Corn Blotch Leafminer Identification and Management

Corn blotch leafminer is an occasional pest that feeds within corn leaves but does not usually result in potential yield loss.

What to Consider

Corn blotch leafminer (CBL) is considered a sporadic, minor pest. About four to six weeks are required to complete the entire CBL life cycle. There can be several generations per year, but typically the first generation does the most leaf damage.[1]

Figure 1. Corn blotch leafminer feeding and tunneling resulting in corn leaf damage.

Figure 2. Heavy corn blotch leafminer corn leaf damage. Photo courtesy of Chris DiFonzo, Michigan State University

- The adult is a small (about 1/4 inch long) gray to brown fly, and females insert eggs between corn leaves during the growing season.
- After egg hatch, the larvae tunnel into leaves.
- Larvae are pale-green to yellowish-white and about 1/4 inch long when fully grown.
- Mature larvae chew out of the leaf and drop to the soil to pupate.

As corn matures, leaves thicken and larvae from later CBL generations generally tunnel in only the lower or upper half of the leaf, causing less damage.

Yield Impact

Larvae feed on internal leaf tissue, leaving transparent tunnels or mines (Figure 1 and 2). The tunnel from one larvae usually widens as the larvae grows, resulting in a broad blotch in the last third to half of the mine.[2] Numerous mines on a single leaf can merge giving the leaf an overall bleached appearance.[3] Also, in heavy infestations when the entire leaf is mined, the foliage dries up and shrivels, giving the plant a frosted appearance.[4]

There are no sampling methods or economic thresholds for CBL.[3] Although research on the effect of CBL leaf feeding on yield potential is nearly non-existent, entomologists believe CBL damage is usually noneconomic.

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Potential losses from CBL can be estimated using hail damage data.[3] Using this data -

- 4% yield potential loss in 7-leaf corn would require 60% defoliation (Table 1).
- 5% loss in yield potential in 12 or 17-leaf corn, mining damage would have to be 40 and 25%, respectively.[5]

This is the best information currently available to estimate potential yield loss; however, it is not based on CBL feeding damage. Hail damage is based on whole plant damage versus CBL feeding that occurs on leaves generally in the lower portion of the plant canopy.

Table 1. Estimated potential corn yield loss due to percent leaf defoliation at various growth stages.

	Percent Leaf Area Destroyed				
Corn Growth Stage*	20%	40%	60%	80%	100%
	% Potential Yield Loss				
7-leaf	**0**	**1**	**4**	**6**	**9**
12-leaf	**1**	**5**	**11**	**18**	**28**
17-leaf	**4**	**13**	**28**	**48**	**72**
Silked	**7**	**20**	**39**	**65**	**97**
Blister	**5**	**16**	**30**	**50**	**73**
Soft dough	**2**	**8**	**17**	**29**	**41**

*This system counts a leaf as fully developed when the leaf tip is pointing below a horizontal line (not fully developed leaf collar).

Source: 2013. Corn loss adjustment standards handbook, 2014 and succeeding crop years. Page 84. FCIC-25080 (11-2013). USDA Federal Crop Insurance Corporation.

Management Considerations

Foliar insecticide applications are not effective for CBL control because the egg and larvae are inside the leaves, protected from insecticides. Adult flies emerge over several weeks and would require multiple insecticide applications. In addition, broad-spectrum insecticides may kill predators and parasites which are important for suppression of CBL and other corn pests such as spider mites and aphids. Corn blotch leafminer populations are normally suppressed by numerous species of parasitic wasps.[1,2,4]

Figure 3. The tunnel from one larvae usually widens as the larvae grows, resulting in a broad blotch in the last third to half of the mine.

Sources:

[1] Wright, B. 2010. Corn blotch leafminers damaging corn in central Nebraska. CropWatch. University of Nebraska - Lincoln. https://cropwatch.unl.edu/unl-cropwatch

[2] Steffey, K.L., Rice, M.E., All, J., Andow, D.A., Gray, M.E., and Van Duyn, J.W. 1999. Handbook of corn insects. Entomological Society of America.

[3] Obermeyer, J. and Bledsoe, L. 2003. Corn blotch leafminer or why are corn leaves turning white? Pest & Crop. Issue 16. Purdue University.

[4] DiFonzo, C. 2012. Corn blotch leafminer. CDD #038. Michigan State University. http://www.msuent.com/assets/pdf/38CornLeafminer.pdf

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