Insect Answers:

Caterpillar Pests of the Cabbage Family

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS018E

Introduction

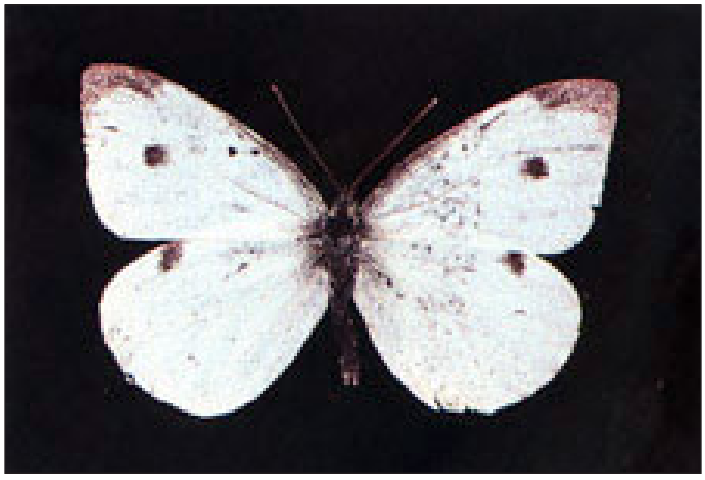
A number of caterpillar pests feed on members of the cabbage family—broccoli, cauliflower, kale, brussel sprouts, collards, kohlrabi, and of course, cabbage. While a dozen or more caterpillar pests attack this plant group, a few major ones inflict the most damage. Those which cause damage include imported cabbage worm, diamond-back moth, several loopers, and a number of cutworms and armyworms. All of these insects go through several stages of their life cycle: egg, larva, pupa, adult. The caterpillar or larval stage of these pests does the damage. Often, several of these pests attack and damage a plant simultaneously.

Imported Cabbage Worm

The imported cabbage worm, *Artogeia rapae*, is probably better known to the gardener as the cabbage butterfly. This butterfly was imported from Europe to eastern Canada in the mid-1800s, and has since spread to all parts of the continent. The adult is a white butterfly (wingspan 1 1/2 inches) that has black-tipped forewings. Females have two black spots on top of each of their forewings; males have only one black spot. The hindwings are all white on the surface except for a black spot on the outer front margin. A slight yellowish hue shows on the undersides of the wings.

Adults appear in the spring, mate, and females begin to lay eggs singly on the leaves of host plants. The eggs are yellow, oblong, and deeply ridged length-wise. Eggs hatch in 3 to 7 days, depending on temperature. The larval stage takes about 2 weeks to attain full growth, about 1-inch in length. The larva is soft and velvety green with faint yellow stripes running longitudinally on its back and sides. When development is complete, the larva pupates in a pale green chrysalis, which it attaches to any handy object in the garden. Completion of the pupal stage takes from 1 to 2 weeks. Three to five generations overlap throughout the season. Overwintering occurs in the pupal stage of the last generation.

The larvae feed on the first formed outer leaves of their host plants, which often appear riddled with irregularly



Adult male cabbage butterfly.

Imported cabbage worm larva and leaf damage. Note fecal pellets on leaf.

shaped holes. As the caterpillar becomes mature, they feed in the center of the head. Fecal pellets can be found between the leaves. This pest damages turnip, radish, mustard, and nasturtiums in addition to the cabbage group.

Diamondback Moth

A second major caterpillar pest of cabbage and related plants is the diamondback moth, *Plutella xylostella*. This pest, also introduced from Europe in the nineteenth century, now has a wide distribution on this continent. The small brown or grayish moths have a wingspan of about 3/4-inch or less. When at rest, the folded wings present an image of light-colored diamond shapes along the wing backs where they meet.

Adults appear in early spring. After mating, females deposit small, almost round, yellowish-white eggs singly or in small groups on both sides of leaves of host plants. Hatching occurs in a few days, and the young larvae begin working as miners between the outer leaf tissues. This insect also feeds on some ornamentals, such as sweet alyssum. Larvae become external feeders within a few days of hatching. As they mature and grow larger they remove leaf tissues, creating holes or sunken areas in the leaves. Mature larvae are approximately 1/3-inch long and pale green in appearance. Pupation takes place in a delicate cocoon on leaves or in garden debris. A total life cycle may take from 2 to 7 weeks. About four to six generations occur annually. Adults overwinter in plant debris or in the soil.

Adult diamondback moth (top). Leaf damage done by larval stage of diamondback moth (center). Larvae create holes or sunken areas in leaves. Diamondback moth larva (bottom).

Alfalfa Looper

The alfalfa looper adult, *Autographa californica*, has a wingspan of up to 1 1/2 inches. The moth has mottled gray forewings; a distinctive, silver, commalike mark occurs in the center of each.

Appearing in the spring, adults mate, and females lay pale yellow hemispherical eggs singly and in clusters on leaves of host plants. The pale green mature larvae are about 1 1/3 inches long, and have a dark top stripe edged with white lines, and two somewhat obscure white lateral lines. These larvae have three pair of true legs attached to the thoracic segments behind the head, and possess prolegs (false legs) attached further down on the abdomen. While the imported cabbage worm and diamondback moth larvae have five pair of prolegs, loopers possess only three pair. Because the looper prolegs are attached near the end of the abdomen,

Adult alfalfa looper (top). Alfalfa looper larva and damage (center). Cabbage looper larva (bottom).

Western yellowstriped armyworm (light phase). These caterpillars like garden weeds.

these caterpillars appear to move in a "looping" fashion.

Loopers overwinter in the pupal or adult stages. From three to five generations occur annually. While general feeders, alfalfa loopers can at times cause significant damage to cabbage and related plants. The cabbage looper, *Trichoplusia ni*, is another looper that sometimes attacks these plants. These two loopers are extremely similar in appearance and, therefore, difficult to tell apart.

Cutworms and Armyworms

A number of cutworms and armyworms can cause considerable damage to cabbage family plants. The adults are mostly drab moths, the same size as the alfalfa looper. In fact, they are in the same family of moths which, as adults, are collectively known as "Millers."

Insect exclusion cage protects cabbage from insect pests, caterpillars.

Among the many species of armyworms and cutworms that occasionally feed on cabbage, the most commonly encountered are the Bertha armyworm, variegated cutworm, spotted cutworm, army cutworm, western yellowstriped armyworm, zebra caterpillar, and the black cutworm. Many of these caterpillars have strong preferences for certain species of weeds. Gardens surrounded by, or overgrown with, weeds tend to have more serious cutworm and armyworm problems.

Control

All species of caterpillar pests of cabbage and related plants are parasitized or otherwise preyed upon by a variety of biological entities, including parasitic wasps, predacious beetles, disease, birds, and bats. Caterpillar pests may be nearly nonexistent in your garden some years due to these predacious "good guys," adverse climate, or other factors. However, at times, one or several caterpillar pests may be numerous enough that damage becomes intolerable. Then control measures are needed. Physical removal of caterpillars may be helpful, but it is tedious work. Since many caterpillar pests are hard to locate, this method may not be satisfactory. Cages of screen door hardware cloth can be placed over developing plants and left in place through maturity to achieve maximum protection. They are effective in excluding these pests and preventing maggot damage as well (see FS010E, *The Cabbage Maggot in the Home Garden*).

Chemical controls available for use on this plant group are listed in the current PNW Insect Management Handbook or on HortSense at http://pep.wsu.edu/hortsense.

Be sure plant species you intend to spray is on the product label before you purchase or use it. Please pay particular attention to bee safety warnings.

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Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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FS018E