7-27-1998

Second-generation corn borer outlook

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Abstract
ISU extension field crop specialists have reported that first-generation damage by European corn borer is light across Iowa. First-generation moth flights were apparently cut short by the cold, wet weather the first week of June. Some producers might think that second-generation European corn borer damage also will be averted because there will be fewer moths to lay eggs and thus, lower numbers of larvae emerging. This is not necessarily true.

Keywords
Entomology

Disciplines
Agricultural Science | Agriculture | Entomology

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- The limited number of larvae that has successfully established in cornfields will probably produce some moths that will contribute to a second generation. Weather, predatory insect populations, insect diseases, and other factors will determine the success of these moths in producing a second generation. Under ideal conditions, a female moth can produce between 500 and 1,000 eggs during her lifetime, and damaging populations could develop.
- Although the small larval populations present in corn mean that cornfield-grown adults will be limited, European corn borer can infest other plants; over 230 species have been identified to date. Many of these alternative host plants are effective incubators that can produce enough adult moths to lay significant numbers of second-generation eggs.

European corn borer larvae were collected from corn stalks around Iowa and their developmental stage determined to allow us to predict when females will be laying eggs (Table 1). Note that because the sample sizes were small, these dates are approximate.

The key to the development (or lack thereof) of damaging second-generation European corn borer populations is the environmental conditions yet to come. For instance, a period of cooler-than-normal temperatures with some moisture when the females are laying eggs would reduce oviposition rates. Conversely, larval death from Beauvaria is favored by hot and dry conditions. Accordingly, the number of larvae would be reduced.

[1] **Corn borer killed by *Beauveria* fungus.**

[2] **European corn borer egg mass.**

Scouting for corn borer eggs should begin the last week of July for most of Iowa. Late-planted corn typically has the largest populations of second-generation corn borers. Pay

special attention to fields that are actively shedding pollen or have fresh silks. If insecticide use is warranted, timing of treatments is critical. Scouting is the only effective way to know when to treat. Examine the undersides of the middle seven leaves (three leaves above and the three leaves below the ear leaf) on 20 plants at five locations in the field. Multiply the number of egg masses found by 1.1 to correct for eggs that might be on other leaves of the plants. Use the information in Table 2 to estimate the need for an insecticide application in your field. If the population is initially low, rescout the field in 5 to 7 days.

Table 1. Predicted egg-laying dates for European corn borer .

County	Predicted date for 25-50% egg laying
Story (2 samples: Heart of Iowa Coop, Mark Britten)	July 27 to August 3
Warren	July 27 to August 2
Union (Crestland Coop)	July 26 to August 1
Woodbury (David Linn)	July 25 to July 30
Cass	July 28 to August 2

Table 2. European corn borer second generation: cost-benefit analysis of management (below). (Note: for a high-resolution version of this analysis suitable for printing out and formatted in Adobe PDF, click here [3].)

Table 2. European corn borer second generation: cost-benefit analysis of management.

Example		
1. 0.3 egg masses per plant*	× 4.5 borers per egg mass	= 1.35 borers per plant
2. 1.35 borers per plant	× 0.04% yield loss per borer**	= 0.05% yield loss
3. 0.05% yield loss	× 140 expected yield (bu/acre)	= 7 bu/acre loss
4. 7 bu loss per acre	× $2.40 price per bushel	= $16.80 loss per acre
5. $16.80 loss per acre	× 80% control	= $13.44 preventable loss per acre
6. $13.44 preventable loss per acre	- $10.00 cost of control per acre	= $3.44 profit (loss) per acre

* Cumulative counts taken 5 to 7 days later can be added here.
** Use 0.04 for pollen-shedding corn, 0.03 if kernals are initiated.

You fill in the blanks		
1. ____ egg masses per plant*	× 4.5 borers per egg mass	= ____ borers per plant
2. ____ borers per plant	× ____% yield loss per borer**	= ____ % yield loss
3. ____ % yield loss	× ____expected yield (bu/acre)	= ____ bu/acre loss
4. ____ bu loss per acre	× ____price per bushel	= $____ loss per acre
5. ____ loss per acre	× 80% control	= $____ preventable loss per acre
6. ____ Preventable loss per acre	- ____ cost of control per acre	= $____ profit (loss) per acre

* Cumulative counts taken 5 to 7 days later can be added here.
** Use 0.04 for pollen-shedding corn, 0.03 if kernals are initiated.

This article originally appeared on pages 149-150 of the IC-480(20) -- July 27, 1998 issue.

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