EB1892

RECOGNIZING ECONOMICALLY IMPORTANT CATERPILLAR PESTS OF PACIFIC NORTHWEST ROW CROPS

Prepared by A.L. Antonelli, Ph.D., Washington State University Cooperative Extension entomologist, WSU Puyallup;

P.J. Landolt, Ph.D., USDA, Wapato;

D.F. Mayer, Ph.D., WSU research entomologist, WSU Prosser;

and

H.W. Homan, University of Idaho entomologist (retired)

Use pesticides with care. Apply them only to plants, animals, or sites 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.

EB1892
RECOGNIZING ECONOMICALLY IMPORTANT CATERPILLAR PESTS OF pacific northwest ROW CROPS

Most economically important "worms" or caterpillars in the Pacific Northwest belong to the family Noctuidae, comprising the cutworms, armyworms, and loopers. The moth adults of this family collectively are known as "millers." Although in this bulletin we deal primarily with the noctuid group, we describe two other species, the imported cabbageworm and the diamondback moth. They also are noted pests of the Northwest's important cole crops.

Because it is often more efficient to monitor for adults than for larvae, we include descriptions and photos of adults in this guide. Larvae photos are as true to type as we could find to reinforce the text. Word descriptions follow the style and format previously given by Johansen, 1973 (Fig 1) and can be used only with mature larvae. Young larvae often do not resemble full grown forms. "Reticulation," used frequently, is defined as "covered with a network of lines or netted" (Torre-Bueno, 1937).

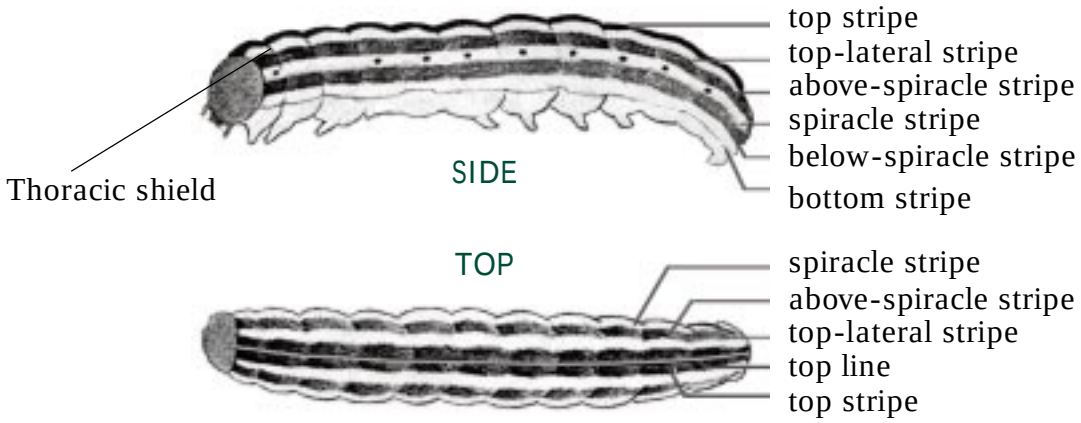

Fig. 1 Key to locating various descriptive Landmarks on mature noctuid larvae

NOTE:

Definitive identification of larval forms often is unreliable. Experts on the noctuid group base species level diagnoses on the adult stage only. Approximately 650 species of noctuids exist in Washington. Considerable variation of larval stages occurs within many species. Experts often reject preserved larvae sent in for identification, returning only a family level identification. Based on need, some experts will rear larvae to adulthood. Contact the author(s) to see if this can be done in your situation.

VARIEGATED CUTWORM *(Peridroma saucia)*

General:
The variegated cutworm appears throughout North America, Europe, and Asia. This cutworm does not present damaging numbers every season.

Fig. 2.
Adult variegated cutworm. Ken Grey Collection, Oregon State University

Description:
The moth (Fig. 2) has a wingspan of about $1^{1}/_{2}$ inches. The forewings, having darker spots, vary in color from brown to red-brown.

