

Armyworm and Cover Crops



Photo: Steve Gower, Michigan State University

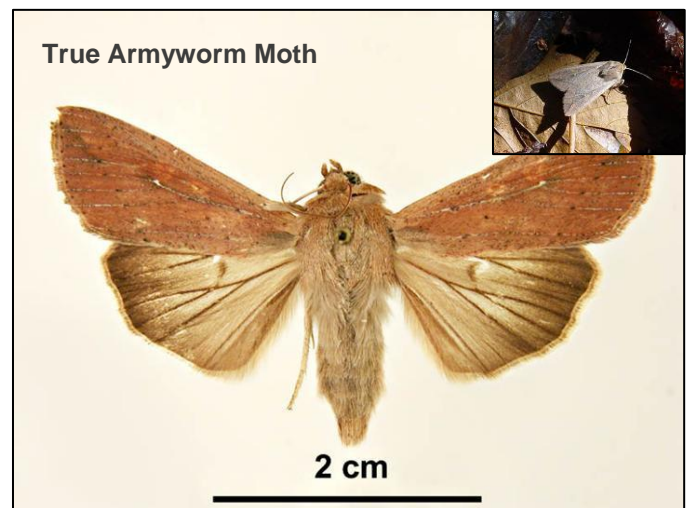
Introduction

True armyworm (*Mythimna* (= *Pseudaletia*) *unipuncta*) primarily overwinters in southern states as late instar caterpillars and adults. Waves of moths migrate northward in April and May. Females lay eggs in grassy fields (pastures, meadows, and hay fields), in areas with dense grass vegetation (road ditches), in weedy grass fields (crabgrass, quackgrass, bluegrass), fields planted to small grains (wheat, oats, barley), cover crops (cereal rye, annual ryegrass), and even lawns. Young caterpillars initially feed and establish on the grass vegetation, then transfer to corn in early May through June following the destruction of the initial grass vegetation.

Corn planted into rye cover is at greater risk for early season armyworm feeding, because the caterpillars may already be in the field and then move to the corn after the rye is terminated. Armyworm can also migrate into corn from other fields, such as wheat, barley or cut hay fields, primarily when wheat matures or hay is cut. Usually this migration occurs along field edges. Though some growers include an insecticide in their rye burndown herbicide, this prophylactic application is not recommended because in many years, armyworm populations will not be sufficient to warrant this action. Foliar insecticides have been shown to work well as a rescue treatment, and can be applied in years when scouting indicates it will help.

Purdue University trap reports from Northern Indiana indicate that there have been unusually high numbers of adult moths in flight already this year. Armyworm eggs and caterpillars may already be in fields throughout the Midwest and Eastern states.

Curtis Young, an entomologist and Extension educator with Van Wert County at Ohio State University, has reported similar findings in Northwest Ohio (04/21/2017). Corn fields planted into rye cover or other no-till grassy habitats should be scouted in early to mid-May in southern Ohio, and mid to late May moving north. With the warmer weather this year, scouting may have to occur 1-2 weeks earlier and continue on a regular basis.



True Armyworm Moth

2 cm

Photos by Peter Lillywhite and Luis Miguel Bugallo Sánchez

True armyworm life cycle

Moths migrate fly up from the South in greater numbers when the South has a warm or mild winter. Moths lay up to 2,000 eggs and there may be 2-3 generations or waves, spaced 3-4 weeks apart. Eggs hatch in 5-10 days, after which the caterpillars feed on the vegetation for several weeks.

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Caterpillars mature in 40 to 60 days, depending on temperature. In warmer weather, caterpillars mature in 40 days, and with cooler temperatures it may take up to 60 days.

Armyworms prefer to feed on grassy vegetation and are less likely to deposit eggs on alfalfa, legumes or clovers. Most of the damage (80%) to crops occurs at the 5th and 6th instar during the last 7 days of growth, when caterpillars are 1-1.5 inches long (Waldron, 2012). University research has shown that it is generally not economical to spray the caterpillars after they reach 1.5 inches, because they are ready to pupate and it takes much more insecticide to kill them.

The best recommended time for rescue sprays is when caterpillars are 0.5 inches or smaller. See instructions below for when it is economical to spray crops as a rescue treatment.

Ohio State University Scouting Recommendations

Armyworms take shelter during the day in corn whorls or under debris and generally feed at night, so it can be difficult to find them. Their feeding damage is more obvious, with ragged edges that progress towards the midrib.

Check 4-5 spots within a field and 20-30 plants at each spot. When 15 to 20% of the stand has feeding damage, the field should be re-checked within a few days to determine if defoliation is increasing. Rescue treatments in corn may be needed if stand infestation is greater than 50% and caterpillars are not yet mature. If defoliation remains less than 50% and the new growth shows minimal feeding injury, the stand will likely recover with minimal impact on yield.

