

LEEK MOTH

A New Invasive Insect Pest of Allium Crops

Amy Ivy, Horticulture Educator, Cornell Cooperative Extension
 Anthony Shelton, Ph.D, Professor of Entomology, Cornell University
 Dan Olmstead, Research Support Specialist, Cornell University

<http://web.entomology.cornell.edu/shelton/leek-moth>



Figure 1. Adult and larval life stages of leek moth.

Introduction

Leek moth (LM) is a pest of plants in the Allium family which includes onions, garlic, leeks, chives and shallots. The larvae feed on crop foliage, stunting plant growth and compromising the storage life of the crop. LM is native to Europe and is now common in Russia, Japan, and Algeria. It was discovered in North America in 1993 in Ontario, Canada and the first confirmed occurrence of leek moth in the continental United States was in Plattsburgh, NY (Clinton County) during the summer of 2009. In 2010 and 2011, it reappeared in the same sites as well as additional sites north of Plattsburgh (Figure 2). It was also confirmed in the Canton/Ogdensburg area of northern NY (St. Lawrence County) those same years. There is speculation from growers there that it may have been present for a number of years, but this cannot be confirmed.

Counties Where Leek Moth Has Been Confirmed

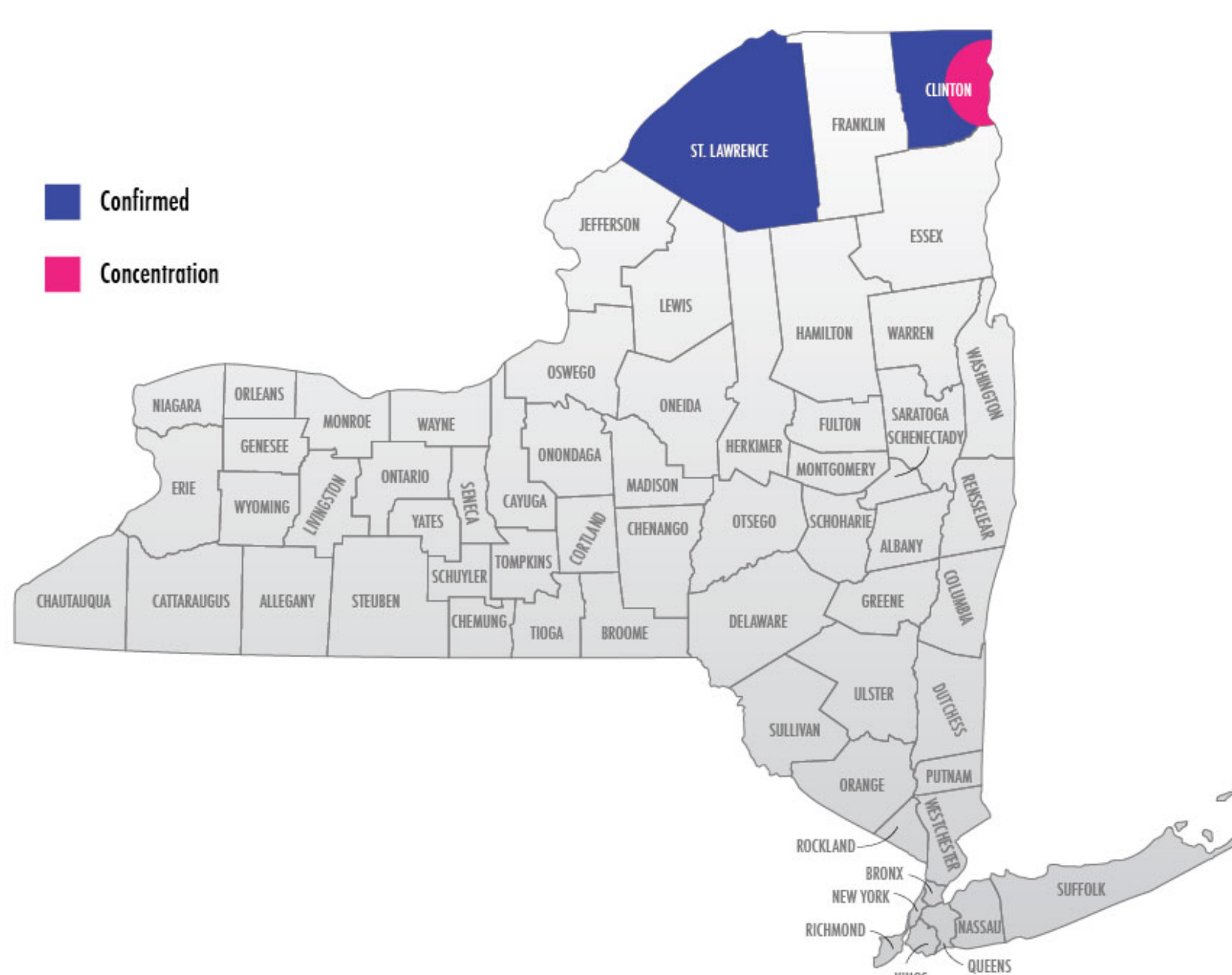


Figure 2. Distribution of confirmed leek moth populations in the northeastern United States as of 2011.

Biology

The moth is speckled brown, white and black with a distinctive white spot halfway down its outer pair of wings (Figure 1). It is about 3/8" long and is nocturnal so it will rarely be seen unless trapped. The larva is a creamy yellow, slender caterpillar, less than a half inch long when fully grown (Figure 1).