Fig. 3
Variegated cutworm larva.
Dan Mayer photo

The larvae (Fig. 3) range in size up to $1^{5}/_{8}$ inches long. The head is light brown with dark markings. In general the body is pale gray to dark mottled brown, intermixed with red and yellow. A line of small pale yellow to orange spots appears at least on the anterior portion of the back. A black "W" marking often is present on the 8th abdominal segment. The top-lateral and spiracle stripes are black. The spiracles are black.

Life Cycle:
The variegated cutworm overwinters as a larva or pupa. Two overlapping generations occur per season; pupation takes place in the soil or under trash. One period of adult flight extends from May through the end of September. Larvae mature in late April and May. They feed at night and hide during the day. During early spring, larvae can cause significant damage, often striking at the seedling stage.

Host plants:
The variegated cutworm commonly attacks alfalfa, bean, clover, mint, small grains, sugarbeets, vegetables, and tree fruits. A very general feeder, it may appear on almost any crop.

REDBACKED CUTWORM *(Euxoa ochrogaster)*

General:
This native pest inhabits the northern United States and Canada. Six different forms of this species thrive in the Pacific Northwest. This cutworm can be very damaging even when the population is low. Individual cutworms can destroy many plants.

Description:
The moth (Fig. 4) has a wingspan of about $1^{1}/_{2}$ inches. Its forewings vary in color from pale clay-yellow to dark red.

Fig. 4.
Adult redbacked cutworm.
Ken Grey Collection, Oregon State University

The larvae (Fig. 5) are up to $1^{1}/_{5}$ inches long. The head and thoracic shield (shoulder area behind head) are yellowish brown. In general the body has a brown to distinctly reddish pale top stripe. This stripe is divided by an obscure top line and bordered with dark bands. Below the bands the body is green to brown. Dark tubercles (small solid pimples) lightly spot the body. The spiracles are black.

Fig. 5.
Redbacked cutworm larva. Ken Grey Collection, Oregon State University

Life Cycle:
The redbacked cutworm overwinters as first instar larva inside the egg shell. Only one generation occurs per season, with pupation taking place in the soil. One distinct period of adult flight takes place from July through September. Larvae feed beneath the soil surface on roots and stems of plants and on plant stems at the soil surface. Significant larval damage usually occurs from April through early June. Poking around the base of host plants will discover larvae.

Host plants:
Redbacked cutworm commonly attacks asparagus, alfalfa, canola, clover, corn, grapes, mint, mustard, rape, small grains, sugarbeets, and tree fruits. Growers can find this very general feeder on almost any crop.

WESTERN YELLOWSTRIPED ARMYWORM *(Spodoptera praefica)*

General:

This native armyworm occurs throughout the western United States and British Columbia. This pest does not appear in damaging numbers every season.

Fig. 6.
Adult western yellowstriped armyworm.
Art Antonelli photo

Description:

The moth (Fig. 6) has a wingspan of about $1^{1}/_{2}$ inches. The forewings are gray or brown with slate or buff colored markings. The hind legs are silvery gray.

The larvae (Fig. 7a & 7b) are up to $1^{1}/_{2}$ inches long. The dark brown head has dark reticulations and displays a white inverted "V" marking on the front. In general the body is light gray-brown to dark black and carries a faint red top line. The top stripe is dark. Paired sub-triangle marks usually are present on top of each segment. This is most obvious in light gray-brown forms. The top-lateral stripe is white, and the spiracle stripe is orange-brown (much less distinct in light gray-brown forms).

