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## Stalk Borers Begin Migration to Corn

Erin W. Hodgson

*Iowa State University*, [ewh@iastate.edu](mailto:ewh@iastate.edu)

Adam Sisson

*Iowa State University*, [ajsisson@iastate.edu](mailto:ajsisson@iastate.edu)

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# Stalk Borers Begin Migration to Corn

## **Abstract**

Degree days are a useful tool to estimate when common stalk borer larvae begin moving into cornfields. Start scouting corn for larvae when 1,300-1,400 degree days (base 41°F) have accumulated. Temperatures have been variable this spring and degree days have been slowly increasing. Southeastern Iowa reached this important temperature benchmark this week (Fig. 1) and therefore scouting for migrating larvae in corn should begin now to make timely treatment decisions. Consider applications at peak larval movement, or 1,400-1,700 degree days (base 41°F).

## **Keywords**

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## **Disciplines**

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## Stalk Borers Begin Migration to Corn

By Erin Hodgson, Department of Entomology and Adam Sisson, Integrated Pest Management

Degree days are a useful tool to estimate when common stalk borer larvae begin moving into cornfields. Start scouting corn for larvae when 1,300-1,400 degree days (base 41°F) have accumulated. Temperatures have been variable this spring and degree days have been slowly increasing. Southeastern Iowa reached this important temperature benchmark this week (Fig. 1) and therefore scouting for migrating larvae in corn should begin now to make timely treatment decisions. Consider applications at peak larval movement, or 1,400-1,700 degree days (base 41°F).

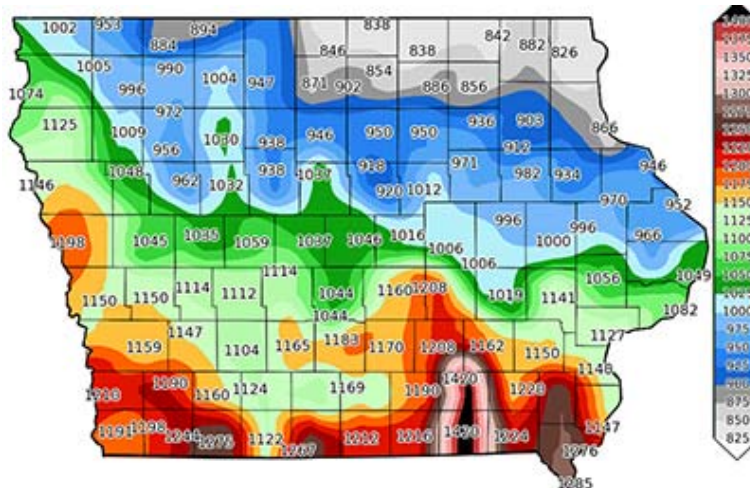


Figure 1. Degree days accumulated (base 41°F) for stalk borer in Iowa (January 1 - May 26 2015). Map courtesy of Iowa Environmental Mesonet, ISU Department of Agronomy.

Stalk borer larvae in central and northern Iowa will migrate later in June. To more accurately predict larval movement, use this [website](#) to generate up-to-date information for your area. Click on the "View Degree Day Map" button in the lower left corner of the page and then set the parameters for degree days to create a new map. Make sure to set the start date to January 1 of the current year and the end date to today; set base temperature to 41°F and ceiling temperature to 86°F. It may take a few moments for the map to load after the pop up screen disappears.

### Description

Stalk borer larvae have three pairs of true legs and four pairs of fleshy prolegs. The body is creamy white and dark purple with brown stripes. Often there is a creamy white stripe running down the back of the thorax and abdomen. A distinctive feature of stalk borer larvae is an orange head with two dark lateral stripes (Photo 1). The adults are dark grey and brown colored moths, with jagged white lines and two to three clusters of white spots (Photo

2).