The pupa is surrounded with a cocoon having a net-like structure and is often found attached to outer plant surfaces that may be healthy or necrotic. The eggs are tiny and translucent. They are laid on the undersides of leaves and are very difficult to see.

There are two to three generations per year in Ontario, CA. LM overwinters as a pupa. In spring, adults emerge, mate, and lay eggs when temperatures reach 10°C (Figure 3). A female will lay about 100 eggs, singly, on the underside of host plant leaves over a 3-4 week period. Eggs hatch in about a week. Larvae burrow into the leaves and grow in size over the next two weeks, and then pupate. Adults emerge about 10 days later.

Damage Symptoms

The first generation (May-June) feeds on Allium leaves, causing some damage. The second generation (July-August) causes more severe damage due to higher numbers and better growing conditions as LM larvae move towards the bulb. Feeding damage stunts plant growth, introduces rots and shortens the storage life of onions and garlic. On crops with hollow leaves (onions, shallots and chives), larvae feed inside the leaf causing 'windowpane' damage to the leaves. Look for LM larvae by splitting open damaged leaves and looking for frass (excrement) and debris (Figure 4). Even after the larvae have left the plant to pupate, the telltale debris remains visible. On garlic and leeks, larvae feed on the leaf surfaces and sometimes tunnel through the leaves. They are often found between leaves or in the protection of folded leaves.



Figure 4. Examples of leek moth larval damage in Allium crops including (A) window pane damage in onion, (B) a split onion leaf showing interior damage, and (C) leek plant damage.

