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The Armyworm in New Brunswick

Mythimna unipuncta (Haworth)
Synonym: *Pseudaletia unipuncta* (Haworth)

Family: ***Noctuidae - Owlet moths and underwings***

Importance

The armyworm attacks mainly grasses. Crops attacked include: corn, forage grasses (timothy, fescues, etc.) and small grains such as oat, wheat, barley, rye and other small grains.

Infestations in New Brunswick may be local or widespread and occur on irregular intervals, anywhere from 12 to 20 years. An outbreak occurs when local infestations become widespread. There have been a few reports when infestations have reoccurred at the same locations for a few years in a row in southern NB. Periodic outbreaks have caused widespread damage in southern and southwestern parts of the province.

Life History

In the spring, storm fronts carry these moths northward from the southern United States, or some moths may emerge locally in some areas of Canada. However, moths are seldom seen since they are active at night. Female moths lay eggs after 7 days and may lay up to 2000 eggs. Eggs are laid in clusters of 25 to 134 on grass or small grain leaves. Females live up to 17 days. Eggs are laid in folded leaves or leaf sheaths in early to late June and hatch in three weeks. In NB larvae appear from mid-June to the end of July. Larvae pass through 6 instars (the stage of development between successive moults) which takes 3 to 4 weeks. (A small percentage will develop to a 7^{th} instar at low temperatures.) Larvae reach a length of 35 mm long when mature. The following instars are listed with approximate body lengths, respectively: 1^{st} (2 – 4 mm), 2^{nd} (3 – 6 mm), 3^{rd} (5 – 10 mm), 4^{th} (11 – 15 mm), 5^{th} (14 - 21 mm), 6^{th} (24 – 35 mm). Eighty percent of larval feeding damage is done in the 6^{th} instar. Larvae hide under debris during the day. When fully grown they stop feeding for a few days (prepupal stage) and pupate. In NB, starting at the end of July, larvae crawl under leaf litter or 3 to 5 cm below the soil surface and start to develop into pupae. Usually the pupae do not survive the winter in Canada.

Identification

The eggs are whitish, bead-like and are laid in masses. Caterpillars are smooth-bodied and have alternating light and dark stripes running lengthwise along the top and sides of the body. Young larvae have stripes on greenish grey background while older larvae have stripes on a greenish-brown or black background. There is some variation in the colouration of stripes as larvae mature. Mature larvae have the following pattern of stripes: There is a narrow broken stripe down the centre of the back. This is bordered by a wider, darker, mottled one (half of this stripe reaches the side). Seen from the side there are three stripes of about equal width. Below the darker mottled stripe is 1) a pale-orange, white-bordered stripe, 2) a dark-brown, light-mottled stripe just reaching the spiracles, and 3) a pale-orange, unmottled one edged with white. The prolegs (false legs) at the posterior end of the caterpillar have a dark band on the outer side and a dark tip on the inner side.

The pupa is red-brown and is approximately 2 cm long. Adults have a wingspan of 4 centimetres. Forewings are pale brown with a white dot near the centre. This dot is useful for identification. The hindwings are pale grey-brown and have a slightly darker area on the posterior edge.

Larvae of the armyworm are often mistaken for that of the fall armyworm. On the armyworm, as mentioned above, at the top side of the caterpillar there is a wide dark (mottled) stripe above a lighter stripe. The fall armyworm has the opposite, a lighter stripe above a darker one, in this area. The fall armyworm also usually has an inverted white “Y” pattern on the front of the head.

Infestations

Infestations are more common in years with cool wet spring weather, following years in which there has been a drought. The cool wet spring weather is thought to slow down the development of parasites which usually keep armyworm populations under control.

Armyworms feed at night and hide under debris during the day. Consequently, armyworms are not usually noticed until severe damage occurs. In NB the first reports of armyworm infestations occurs in late June or early July. By this time, larvae are one to two weeks old. When armyworms are numerous and the food supply becomes depleted, caterpillars march in great numbers to find a new food source. During this time they may also be seen feeding during the day. In severe infestations, after all grassy leaves have been consumed, migrating hordes of armyworms have chewed some leaves from non-host plants, but this appeared to be incidental damage.

Monitoring and Thresholds

All fields should be monitored since this is the only way to determine whether or not a control measure is required. Larvae typically feed at night. However, they can be monitored in late evening or early morning as they may still be actively feeding. Some may be seen feeding on overcast days, especially during a severe outbreak. During outbreaks, field sections should be monitored from late June to late July every few days when populations are near threshold levels.

Where to look: All field sections should be inspected by looking for larvae on the ground or under debris. Field edges can also be monitored for signs of migrating larvae. The presence of large numbers of birds in a field may also indicate that large numbers of armyworms are present. Here are some tips on monitoring:

- **egg laying:** Armyworm moths prefer to lay eggs on plants with luxuriant foliage. Moths have also been known to prefer laying eggs on plants in wet areas of pastures. They also prefer to lay eggs in wheat fields and in corn fields with a grass cover crop or with grassy weeds.

- **corn:** It is especially important to monitor corn fields which have been recently sprayed with a herbicide to kill grass weeds since armyworms will immediately move to the corn. The armyworm (and climbing cutworms) will leave the plant and hide in the soil or under debris during the day. The fall armyworm does not leave the plant. A treatment may be necessary on corn if feeding occurs above ear level after pollen shed. Armyworms feed on leaf edges, eventually leaving only the midrib. They feed on lower leaves first, work upward and feed on the whorl leaves last.

