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Scouting for First Generation European Corn Borers in Field Corn

Michigan State University

Cooperative Extension Service

IPM Facts

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Scouting For First Generation European Corn Borers in Field Corn

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Corn borer populations vary greatly from year to year and from field to field. In most of Michigan, the European corn borer¹ has two generations per year. This bulletin focuses on scouting for first generation borers.

Description of life stages

Scale-like, rounded eggs are laid in masses, up to 1/4 inch long, on the underside of corn leaves near the mid-vein. Each egg is about the size of a pinhead; they overlap much like fish scales. Although whitish when first laid, they darken and form a definite dark spot (the head of the larvae) just before hatching. Newly hatched larvae (or borers) are about 1/16 inch long. They have smooth whitish bodies, black heads, three pairs of legs near the head, and five pairs of fleshy legs (prolegs) near the tail. Full grown larvae range from 3/4 to 1 inch long, vary in color from gray to creamy white and have numerous prominent dark brown or black spots. Adults are pale yellow to light brown with wavy lines on the wings and have a wingspread of about one inch.

Damage

Whorl feeding produces the "shothole" type of damage typical of early first-generation borer damage. As they mature, larvae leave the whorl to tunnel into the stalk of the corn plant. This weakens

the stalk and can result in reduced yields and lodging.

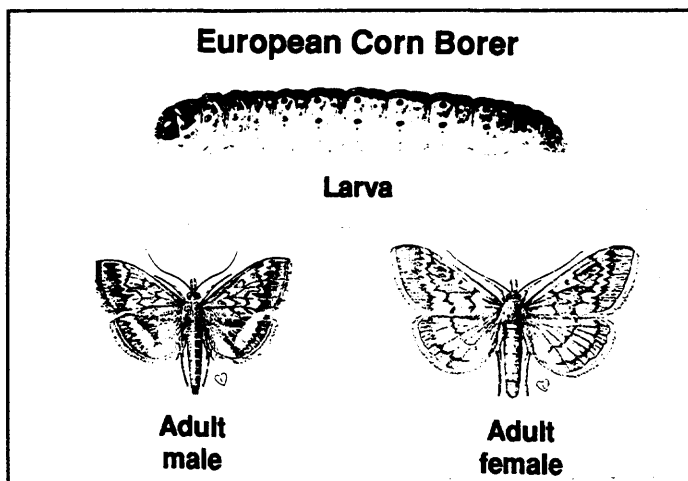
Scouting & Economic Thresholds

Moth numbers and flight periods can be monitored using blacklight or pheromone traps. Growers can obtain information on when to time scouting activities from alerts issued by county agents.

First generation - Begin sampling when corn is 16-22 inches in extended leaf height. Pay special attention to earlier planted (taller) fields because they are frequently more attractive during first generation egg laying. Scout these early planted fields first then move to later planted fields. Choose five random locations of the field and check the whorl leaves of 20 consecutive plants in each area (100 plants/field) for feeding damage. Keep a count of damaged plants in each area and record this number on the form on the reverse side. Damage is evident as either white spots, "shot-holes," or broken leaf midribs. Then choose two

damaged plants in each of the five areas (10 plants/field) and examine for larvae. Grasp the top of the whorl and pull it out of the plant, and unroll the leaves looking for whitish larvae with four spots per segment and black heads. Count the number of live borers found and record this number on the form on the reverse side (use

"3" for any plant in which 3 or more live borers are found, as additional borers do not significantly increase damage). If you find no borers in damaged plants, they may have already tunneled into the stalk and is too late to control them with insecticides. Alternatively, natural enemies may have killed the



¹ European Corn Borer: *Ostrinia nubilalis* (Hubner)

larvae leaving only damaged plants but no borers.

A general guideline is that a threshold exists if 50 percent or more of the plants show damage and larvae are present in the whorl. Use the worksheet below for a more accurate determination of the

economic threshold. The worksheet is derived from the North Central Regional Extension Publication No. 327, **European Corn Borer: Development and Management.**

Sample	# Damaged	# Live Larvae
#1	_____	_____
#2	_____	_____
#3	_____	_____
#4	_____	_____
#5	_____	_____
	/100	/10

$$0. \quad \times \quad \times \quad \times \$ \quad \times 0. \quad \times 0.05 \quad - \$ \quad =$$

Proportion of plants damaged	Average # of larvae per plant	Expected yield in bushels per acre	Expected price per bushel	Expected control (0.5 for liquids, 0.8 for granulars)	Loss per larvae per plant	Cost of control, \$/acre	\$ return per acre*
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* If result is negative, no treatment is needed. If result is positive, determine if potential return/acre justifies the additional input.

1. Choose 5 areas in a field and check 20 consecutive plants for ECB damage. Enter number of damaged plants for each sample.
2. Pull the whorl of 2 damaged plants per sample and examine for ECB larvae. Enter number of larvae observed.
3. Add columns and divide.
4. Fill in additional information and multiply.

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This publication contains pesticide recommendations based on research and pesticide regulations. However, changes in pesticide regulations occur constantly. Some pesticides mentioned may no longer be available, and some uses may no longer be legal. If you have questions about the legality and/or registration status for using pesticides, contact your county Cooperative Extension Service office.

To protect yourself and others and the environment, always read the label before applying any pesticide.

Illustrations courtesy of United States Department of Agriculture.



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