moved up to 10 km from release sites. There is a noticeable reduction of the lily leaf beetle populations associated with sites where *Tetrastichus setifer* was released. (Tewksbury, 2017).

There are multiple chemical options for control of the lily leaf beetle. Azadirachtin, which is among the compounds registered for use against this pest in Connecticut, will control small larvae and repel adults. Multiple applications are necessary as eggs hatch over a period of weeks. Permethrin, spinosad, or imidacloprid may be used against larvae and adults as a foliar spray. Care must be taken to not contaminate open flowers with these insecticides. Imidacloprid, a restricted use insecticide, applied by a licensed professional as a systemic to be taken up by the roots in the spring, may provide season-long control, but may be hazardous to pollinators. Consult the label for dosage rates and safety precautions. Follow all label directions.

References

Tewksbury, L. R. Casagrande, N. Cappuccino, M Kenis. 2017. Establishment of Parasitoids of the Lily Leaf Beetle (Coleoptera: Chrysomelidae) in North America.

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