Fig. 7a.
Western yellowstriped armyworm
(normal color phase).
Dan Mayer photo

Fig. 7b.
Western yellowstriped armyworm
(light color phase).
Dan Mayer photo

Life Cycle:

The western yellowstriped armyworm overwinters as a pupa. It has one to three overlapping generations per season, with pupation taking place in the soil. Two distinct periods of adult flight occur annually. The first begins in March and extends into May; the second begins in August and extends into September. Significant larval damage usually appears in June and early July and again in late September and early October. When populations are high, larvae crawl out of maturing peas, lentils, hops or alfalfa in late summer and feed on garden vegetables and other crops. Young larvae feed on terminal leaves during the day. Older larvae may spend the day in trash on the soil surface. However, during the serious outbreaks, older larvae feed on alfalfa buds during the day.

Host plants:

The western yellowstriped armyworm commonly attacks alfalfa, bean, clover, lentil, mint, ornamentals, sugarbeets, vegetables, and many weeds. It is a fairly general feeder that can appear on almost any crop.

WESTERN BEAN CUTWORM *(Loxagrotis albicosta)*

General:
Western bean cutworm is a pest of beans and corn in Idaho and southwestern Oregon. Records also place this species in seven other states and provinces in western North America from Alberta to Mexico. It has not yet been found in Washington.

Description:
The adult is a typical miller moth (Fig. 8), having a $^{3}/_{4}$-inch-long body and wingspan of $1^{1}/_{2}$ inches. The forewings are a rich brown shaded tan to darker brown on the outer margin. The head of the larvae (Fig. 9) is brown. The body, pinkish brown to gray in the early stages, becomes tan as the larvae mature. Three white stripes appear on the mature larvae on the first dorsal segment behind the head. The presence of these lines can easily separate the western bean cutworm larvae from corn earworm larvae.

Fig. 8.
Adult western bean cutworm.
Art Antonelli photo

Fig. 9.
Western bean cutworm larva.
Ken Grey Collection
Oregon State University

Life Cycle:
Only one generation occurs per year. Cutworms overwinter as mature larvae in an earthen cell 3 to 6 inches below the soil surface. The adults emerge from early July to mid-August and live 7 to 9 days. Adults begin laying eggs in masses of 5 to 200 on corn and bean leaves about 3 days after emergence.

Host Plants:
Beans and corn are the primary hosts, but western bean cutworm larvae also feed on ground cherry and black nightshade.

General:

This insect ranges widely throughout North America. The black cutworm has a generally greasy appearance and often is called the greasy cutworm. It inhabits irrigated areas and areas of at least moderate rainfall.

Description:

Larvae (Fig. 10) appear greasy. They have convex coarse granules interspersed with small granules on their surface. Color is from light gray to almost black; the lighter colored lower portion has lighter flecks. The adult moth (Fig. 11) has dark dagger shaped markings near the outer edge of the forewing. The basal two-thirds of the forewing is dark; the outer one-third is much lighter. The light colored hindwings show a brownish tint along the outer margins.

Fig. 10.
Black cutworm larva. Ken Grey Collection, Oregon State University

Fig. 11.
Adult black cutworm. Ken Grey Collection, Oregon State University

Life Cycle:

These cutworms overwinter as pupae and emerge as adults in March. There are generally three flights of moths each year in warmer, lower elevations. The first flight peaks in mid-May, the second in mid-July, and the third in August or September. The time period from egg to adult is from 45 to 60 days. The larvae are nearly 2 inches long when mature. The larvae remain hidden in the soil during the day and feed at night. Damage from these cutworms generally occurs in lower areas of the field or in weedy areas.

Host Plants:

Black cutworm larvae attack corn, sugarbeets, vegetables, ornamentals, grasses, berries, grapes, and tree fruits.

SPOTTED CUTWORM *(Xestia c-nigrum)*

General:

This cutworm species is a native, having a more or less northern distribution in the United States. It is unique in coming out of its hibernation state, at times, very early in the year. For example, it has devastated raspberry buds in early March considerably before budbreak. It is one of the common climbing cutworms.

Fig. 12.
Adult spotted cutworm.
Ken Grey Collection
Oregon State University

Description:

The adult (Fig. 12) has a wing span of $1^{1}/_{2}$ inches. The forewings are light brown or tan showing some distinct patterns. About midway along the leading edge, a light tan wedge shaped marking appears, surrounded by an uneven darker brown border. A characteristic blackish "spike" marking occurs near the tip of the leading edge of the forewing. The underwings or hindwings are a more or less uniform lighter shade of tan, having no distinguishing markings.

