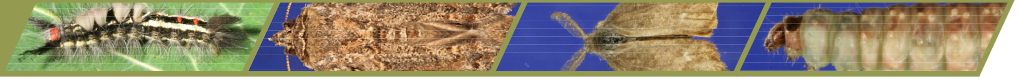




# Insect Production Services

<http://www.nrcan.gc.ca/forests/research-centres/glfc/13467>

version 2.1



## Biology of the Cabbage Looper (*Tricoplusia ni*)

### INTRODUCTION

The cabbage looper *Tricoplusia ni* is found throughout North America. It is a major pest of crucifer crops including cabbage, broccoli, cauliflower and may also be found feeding on other agricultural crops such as beets, celery, lettuce, peas, spinach, tomatoes and flowers including carnations and nasturtiums. Cabbage looper cannot survive Canadian winters. Every year, they migrate from the southern US and arrive here in July and August depending on temperatures and wind patterns. Although they normally produce two to three overlapping generations in a growing season, the actual number depends on when they arrive in Canada. It takes approximately one month of warm weather for the cabbage looper to complete its life cycle and produce the next generation of offspring.



method of locomotion is characteristic to loopers which are also sometimes referred to as “inch-worms”. Larvae feed for two to three weeks on the underside of leaves, damaging and killing plants by chewing large holes between plant veins. Mature larvae reach lengths of

3-4 cm before they pupate within fragile, thin, white cocoons attached to the stems or undersides of leaves. Pupae are initially green but as they develop they turn dark-brown or black in colour and are about 2cm in length. Development of adults within pupae takes about six days at 27°C after which they emerge as mottled greyish-brown moths with distinctive silvery markings on their forewings. Adults are considered to be semi-nocturnal and may be active at dusk and during cloudy days but are most active late in the evening. Moths are capable of flying up to 200 km to locate new crops where females produce 300-600 eggs to initiate next generation.

### LIFE CYCLE

Cabbage looper do not require an overwintering period as a part of their life cycle, in fact, conditions colder than 10°C can prove fatal. Once adults migrate into an area, they deposit their eggs on the upper or lower surface of host foliage. Eggs are hemispherical in shape, yellowish- white to a light green in color, bearing longitudinal ridges and are approximately 0.6mm in diameter. They are usually laid individually but may be found in masses containing 2-10. The length of time required for eggs to hatch is temperature dependant. Eggs hatch after three days at 27°C or 10 days at 15°C into small, green, first-instar, larvae that are initially hairy but lose this hair as they develop. They will shed their skins and moult through a total of five larval stages know as instars. Larvae are light green with faint white stripes running dorsally along their bodies. Their torso at the anterior end is narrow, containing three pairs of forelegs, gradually getting wider to the posterior end with three pairs of prolegs. Larvae move by holding on with their prolegs, projecting their front end forward, grabbing hold with their forelegs and then arching their bodies bringing the prolegs up to meet the forelegs. This

### DAMAGE AND NUISANCE

CABBAGE LOOPER LARVAE IN THEIR FIRST THREE INSTARS GENERALLY FEED ON THE UNDERSIDES OF LEAVES KEEPING THE UPPER SURFACES OF LEAVES INTACT. DURING THEIR FOURTH- AND FIFTH-INSTARS, LARVAE CHEW LARGE HOLES IN LEAVES AND MAY BORE INTO THE DEVELOPING HEADS OF CABBAGE. AT THIS STAGE, LARVAE CAN CONSUME THREE TIMES THEIR BODY WEIGHT DAILY. THEIR WET AND STICKY FECAL MATERIAL CALLED FRASS ACCUMULATES AT FEEDING SITES AND MAY EVEN STAIN VEGETABLES SUCH AS CAULIFLOWER AND BROCCOLI RENDING THEM UNMARKETABLE. FEEDING DURING THE FIRST HALF OF THE GROWING SEASON MAY NOT ALWAYS AFFECT CROP YIELDS SINCE LARVAE FEED PREDOMINATELY ON THE WRAPPER LEAVES OF THE PLANTS, E.G., CABBAGE.

### NATURAL CONTROL

Cabbage looper are susceptible to numerous entomopathogens including fungi, protozoa, bacteria and viruses. The most common is a nucleopolyhedrovirus (NPV) which under some conditions, may prove to be a natural regulator of

cabbage looper populations. Once infected by virus, the larvae turn milky yellow and then brown at death. These dead larvae decompose and release virus particles into the surrounding area. Natural enemies such as parasitic wasps and tachinid flies may also contribute to population suppression. Parasitoids have been retrieved from looper eggs, larvae and pupae. Predators for cabbage looper include ground beetles, lady beetles, bugs, spiders, birds and small mammals. Although natural predators do play an important role in wide scale control, quite often their impact may not be effective on small local populations of looper.

### WHAT CAN I DO?

For small gardens and backyard plants and flowers, hand-picking of caterpillars several times a week may do the trick. Starting plants indoors and planting very early in the growing season allows for harvesting of vegetables before peak insect population outbreaks. Planting cultivars of plants that are less palatable to insects is also recommended. Attracting natural predators and parasitoids can be achieved by planting flowers (pollen and nectar) around gardens. Beneficial insects are especially attracted to plants such as dill, fennel, coriander and alyssum. Collecting dead diseased larvae, grinding them in water and spraying with a mist bottle may speed up the natural process and prove to be effective. Currently, the microbial insecticide called B.t., *Bacillus thuringiensis*, is available at most gardening centers and has long been used for effective suppression. If insect control is necessary, B.t. is available at most gardening centers and is much safer to use than chemicals. Spraying chemical insecticides might also greatly affect natural cabbage looper predators and non-target species, so read the label carefully and follow instructions stringently before using them.

### Contact

John Dedes, Insectarium Supervisor  
Canadian Forest Service, Great Lakes Forestry Centre  
1219 Queen Street East  
Sault Ste. Marie, ON P6A 2E5  
(705) 541-5673  
john.dedes@nrcan.gc.ca