

Armyworm on Wheat

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The true armyworm is a native species that overwinters in southern areas of the United States. Moths migrate to northern areas, reaching Ohio in the spring where they are attracted to various grasses and cereal grain crops. Eggs are laid at the base of the various grasses, and then hatching larvae feed for about three weeks depending on the temperatures before pupating. Larvae go through six stages known as instars before they pupate. Mature larvae are about 1½ inch in length, greenish-brown with longitudinal stripes on their back and sides (fig. 1). During the day, the larvae will usually hide underneath litter on the ground, doing most of their feeding at night. However, during cloudy, overcast days, the larvae might be found feeding on the plant. Larvae damage plants by feeding on leaf tissue from the ground up. Large numbers of armyworm larvae can strip the plants of all leaf tissue (fig. 2). Reports of significant head clipping after complete defoliation have been received, but this is not a common occurrence.

In Ohio, armyworm is only a sporadic pest of wheat, reaching economic levels in years when large numbers of adults migrate from southern locations. Arrival of moths can be detected using pheromone traps or light traps in the spring. We would point out that it is also important to follow trapping data from states to our south because those areas will often pick up these migrations weeks before they arrive in Ohio. Their findings can give Ohio growers a preview of what might happen in the future.



Figure 1. Armyworm larva



Figure 2. Armyworm defoliation on wheat

Assessment of Injury in Wheat

The collection of large numbers of moths does not give us the information necessary to make informed decisions on the need to spray in a specific field; this can only be done by sampling individual wheat fields. Armyworms are scouted by sampling prior to and following head emergence. Numerous areas of the field should be scouted for the presence of leaf feeding and larvae. Because the insect usually is hidden during the day, larvae should be counted early in the morning or at dusk, although they might also be seen during overcast days. Larvae should be expressed as the number per linear foot of row. Thresholds range from 3 to 5 per foot, with lower numbers being used when wheat is selling at higher prices.

As the wheat begins to mature, the need for spraying diminishes. The health of the upper two leaves and the spike is important to maintain good yields and test weights; however, the importance of keeping these plant parts healthy with chemical applications diminishes once grain fill is complete. The extent of the yield loss resulting from defoliation depends largely on when defoliation occurs relative to grain fill, the variety involved, and the weather conditions. For those fields that have been completely defoliated by armyworm, the damage has already been done unless significant head



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cutting is occurring. Losses resulting from damage to the upper two leaves tend to be highest when defoliation occurs shortly after pollination (which coincides closely with flowering), before grain fill is complete. If defoliation occurs toward the end of grain fill, losses will likely be much lower. If leaves are destroyed at such a late growth stage, sugars will be redistributed from other green plant parts such as the spike and stems to compensate for the loss of the upper leaves.

Because of Ohio's weather, the grain fill period is usually relatively short, and tends to be even shorter as it gets warmer. To determine the growth stage of your crop, remove and examine a few kernels from the tip, middle, and base of 15 to 20 spikes. If the content of the kernels is milky, the wheat is at Feekes growth stage 11.1 (milky ripe); if it is soft but dry, the wheat is at Feekes growth stage 11.2 (mealy ripe); if it is hard and difficult to divide with a thumbnail, then the wheat is at Feekes growth stage 11.3 (kernel hard). Fields that are defoliated close to Feekes 11.3 will likely suffer less yield loss than those that were defoliated at an earlier stage during grain fill. Remember, this all depends on the variety. For a very similar level of defoliation and a

similar growth stage, yield and quality losses may be higher in one variety compared to another.

Prevention of Losses Due to Armyworm in Wheat

There are many natural biological controls against armyworm that often prevent them from causing economic losses, including parasitoids (fig. 3), diseases (fig. 4), and predators. However, following large migrations of adult moths where larval numbers build to threshold levels, insecticides are sometimes necessary to reduce larval numbers. Growers should pay close attention to the pre-harvest intervals for the various insecticides that range from 7 to 30 days. Of special note, there is one material, Entrust, available for the organic wheat grower that is OMRI listed. This is a product made from a fermentation process of a living organism.

See Ohio State University Extension Bulletin 545, *Control of Insect Pests of Field Crops*, for those insecticides labeled for armyworm, or for all insecticides labeled on wheat. Bulletin 545 can be accessed at <http://entomology.osu.edu/ag/>.



Figure 3. Armyworm larva with parasitoid eggs



Figure 4. Diseased armyworm larva

This publication refers to pesticide recommendations in Bulletin 545 that are subject to change at any time. These recommendations are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Due to constantly changing labels and product registration, some of the recommendations given in this writing may no longer be legal by the time you read them. If any information in these recommendations disagrees with the label, the recommendation must be disregarded. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The authors, Ohio State University Extension, and the Ohio Agricultural Research and Development Center assume no liability resulting from the use of these recommendations.

Additional information is available from your local OSU Extension office or The Ohio State University Entomology Agronomic Crops Insects web site (<http://entomology.osu.edu/ag/>).

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