- **grain:** Armyworms feed on leaves and on beards of grain. Look under lodged plants for signs of an infestation since larvae hide under debris. Larvae start to feed on the lower plant leaves. There is no economic loss if lower leaves are eaten. However, a reduction in yield can occur if the upper leaves, especially the flag leaf, are eaten. Once the flag leaf is eaten, larvae may chew into the stem just below the head and clip off heads. Threshold in grain: 20 larvae per linear metre (6 per linear foot) of row, before extensive head cutting occurs (larvae should be 19 – 32 mm [3/4 to 1¼ inches] long).

- **forage:** Both armyworms and cutworms may be present in grass fields or grass-legume fields. Only grass plants will be eaten if only the armyworm is present.

The economic threshold on crops is 60 larvae per square metre (5 1/2 per square foot). There is a general threshold of 20 larvae per linear metre (6 per linear foot) of row for grain crops.

Control

Cultural: Although not necessarily practical on a large area, some control may be obtained by plowing a deep ditch and keeping it filled with water to prevent larvae from migrating from one field to an adjacent area. Another method is to dig a deep ditch with vertical sides to prevent larvae from crawling out. Holes, the diameter of a fence post, should then be dug every ten metres in the ditch. Larvae will then congregate in the deeper holes where they may be crushed (or sprayed). Some growers have attempted to control migrating larvae by crushing them with a roller, but with little success.

Biological: Larval populations are usually kept under control by parasitic flies and wasps and other insect predators and parasites. Armyworms are also attacked by viruses and fungi. In some instances, viruses have been known to cause armyworm populations to crash within a few days. Armyworm caterpillars infected with a virus appear limp and hang from plants after they die. Birds, toads, skunks and small mammals also feed on armyworms.

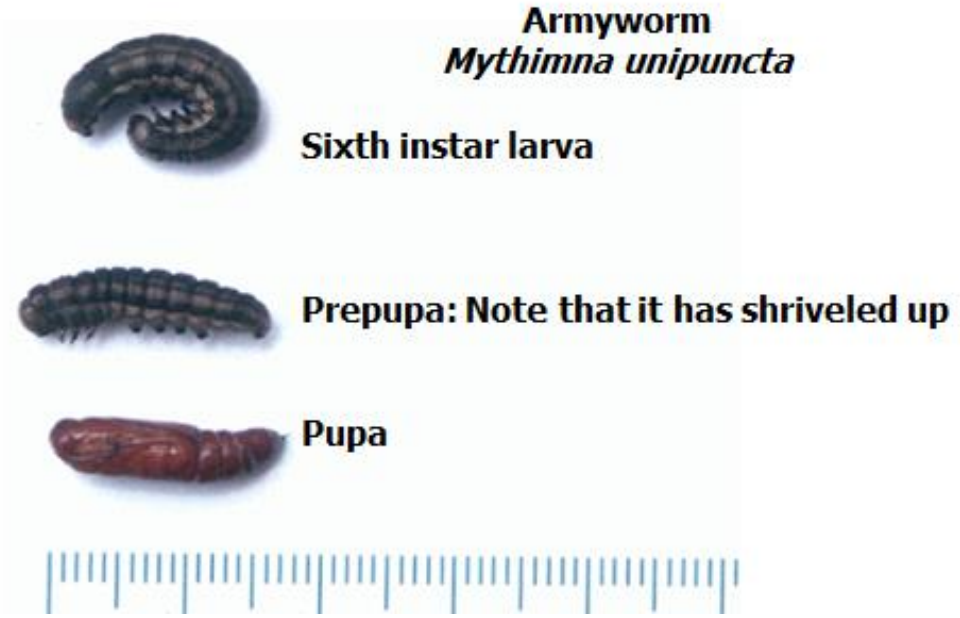
Chemical: Insecticides should be applied if larvae are at or above threshold levels and preferably when larvae are approximately 12 to 20 mm (1/2 to ¾ inches) long before most damage has occurred. Once larvae are mature, 30 to 35 mm (1.18 to 1.37 inches) long, they will have done most of their feeding damage and it would no longer be economical to apply a control measure.

Control tips:

- After cutting a pasture, grass should be removed as armyworm larvae may hide under debris. A control measure should be applied to the field edge, as a ten metre strip, to prevent armyworms from migrating to a neighboring area.

- Insecticides should be applied in the evening since armyworms prefer to feed at night.

- It is important to follow all precautions and directions listed on the pesticide label and ensure that the product is registered for armyworms on the specified crop. Pay particular attention to the required water volume to be used. Best control is achieved when using the highest water volumes.



Armyworm: adults

Note the white dot in centre of forewings.

Scout fields by separating plants

Armyworm:

Note pattern of dark brown lines on head capsule

Armyworm: Larvae in pasture
Note: only grasses have been eaten

Dead armyworm caterpillar (from virus) hanging from plant.

Revised January 2017

References: 1) Diseases and pests of vegetable crops in Canada: an illustrated compendium. (1994), R.J. Howard, J.A. Garland and W.L. Seaman (editors); 2) Immature insects (1987). F. Stehr (editor); 3) Fact Sheet No. 7 – Armyworm: *Pseudaletia unipuncta*. (2001) University of Illinois; 4) (Fact Sheet) Armyworms in wheat: recommended scouting procedures and thresholds. (2001) University of Illinois; 5) Destructive and useful insects. (1962) C.L. Metcalf, W.P. Flint and R.L. Metcalf.