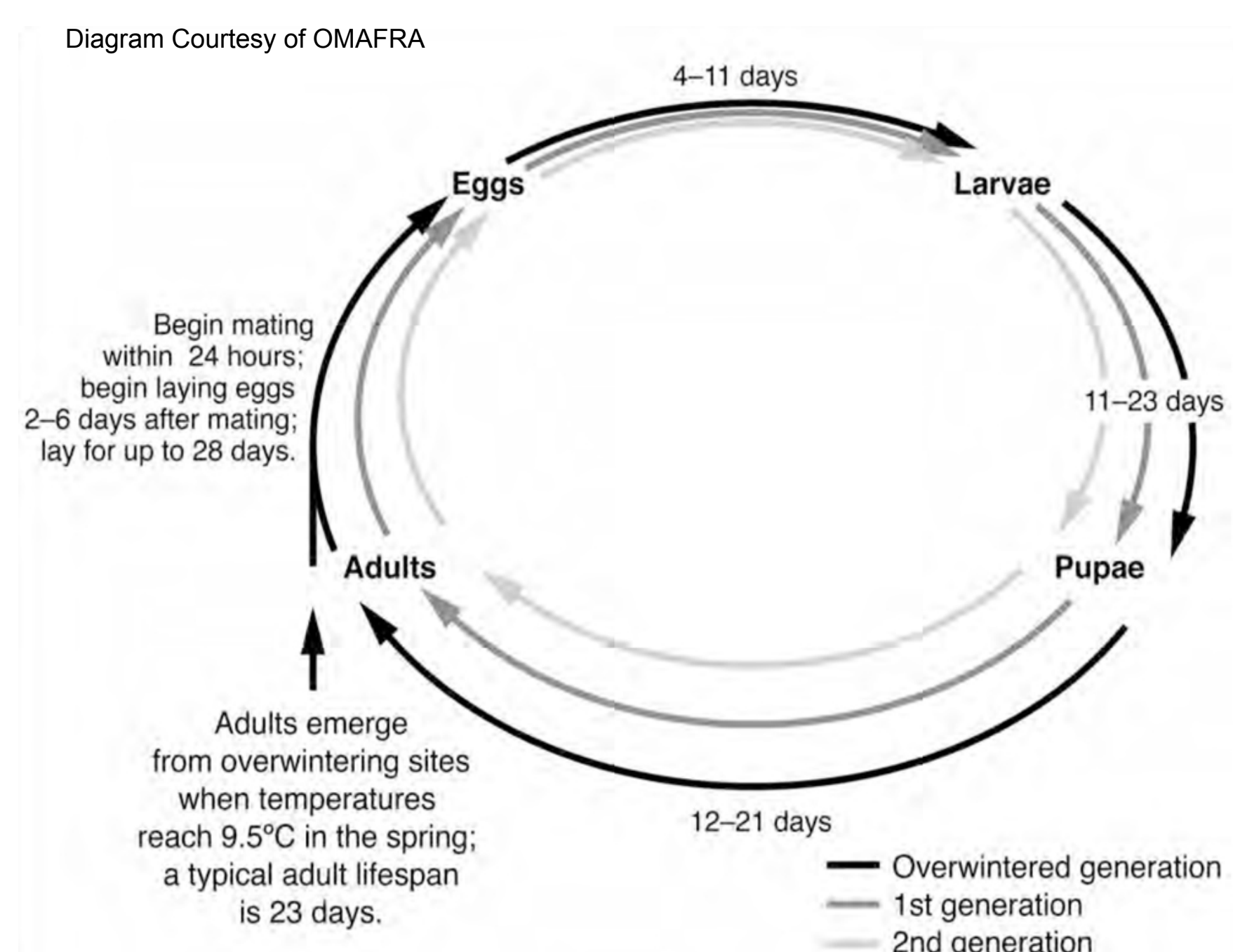


Figure 3. Diagram of leek moth developmental progress through a typical growing season.

Management

In July 2010 the NYS Department of Environmental Conservation granted special insecticide registrations for: Warrior II (pyrethroid), Radiant SC (spinetoram), Lannate LV (carbamate), Entrust (spinosad), and DiPel DF (*Bacillus thuringiensis*). DiPel DF and Entrust can be used in organic production.

Insecticide applications made 7-10 days following a peak flight of LM can greatly reduce LM populations. Applications of organic insecticides must be precisely applied to have an effect. Thorough coverage of a plant is essential to control young larvae, especially with DiPel.

Row covers can be effective for control of LM on a farm and rotation to non-host plants can be effective for area-wide management.

Parasitic hymenopteran wasps, *Diadromus pulchellus* (Ichneumonidae) and *Conura albifrons* (Chalcididae), and generalist predators may be helpful in suppressing LM populations.