

VEGETABLE CROPS

COOPERATIVE EXTENSION • NEW YORK STATE • CORNELL UNIVERSITY

cabbage looper

Trichoplusia ni (Huebner)

INTRODUCTION

The cabbage looper is native to the United States and feeds on many cultivated vegetables, including all members of the cabbage family. This pest survives the winter only in the Gulf States. The adults migrate northward annually, arriving in northeastern United States and Canada anytime from early July to late August, depending on the weather and wind patterns. There are one to three generations in the northeastern states depending on the time of arrival and temperature in late summer and early fall.

ADULTS

The adult looper is a mottled, greyish-brown moth with a wing span of 1 1/2 inches (38 mm). It has a small silvery

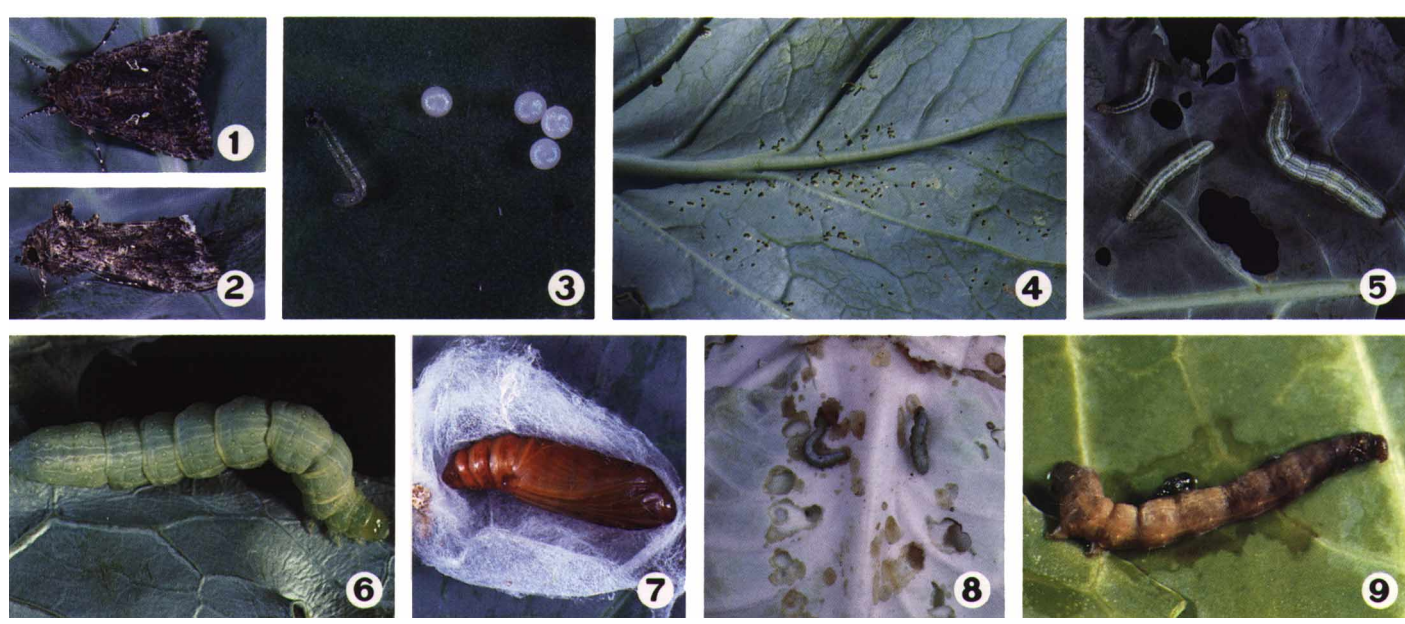
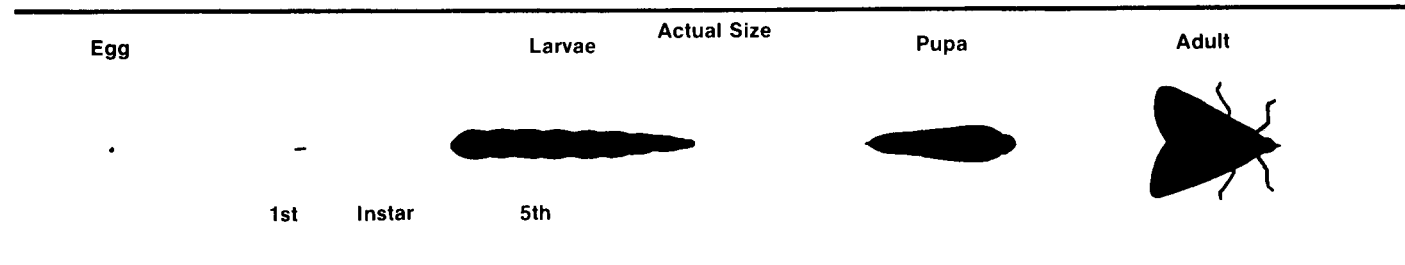
white figure "8" in the middle area of each of the front wings (Fig. 1). The forewings have two shades of grey and blackish zig-zag stripes. The hind wings are a pale brown. Arising from behind the back of the moth's head is a tuft of hair (Fig. 2). Adults are nocturnal fliers, but can be seen occasionally during the day resting on the underside of cabbage leaves. Female moths can lay up to 200-350 eggs. They usually lay eggs in groups near the outer fringes of lower leaves and on plants not previously infested by cabbage looper larvae.

