

Cutworms in Field Crops

Cutworms are a natural part of the prairie habitat. Some cutworms are likely to be in most crop fields in any given year, but usually at levels well below where they would be an economical concern or worth trying to manage. However, there are some species of cutworms that in some years can get to levels that are of economical concern in field crops.

Most Common Species

In Manitoba, seedlings of crops may be damaged in late May or June by sporadic outbreaks of cutworms. The redbacked cutworm (*Euxoa ochrogaster*), can be one of the most damaging species. Damaging populations often include larvae of other cutworm species, particularly the darksided cutworm (*Euxoa messoria*) and the dingy cutworm (*Feltia jaculifera*). The glassy cutworm (*Apamea devastator*) can sometimes be abundant in grassy crops. Army cutworm (*Euxoa auxiliaris*) may move into Manitoba as it migrates from the Rocky Mountains to lower elevations, but rarely are they at economical levels in Manitoba as they can be in Alberta and Saskatchewan.

Knowing the species of cutworm can be important because some species complete the larval stages earlier in the year than others, and some species are more likely to feed on and clip stems than others. All cutworms belong to a family of moths known as Noctuidae. Cutworm larvae have four sets of abdominal prolegs and curl up when disturbed.

Redbacked cutworm: Larvae of redbacked cutworms have two broad dull-red stripes along the length of their back (Fig. 1) The head is yellowish-brown. Mature larvae are about 38mm long. Young larvae make small holes and notches in the foliage. Older larvae eat into the stems and often sever them.



Fig. 1. Redbacked cutworm larvae

Adult moths of the redbacked cutworm (Fig. 3) have 4 colour forms. The flight period for moths of the redbacked cutworm in Manitoba extends from mid-July to October. The peak flight period occurs during August.



Fig. 2. Redbacked cutworm pupae



Fig. 3. Redbacked cutworm adult

The redbacked cutworm feeds on practically all field crops, vegetables, and home garden plants. It is best known for its feeding on cereals, flax, sunflowers, canola and mustard.

Darksided cutworm: Larvae of darksided cutworms (Fig. 4) feed on leaves, and older larvae may cut plants at ground level. Populations of larvae of the darksided cutworm and the redbacked cutworm are often mixed. Larvae of these 2 species may be easy to confuse. These 2 species cause their greatest damage in row crops with low plant/ha ratios.



Fig. 4. Darksided cutworm



Fig. 5. Redbacked (left) and Darksided (right) cutworms

The flight period for the darksided cutworm in Manitoba extends from early-August to October. The peak flight period occurs during August.

Dingy cutworm: Larvae of dingy cutworms (Fig. 6) have a thin light line down the very middle of the back. On either side of this thin line there is a broader series of somewhat diagonal markings that look like tire tracks, or to form "V's" on the back. They also have 4 equal-sized black dots on the back surface of each abdominal segment. Dingy cutworms are primarily leaf

feeders, and rarely cut plants.



Fig. 6. Dingy cutworm larvae

Larvae of the dingy cutworm have been reported from more than 40 plant species including sunflowers, alfalfa, corn, flax, oats, rye and wheat.

Other cutworms found in field crops in Manitoba: The glassy cutworm (Fig. 7) sporadically can get to levels that can be economical, but normally causes little or no harm to crops in most areas and years. Host plants can include wheat, oats, barley, corn, and grasses grown for forage and seed.



Fig. 7. Glassy cutworm larva



Fig. 8. Black army cutworm

The pale western cutworm (*Agrotis orthogonia*) can be found in Manitoba, but is not as serious a pest in Manitoba as in Alberta and Saskatchewan. Older larvae of this species will sever plant stems below the soil surface.

The black army cutworm (*Actebia fennica*) (Fig. 8) can also sporadically be found on field crops in Manitoba but is normally of little economic concern. Larvae feed aboveground in May and June but do not cut stems.

Lifecycle

Cutworm moths may lay several hundred eggs in or on the soil. After the eggs hatch, the larvae feed on the host plants. Larvae normally have 6 instar stages before they become fully grown, although some species, such as darksided cutworm, may have seven larval stages. Between each instar stage, the larvae "moult" or shed their skin. During moulting the larvae are inactive and remain several centimeters below the soil surface. Studies from Alberta found 20 to 50% of the populations of pale western cutworms in some fields were in a pre-moult or recent post-moult stage and were not feeding. That can cause a significant delay in control of those individuals when insecticides are used as a control strategy. Laboratory studies have shown the moulting period during which the larvae are inactive comprised approximately 33 percent of the entire larvae life stage. Feeding cutworms can be identified by the presence of greenish mid-gut contents visible through the semi-transparent underside. A moulting cutworm will not have food in its gut. Once the larvae complete their last instar stage, they burrow deeper into the soil and form earthen cells where they pupate. The new moths emerge, exiting through the soil using the old larval tunnels. Some species overwinter as eggs (eg, the rebacked cutworm and darksided cutworm); others, as partly-grown larvae (dingy, army, glassy, and black army cutworms). Still others do not overwinter in the Prairies but rather re-invade annually from the U.S., aided by southerly winds. Most of our pest species have only one generation per year.