Fig. 13.
Spotted cutworm larva. Ken Grey Collection,
Oregon State University

The larvae (Fig. 13) are up to $1^{1}/_{2}$ inches long. The head is whitish showing darker reticulation and markings. In general, the body is pale brownish to ashy gray. A double row of oblique triangular marks on the back increases in size and prominence to the rear. Some refer to these marks as "chevrons." Traces of pale top line and a series of black spots appear above the spiracles. The area below the spiracle zone is abruptly lighter in color. The spiracles are whitish, having black rims.

Life Cycle:

The spotted cutworm overwinters as a partially developed larva. Two overlapping generations occur per season, with pupation taking place in the soil. Two distinct periods of adult flight take place, the first begins in early May and extends into June; the second occurs in August and extends into the fall. Significant larval damage usually appears during April to May and again in July to August.

Host Plants:

Spotted cutworm larvae commonly attack asparagus, clover, sugarbeets, mint, corn, most vegetables, wheat, oats, alfalfa, grapes, raspberries, and tree fruits. It is a very general feeder and may appear on almost any crop.

GLASSY CUTWORM *(apamea devastator)*

General:
The glassy cutworm is a true subterranean cutworm that feeds primarily on roots and underground portions of plant crowns. It occurs throughout the United States and southern Canada.

Description:
The moth (Fig. 14) has a wingspan of from $1^{1}/_{2}$ to $1^{3}/_{4}$ inches. Wing color and markings are highly variable. They range from a uniform dull gray-brown with almost no markings to light tan having numerous triangular and irregular shaped small black marks. Adult flight occurs throughout the summer. Eggs are scattered over the soil surface.

Fig. 14.
Adult glassy cutworm.
Art Antonelli photo

The mature larvae (Fig. 15) are usually $1^{3}/_{8}$ to $1^{5}/_{8}$ inches long. All larvae inhabit subterranean burrows in or near the roots and crowns of host plants. The body of the larva is uniformly dirty white to light gray-green. It has a dull, translucent appearance, and a dark, subcutaneous top line runs the length of the body. The head is a starkly contrasting reddish brown.

Fig. 15.
Glassy cutworm larva. Ken Grey Collection, Oregon State University

Life Cycle:
There is one generation per year. During the summer the female moths scatter eggs over the soil surface, seemingly at random. Young larvae hatch in the fall and feed for a period of time before winter temperatures become too cool. They overwinter in the soil as small larvae. Injury to grasses usually appears in the late winter and often is associated with “winterkill.” Much damage to plants occurs in the late winter and early spring as the larvae grow to maturity. Pupation takes place in the soil during the spring months.

Hosts:
The glassy cutworm attacks roots and crowns of grasses, grains, and corn. It also damages other crops planted to sites following grains or grasses.

ARMY CUTWORM *(Euxoa auxillaris)*

General:

The army cutworm occurs throughout the western United States and favors arid habitats. It is common east of the Cascades. It belongs to the genus *Euxoa*, which comprises many closely related and similar-appearing larvae. Specific identification of these larvae is very difficult, if not impossible. Because the young larvae overwinter, most damage occurs in the spring through early June.

Fig. 16.
Adult army cutworm. Ken Grey Collection, Oregon State University

Description:

The moth (Fig. 16) has a wingspan of about $1^{3}/_{4}$ inches. The forewings of certain specimens resemble those of the Bertha armyworm, except the background coloration generally is more of a brown. The thin wavy line about $^{1}/_{8}$ inch from the wing tip that runs from the leading edge to the rear edge of the forewing is nearly indistinct in this species. The "kidney bean" shaped spot on the forewing generally is more symmetrical on this species than on the Bertha armyworm.