EGGS

The eggs are rounded, ridged, white, and approximately the size of a pinhead (Fig. 3). They are normally laid on the underside of the lowest leaves. Unlike the eggs of the imported cabbageworm, cabbage looper eggs are not securely glued to the leaf and can be brushed off easily.

LARVAE

Larvae hatch 3 to 6 days after eggs are laid (Fig. 3). They immediately begin feeding on the underside of the leaf



producing small holes that do not break through the upper epidermis of the leaf (Fig. 4). Looper larvae feed for 2 to 4 weeks and pass through five instars. Egg and larval development may be delayed even longer during the cooler months of September and October.

The larvae are light green with a white stripe along each side of the body and two other white stripes along the back (Fig. 5). When mature, they are approximately 1 1/2 inches (38 mm) (Fig. 6). The body tapers to the head and contains three pairs of slender legs near the head. There are also three pairs of thick prolegs at the hind end of the caterpillar. No legs exist in the median area of the looper. This region is generally humped up when the insect moves and from this "looping" habit, the common name is derived. This trait is prevalent throughout all the larval stages and distinguishes loopers from other cabbage feeding worms.

PUPAE

Young pupae are a light greenish color and gradually turn dark brown when mature. They are nearly 3/4 inches (20 mm) long and wrapped in a delicate cocoon of white tangled threads (Fig. 7). Pupae are usually found on the underside of lower leaves. The cabbage looper overwinters in the pupal stage; however, it is not known to hibernate in the northeastern United States.

DAMAGE

The larva is the damaging stage of the cabbage looper. Because it consumes more foliage and is less susceptible to insecticides, it is more troublesome than either the diamondback moth or the imported cabbageworm. The young larvae feed between veins on the undersides of the lower leaves. Large larvae make ragged holes in the foliage and move to the center of the plant, where feeding generally occurs at the base of the cabbage head (Fig. 8). Large loopers can also burrow through three to six layers of tightly wrapped head leaves.

Under good growing conditions, cabbage plants can withstand at least moderate defoliation of frame leaves before any reduction in headweight occurs. However, feeding on the head will affect marketability for fresh market. In kraut cabbage, some feeding damage on the wrapper or head leaves may be tolerated because these leaves are removed during harvesting and processing. Large amounts of dark green pellets (frass) excreted by the feeding looper may stain cauliflower heads. On broccoli, the presence of looper larvae in the heads renders them unmarketable.

CONTROL

There are naturally occurring control organisms that aid in limiting the cabbage looper populations. Due to the migratory behavior of the looper, however, there appears to be fewer natural controls in the northeast than would exist were the insect present year round. A variety of predacious beetles, spiders, and bugs feed upon eggs and young looper larvae. Additional parasitic wasps and tachinid flies parasitize cabbage looper larvae in late summer. Both the fly and wasp parasites are moderately effective in suppressing looper populations.

There are microorganisms that infect large cabbage looper populations causing significant mortality. One in particular is a virus (nuclear-polyhedrosis) that can develop into a widespread disease later in the season. Diseased loopers are easily detected by their change in color over time from green to yellow to brown. Infected larvae eventually die and quickly decompose (Fig. 9). This releases more virus particles which aids in the spread of the disease.

Consult your local extension recommendations to determine which pest management practices are most effective in your area.

EVALUATING POPULATIONS

Predicting cabbage looper problems on a seasonal basis is difficult due to its migratory behavior. A cabbage looper pheromone, (a chemical emitted by the female) that attracts male moths, can be used in traps to detect the presence of looper adults and indicates the need for intensive field sampling.

Monitoring egg populations is time consuming due to the small size of the egg and its placement on the underside of the lowest leaves. In addition, acquiring accurate estimates of subsequent larval populations from egg counts may be difficult. Thus, weekly sampling for larvae is the preferred method. Larval counts should be acquired by sampling at least 20 randomly chosen plants throughout the entire field. Separate counts of small larvae (less than 16 mm or 5/8 inch) and large larvae are important for making treatment decisions, particularly since larger cabbage looper larvae are more difficult to control. The underside of the lowest leaves should be scanned for both eggs and newly hatched larvae. Observations for larger larvae should also be made around the base of the head by pulling back loose wrapper leaves. Frass (excrement) and fresh feeding damage are usually good indicators of the presence and size of the larva. Consult your local extension recommendations for the appropriate larval threshold necessary for treatment in your area.