Scouting Techniques

Inspect the seedlings on at least a weekly basis, from mid-May to mid-June. Cutworms are nocturnal, feeding at night and hiding during the day, making them hard to detect. Feeding by cutworms results in notched, wilted, dead, or cut-off plants (weed or crop seedlings). Plants may be missing from rows and bare patches may appear in fields as a result of cutworm feeding. Often cutworms will be close to the cut or shriveled plants they have just damaged and can be found by digging around these plants. A garden trowel and a soil sifter are useful tools for collecting cutworm larvae. Cutworms will sometimes be most abundant in patches or a specific area of a field.

Determining the stage of larval development can also be important. Small larvae pose the greatest potential for damage as they still have to feed and grow. Once larvae have reached lengths of 30 to 35mm, most of their feeding may have already occurred and chemical intervention may not be warranted.

How deep in the soil are the larvae? The depth of cutworms in the soil during the day may depend on the age of the larvae and how moist the soil is. A study from Ontario on darksided cutworms found older larvae just under the soil surface in wet weather. However, in dry weather they were found at a depth of 8 to 10 cm (3 to 4 inches) from the soil surface. Most younger larvae rested in the soil during the day at a depth of 6-13 mm ($\frac{1}{4}$ to $\frac{1}{2}$ in.) near the base of the host plant.

Length of time as larvae: How long cutworms spend in their potentially damaging (larvae) stages depends on the species and the temperatures they are exposed to. Redbacked cutworms kept at 15°C took 65 days on average to complete their 6 larval stages, while at 25°C they completed their larval stages in 29 days. Darksided cutworms took on average 87 days to go through their 7 larval stages.

Monitoring adult moths: Pheromone-baited lures which will attract male moths to traps are available for some species of cutworms. However, these have not been found to be a reliable means of predicting the level of cutworms the next season.

Thresholds

Little research has been done to develop economic thresholds for cutworms in field crops. However, nominal thresholds, which are based on experience rather than research quantifying the impact of the insects on the crop, have been suggested for several field crops. Some suggested nominal thresholds are:

Crop	Threshold
Alfalfa	4-5 per square foot (new or thin stands - 2/sq ft.)
Dry Beans	1 cutworm or more per metre of row and the larvae are still small (less than 2cm long)
Canola	A suggested nominal threshold is 25-30% stand reduction
Corn	When 3-6% of plants are cut and small larvae less than 1 inch present

Flax	4-5 larvae/m ²
Peas	2 to 3 cutworms per square metre
Sunflowers	1 cutworm or more per square foot (30 by 30cm) or if there is a 25 to 30% stand reduction
Wheat, Barley, Oats	Redbacked and army cutworms: 5-6/m ² . Well established fall-seeded crops or spring seeded crops with good moisture conditions can tolerate higher numbers.

Plant Compensation: Some crops, such as flax and peas, have the ability to compensate for some of the feeding by cutworms, while other crops, such as corn, have little ability to compensate for feeding by cutworms. The loss of only some flax plants at lower densities of redbacked cutworms resulted in an increase in per plant yield of remaining plants. Peas cut early and at the soil surface regrew or branched from subsurface nodes.

Control Tips

Insecticides

Insecticides are available to control cutworms. Consult the [Guide to Crop Protection](#) for product information.

Best results occur if insecticide applications are made in the evening. Sometimes it is most economical to just treat infested patches and not entire fields.

There are differences in susceptibility to insecticides between species of cutworms.

Natural Enemies

Many predaceous insects, parasites and birds prey upon cutworms and reduce their populations. A study in Saskatchewan found larvae of redbacked cutworms parasitized by 4 species of bee flies, at least 4 species of tachinid flies, and several species of parasitic wasps. Ground beetles can be important predators of cutworms.

Wet soil conditions during the larval stage promote fungus diseases among cutworms and also force them to feed at the soil surface where they are subject to the attack of parasites and predators.

Disease and parasites were found to be the most important factors causing the rapid decline of redbacked cutworms from the peak of an outbreak.

Tillage

Young cutworm larvae may be starved before spring seeding by allowing volunteer growth to reach three to five centimetres (1.2 to two inches), cultivating and then seeding 10 to 14 days later.

Research from Manitoba has shown that minimum tillage practices were associated with greater diversity of cutworms and their parasitoids, including some non-pest species of cutworms, than fields under conventional tillage. This increased diversity suggests a more stable ecosystem in which outbreaks of cutworms would be less common.

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