Fig. 17.
Army cutworm larva. Ken Grey Collection, Oregon State University

The mature larvae (Fig. 17) can be up to 2 inches in length. The pale grayish body has white splotches. A brown-tinged top line runs the length of the body. The head is light brown with pale brown spots. Damage is most prevalent in April and May.

Life Cycle:

One generation occurs per year. The female moth scatters eggs singly on the soil surface during the summer. The eggs hatch in late summer and fall. The larvae feed aboveground during the night and usually remain inactive under plant debris by day. Small larvae overwinter in the soil and resume feeding in the spring. Damage usually occurs on fall and early spring-seeded crops from late March through May. Tansy mustard and stinkweed are favored weed hosts of the army cutworm and may serve as a source of infestation for this species.

Host Plants:

The army cutworm attacks cereals, legumes, grasses, sugarbeets, vegetable crops, grapes, hops, strawberries, and even tree fruits.

BEET ARMYWORM *(Spodoptera exigua)*

General:
Found throughout the United States, the beet armyworm often is a pest in the west. This cutworm attacks many weeds, ornamentals, field crops, and truck crops.

Description:
Beet armyworms are slightly smaller than the other cutworms. The gray adults (Fig. 18) have wingspans of about 1 to $1^{1}/_{4}$ inches. Mature larvae are about the same length. The usually dull green larvae (Fig. 19) have many small, wavy, light colored stripes down the back and a broader stripe along each side. They are about $1^{1}/_{4}$ inches long when mature.

Fig. 18.
Adult beet armyworm. Ken Grey Collection, Oregon State University

Fig. 19.
Beet armyworm larva. Ken Grey Collection, Oregon State University

Life Cycle:
Beet armyworms spend the winter as pupae in colder climates. Several generations reach adulthood each year. Each generation requires about 30 days during warm weather. Damage from these insects generally occurs later in the season. Insect numbers generally are low in the spring, but as numbers increase with each generation, so does expected damage. Females lay eggs in clusters of 100 or more. When the larvae hatch they feed together until they gradually disperse. Younger larvae skeletonize the leaves; older larvae eat holes in the leaves or burrow into tomatoes and other low-growing fruits.

Hosts Plants:
These general feeders attack redroot pigweed, nettleleaf, goosefoot, and many other weeds. Beet armyworms feed on beets, tomatoes, corn, peas, peppers, spinach, other truck crops, and many flowers.

CORN EARWORM *(Helicoverpa zea)*

General:
The corn earworm is one of the most serious pests in the United States because larvae attack a number of important crops. Although widespread throughout the United States and Canada, it is not a serious pest west of the Cascade Mountains.

Fig. 20.
Adult corn earworms
Art Antonelli photo

Description:
The adult moth (Fig. 20) has a wingspan of about $1^{1}/_{4}$ inches. The forewings are light olive-green, fawn, or reddish brown. Two purple spots on the forewings may be indistinct on dark forms but are characteristic of corn earworm.

Fig. 21.
Corn earworm larva. One of many color phases of this noctuid. Ken Grey Collection, Oregon State University

The larvae (Fig. 21) are up to $1^{1}/_{3}$ inches long. The head, which varies from yellow to nearly black, often displays brown or white markings. The body color varies from red, maroon, orange, yellow, and green to nearly black. Light markings usually appear at the edge of the top stripe and dark top and above spiracle stripes. The body is lightly spotted with small dark tubercles. Dark markings appear above the brown or black spiracles.

Life Cycle:
The corn earworm overwinters as a pupa. Two to three generations overlap per season, and pupation takes place in the soil. The main period of adult flight is from mid-May through September. Distinct peaks of adult flight occur during this period. Corn earworm populations stage a regular and gradual buildup from the beginning of the season to the end. Damage is usually not severe on corn until July to August. In some parts of the U.S., this insect migrates long distances in the spring and fall.