Early scouting is important because caterpillars are easier to kill when small, and less rescue spray is needed. Caterpillars nearing maturity have already done most of their feeding and a spray may not be needed.

Michigan State University Armyworm Thresholds

A rescue treatment may be warranted for corn if 25% of plants have 2 caterpillars per whorl or 75% of plants have a single caterpillar per whorl. Michigan State recommends that sprays should be directed down into the whorl. If caterpillars are small (<0.75 inch) a mid-range rate of spray should be considered (DiFonzo, 2010).

Beneficial Predators

Many beneficial predators will consume both the armyworm eggs and the caterpillars - reducing their populations quickly. Beneficial predators include: Parasitic wasps (*Cutesa marginiventis*), parasitic flies (e.g. tachinid flies), ground beetles, earwigs, lacewings, ladybugs, minute pirate bugs, rodents, and birds. A number of other pathogens (e.g., NPV virus, fungi, and bacteria) can kill caterpillars naturally.

All these beneficial organisms kill the armyworm caterpillar without the need for external inputs, so fields should be managed to promote their growth. Beneficial insects benefit from minimal soil disturbance, surface residue to survive the winter, and live ground cover including natural pollinators for some species. The use of broad spectrum insecticides generally kills all insects, including beneficial insects.



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Photo: Steve Gower, Michigan State University



True armyworm natural enemies include the Tachinid Fly (parasitoid), viruses (NPV virus), fungi, and bacteria. Photo from Dr. Chris DiFonzo, Michigan State University.

Insecticides

A number of labeled insecticides are available for armyworm. For a list of labeled insecticides for armyworm infestations in corn, consult [OSU Extension Bulletin 545 Control of Insect Pests of Field Crops](#). Certain [Bt-traited corn hybrids](#) are also labeled for true armyworm control. Organic sprays (Bt and Spinosad) typically do not harm beneficial predators, because the spray has to be ingested to kill the predators.

These organic sprays breakdown quickly with increased heat and sunlight. Ohio State recommends applying all sprays in late afternoon or early evening because the armyworm typically feeds in the evening. Generally a minimum of 10 gallons (20 gallons is better) of water per acre in the spray to maximize coverage and spray effectiveness. Read and follow the chemical label according to law.

Cover Crop Guidelines

Producers with cover crops should take the following precautions:

In Corn and Soybeans: Terminate grass covers at least 2-3 weeks before planting. Spraying at planting may actually concentrate armyworm feeding on emerging plants. Terminating the grass cover crop early may reduce egg laying and reduce a food source for the hatching caterpillars. Grass cover crops in soybean fields should be terminated early because the armyworm may migrate from the grass cover crop to adjoining corn fields and cause damage. If ryegrass is terminated early, watch for hair pinning and wrapping of vegetation when planting. Generally it is advisable to raise up the residue managers and just use a sharp non-wavy (straight) coulters to cut through the residue.

Planting Green or Late Termination: If a producer decides to keep the grass cover in soybeans and let it grow, or decides to use a roller crimper, this field and nearby fields should be scouted on a regular basis – especially if it is adjoining corn and wheat fields. Consider spraying the corn and wheat fields if needed when armyworm start to migrate. Under hunger stress, the true armyworm may attack legumes and other plants it normally would not consume.

Review Corn Traits: Double check your traits on corn and consider using or switching to a corn hybrid that has beneficial traits (e.g., Bt) that may be helpful in reducing armyworm populations.



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Photo: Steve Gower, Michigan State University



Michigan corn stripped by true armyworm.
Photo from Dr. Chris DiFonzo, Michigan State University.

Burndown Herbicide plus Insecticide: If scouting finds large numbers of armyworm this year, consider applying an insecticide with a burndown herbicide in cover crops.

Tilling Grass Covers: If a farmer decides to till a field with a grass cover crop, beware of skips and areas where the grass is not completely terminated. These areas may need an additional treatment to control the armyworm.

Late Corn: Late planted corn fields may be susceptible to armyworm defoliation since the armyworm may already be larger when new corn plants are emerging.

Interseeding Cover Crops: Use legumes, clovers, and brassicas rather than grass cover crops which are the preferred hosts for armyworms.

Preserving Beneficial Predators: In mature soil health systems, beneficial organisms/predators may keep armyworm populations in check.

Consider using organic sprays (Bt or Spinosad), which are generally not harmful or consumed by the beneficial predators. These products must be used on small armyworm caterpillars to get acceptable control. Early and regular scouting is key to avoiding insecticides. It is important to remember that insecticides may be unnecessary if the armyworm population is declining due to beneficial insects or other natural controls.

References

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James J. Hoorman (primary author), in collaboration with Barry Fisher and Dr. Brandon Smith, USDA-NRCS Soil Health Division (Cover Crop Management Recommendations)