Host Plants:
Corn earworm attacks corn, bean, lettuce, pepper, spinach, tomato, strawberries, and various other plants. Although it feeds on several crops, it is considered somewhat host specific, feeding primarily on corn.

ZEBRA CATERPILLAR *(Melanchra picta)*

General:
Zebra caterpillars thrive throughout the United States. Known as general feeders in the western states, they usually become pests in late summer. This caterpillar often exists in a mixed population with bertha armyworm and variegated cutworm.

Description:
The adult moth (Fig. 22) has a wingspan of about $1^{1}/_{2}$ inches. The chestnut brown forewings are shaded in purplish brown. The whitish hindwings have pale brown margins. The newly hatched larvae, whitish in color, are marked by dark heads and several dark spots scattered over the body. The larvae first feed in small compact groups until molting, then they scatter throughout the foliage. The more mature worms vary in color (Fig. 23). The head is reddish; the body displays yellow stripes, white lines, and black spots on the sides. Often the colors are very bright and conspicuous. Larvae feed during the day. When disturbed on foliage, they roll up and fall to the ground.

Fig. 22.
Adult zebra caterpillar. Ken Grey Collection, Oregon State University

Fig. 23.
Zebra caterpillar larva. Ken Grey Collection, Oregon State University

Life Cycle:
This insect passes the winter in the pupal stage in the soil. The first adult moths appear in May or June. They deposit eggs in clusters from a few to as many as 100, usually on the underside of host plant leaves. When the temperature is moderate the eggs hatch in about 6 days. The larvae feed for 4 to 5 weeks, change to pupae and stay in the pupal stage for about 60 days. The second-generation adults appear in late August or September, when they give rise to an additional generation of larvae. The larvae feed, complete their development, become pupae, and overwinter. Damage to crops comes primarily from the second generation. The damage often may be severe on limited areas of the field.

Host Plants:
Zebra caterpillars are general feeders. They commonly feed on fruit, truck, cereal, forage, and field crops, forest and ornamental trees and shrubs, and many weeds. Larvae usually cause most damage to the cruciferous plants, such as sugarbeets, beets, turnips, and cabbage.

ALFALFA LOOPER *(Autographa californica)*

General:
This "looper or semi-looper" is native to the western United States and northward into British Columbia, Canada. The larvae commonly appear on many different field and vegetable crops and on ornamentals.

Fig. 24.
Adult alfalfa looper. Ken Grey Collection, Oregon State University

Description:
The moth (Fig. 24) has a wingspan of from $1^{3}/_{8}$ to $1^{1}/_{2}$ inches. The forewings display various shades of mottled silvery gray tending towards light brown in some individuals. The most diagnostic feature is the ivory colored "tear drop" shaded marking present on each forewing.

Fig. 25.
Alfalfa looper larva.
Louie Getzin photo

The full-grown larvae (Fig. 25) can be a little more than an inch long. They vary from pale to dusky green, having a darker dorsal stripe running the length of the body. A thin, lateral white stripe passes over the spiracles on each side of the body. Three pair of legs attach on the thorax, and pairs of fleshy prolegs appear on abdominal segments 5, 6, and 10 (the last one). By contrast, cutworms have prolegs on abdominal segments 3 and 4 as well. The head is brownish green. Larvae move in a "looping" fashion. When disturbed, they usually arch up on their prolegs.

Life Cycle:
In the Northwest, alfalfa loopers usually overwinter as pupae in cocoons among plant debris. The first moths fly in late March or April. Adults deposit eggs singly or occasionally in groups of two and three on the underside of leaves, usually close to the leaf margin. The larvae feed on host plants for 2 to 3 weeks before pupating on or near the host plant. Second generation adults usually emerge within 2 weeks of pupation. Second generation larvae are present on many crops in June and July. A third generation may appear in late summer and early fall.

Host Plants:
Alfalfa looper has a wide host plant range: from wild mustard to many cultivated plants including alfalfa, mint, onion, beet, cole crops, lettuce, beans, peas, tomato, potato, and marigold.

BERTHA ARMYWORM *(Mamestra configurata)*

General:

This species occurs throughout the western United States, Canada, and south to Mexico. It is a common armyworm on many field and vegetable crops. It feeds on the aerial parts of plants at night and usually remains on or below the soil surface by day. It is one of the most common of the "climbing cutworms."

Description:

The moth (Fig. 26) has a wingspan of about $1^{1}/_{2}$ inches. The forewings are gray to gray-brown, each displaying a distinct white "kidney bean" spot near the leading edge and about $^{2}/_{3}$ of the distance from the body to the wing tip. A fainter and smaller irregularly elliptical spot appears between the "bean shaped" spot and the body. A thin, wavy white line about 1/8 inch from the wing tip runs from the front of the forewing to the rear.

Fig. 26.
Adult Bertha armyworm.
Ken Grey Collection, Oregon State University

The mature larva (Fig. 27) is $1^{1}/_{5}$ inches long. Tremendous variation in color occurs from nearly black to gray, green, brown or yellowish with different amounts of black. A lateral, yellow-orange stripe occurs on the sides of larvae dividing the paler bottom side from the darker upper half. The head is usually yellow-brown.

Fig. 27.
Bertha armyworm larvae.
Ken Grey Collection, Oregon State University

Life Cycle:

Two complete generations usually occur per year. The pupae overwinter in the soil, emerging as adults from late March (in warm years and the more southerly areas of the Northwest) through April. In late April and May the female moths deposit egg masses on the underside of the leaves of weeds and crop hosts. Upon hatching, the first generation larvae dangle from the leaf by threads of silk to be dispersed locally within a crop by wind. They may feed for as long as 6 weeks during a cool spring prior to dropping to the ground to pupate. Second generation adults appear in late June and July. Damage from second-generation larvae appears from late June through September.

Lambsquarter and pigweed are highly attractive to the egg-laying females. In certain crops, infestations of bertha armyworm are associated with the presence of these weeds. Infestations of bertha armyworm occur in patches fairly close to egg deposition. The larvae often appear in mixed populations with the variegated cutworm, particularly on crops grown west of the Cascades. Armyworm presence often precedes the appearance of variegated cutworm larvae by a couple of weeks.

Host Plants:

Bertha armyworm feeds on weeds of the Chenopodiaceae, Brassicas, legumes, beets, hops, cole crops, corn, wheat, peas, beans, and mint. The larvae can damage tree fruits and may be common in weedy orchards. Potato tubers also have sustained damage from this armyworm.

IMPORTED CABBAGE WORM *(Artogeia rapae)*

General:
This pest is probably better known as the cabbage butterfly. It was imported from Europe to eastern Canada in the mid-1800s. It since has spread to all parts of the continent.

Description:
The adult is a white butterfly (Fig. 28) having a wingspan of $1^1/_2$ inches. Females display two black spots on top of each of their forewings, while 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 appears on the underside of the wings.

Fig. 28.
Adult imported cabbage worm.
Art Antonelli photo

The mature caterpillar or larva is about an inch in length. It appears soft and velvety green. Faint yellow stripes run longitudinally on its back and sides (Fig. 29). When development is complete, the larva pupates in a pale green chrysalis, which it attaches to any plant or object available.

Fig. 29.
Imported cabbage worm larva.
Art Antonelli photo

Life Cycle:
Caterpillars take about 2 weeks to reach full development. Pupation takes 1 to 2 weeks to complete. Three to five generations occur throughout the season. Caterpillars overwinter in the pupal stage of the last generation.

Host Plants:
While primarily a pest of cabbage, broccoli, and Brussels sprouts, imported cabbage worm also feeds on horseradish, nasturtium, rape, mustard, sweet alyssum, turnip, radish, and other wild and cultivated cruciferous plants.

DIAMONDBACK MOTH *(Plutella xylostella)*

General:
The diamondback moth, like the imported cabbage worm, was introduced from Europe in the 19th century. It now enjoys a wide distribution on this continent.

Fig. 30.
Adult diamondback moth.
Ken Grey Collection,
Oregon State University

Description:
The adult is a small brown or grayish moth (Fig. 30) having a wingspan of about $^{3}/_{4}$ inch or less. When at rest, the folded wings meet, giving the impression of light colored diamond shapes along the wingbacks.

Fig. 31.
Diamondback moth larva.
Ken Grey Collection,
Oregon State University

The mature larvae (Fig. 31) are about $^{1}/_{3}$ inch long and pale green in appearance. When development is complete, pupation takes place in a delicate cocoon on leaves or field debris.

Life Cycle:
A total life cycle may take from 2 to 7 weeks depending on weather and food. Four to six generations occur per year. Adults overwinter in plant debris or in the soil. Adults appear the following year in early spring, mate, and lay eggs on the top or bottom of leaves. The young larvae begin feeding as leafminers between the outer leaf tissues. As they mature, damage appears as holes in leaves.

Host Plants:
For the Diamondback moth, cabbage is the preferred host. It also attacks cauliflower, horseradish, kale, Brussels sprouts, radish, mustard, turnips, rape, and sweet alyssum. Other parts of the world report onions as a host.

TRUE ARMYWORM *(Pseudaletia unipuncta)*

General:

The true armyworm is widely distributed in North America and occurs throughout much of the world. The adult moth migrates in some parts of its range. Larvae also migrate from field to field, hence the name armyworm.

Description:

The moth (Fig. 32) has a pale yellow-brown background color and a characteristic round white spot near the center of the forewing. It has a wingspan of $1^1/_4$ to nearly $1^1/_2$ inches.

Fig. 32.
True armyworm moth.
Art Antonelli photo

Larvae vary in color from pale green and yellow to brown with pale stripes on the dorsum and on the side (Fig. 33). When mature, the larvae may be close to 2 inches in length.

Fig. 33.
True armyworm larva. Photo used by permission of Frank B. Peairs, Professor of Entomology, Colorado State University, Fort Collins, Colorado. From the Gillette Collection

Life Cycle:

This insect overwinters as a larva in the soil and moves into northern regions in the spring. Multiple generations occur in southern areas of its distribution; only two present themselves in the Pacific Northwest. Adults appear throughout the season from May into October, but outbreaks of larvae occur primarily in late summer, from August into September.

Host Plants:

The true armyworm commonly feeds on various types of grasses, but may move to other crops. It can occur in devastating numbers on pasture grasses and on other grass cover crops (in orchards) and can cause economic damage to corn and sorghum.

GENERAL INFORMATION

Natural Enemies:

Several species of parasitic wasps attack cutworm larvae and eggs. These larval parasites are more effective on day-feeding worms. A small parasitic wasp, *Trichogramma*, commonly attacks the eggs of all species of cutworms. Minute pirate bugs and big-eyed bugs feed on eggs and destroy significant numbers of small larvae. A disease caused by a nuclear polyhidrosis virus can destroy an infestation in a short period of time. Several fungi have the potential of killing cutworm stages that inhabit the soil.

Cutworm descriptions from antiquity

"Probably no other insects are more dreaded in those sections where they cause large annual crop losses, than are the various cutworms. Like the evil gnomes of old, who sallied forth on moonless nights to wreak vengeance upon some hapless wayfarer, the cutworms come forth from hiding, and under cover of darkness, despoil the farmers' crop; or, like the "sappers" of an invading army, these invaders of our fields tunnel from plant to plant, leaving a trail of death and destruction in their wake."

Literature Cited

Johansen, C. 1973. How to recognize cutworms, armyworms, loopers. PNW 130. 31 pp.
Torre-Bueno, J.R. 1937. A glossary of entomology. Brooklyn Entomol. Soc. Publ. 1950 Edition. 336 pp.

COOPERATIVE EXTENSION
Washington State University

Published June 2000. I Subject codes 352, 270, 200
EB1892