**Photo 1. Common stalk borer larva.** Photo credit Marlin E. Rice.



**Photo 2. Common stalk borer adult.** Photo credit Adam Sisson.

## **Biology**

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Stalk borers have one generation annually in Iowa. Stalk borer eggs are laid on grasses and weeds in the fall and overwinter in this cold-hardy stage. Egg hatch typically occurs around April 19 – June 5, and about 50 percent egg hatch happens at 494 degree days. Young larvae will feed on grasses and weeds until they outgrow the stem of the host plant. The number of larval molts is variable depending on food quality, and ranges from seven to nine instars. Migration to larger hosts begins around 1,300-1,400 degree days. Fully developed larvae drop to the soil to pupate. Approximately 50 percent of pupation happens at 2,746 degree days, with 50 percent adult emergence at 3,537 degree days. Peak adult flight occurs during the first two weeks of September.

Corn adjacent to grassy and weedy areas becomes a suitable food source for migrating larvae. The most susceptible corn growth stages for infestation are V1-V5, or about 2-24 inches in plant height. Larvae can damage corn by defoliating leaves and burrowing into stalks. Stalk borers do not typically cause economic damage when feeding on the leaves, but can clip newly emerging plants and cause death (Photo 3). More often, larvae kill corn plants by entering the stalk and destroying the growing point (i.e., flagging or dead heart). A dead heart plant will have outer leaves that appear healthy, but the newest whorl leaves die and can cause barren plants.



**Photo 3. Stalk borer larvae can shred corn leaves and destroy the growing point.**

## Control

Stalk borer infestations are more likely found in corn surrounded by giant ragweed. Female moths prefer to lay eggs in weedy areas in August and September, so minimizing weeds in and around corn during that time will make those fields less attractive. Using herbicides to kill spring weeds can force stalk borer larvae to infest young corn plants. Long-term management requires controlling grassy edges around corn so that mated females will not lay eggs in that area during the fall. To prevent stand loss, scout and determine the percent of infested plants. The use of an economic threshold (Table 1), first developed by Iowa State University entomologist Larry Pedigo, will help determine justifiable insecticide treatments based on market value and plant stage. Young plants have a lower threshold because they are more easily killed by stalk borer larvae.

Market value	\$5/bu				\$6/bu				\$7/bu				
	Yield	150	175	200	225	150	175	200	225	150	175	200	225
leaf stage	1	3.46	2.97	2.60	2.31	2.89	2.47	2.16	1.92	2.47	2.12	1.86	1.65
	2	4.23	3.63	3.17	2.82	3.53	3.02	2.65	2.35	3.02	2.59	2.27	2.02
	3	5.60	4.80	4.20	3.73	4.67	4.00	3.50	3.11	4.00	3.43	3.00	2.67
	4	5.95	5.10	4.46	3.97	4.96	4.25	3.72	3.31	4.25	3.64	3.19	2.83
	5	6.80	5.83	5.10	4.54	5.67	4.86	4.25	3.78	4.86	4.16	3.64	3.24
	6	11.90	10.20	8.93	7.94	9.92	8.50	7.44	6.61	8.50	7.29	6.38	5.67
	7	32.84	28.15	24.63	21.89	27.37	23.46	20.53	18.24	23.46	20.11	17.59	15.64

**Table 1. Economic thresholds (expressed as percent of infested plants with larvae in the whorl) for stalk borer in corn, based on market value, expected yield and leaf stage.**

Fields with persistent stalk borer infestations should be monitored every year. Applying insecticides to infested corn is not effective because the larvae are protected once inside the stalk. Instead, target foliar applications to larvae as they migrate from grasses to corn. Look for larvae inside the whorls to determine the number of plants infested. The larvae are not highly mobile, and typically only move into the first four to six rows of corn. Look for new leaves with irregular feeding holes or for small larvae resting inside the corn whorls. Larvae will excrete a considerable amount of frass pellets in the whorl or at the entry hole in the stalk. Young corn is particularly vulnerable to severe damage, but plants are unlikely to be killed once reaching V7.

If an insecticide is warranted, some products can be tank-mixed with a fast burndown herbicide, or applied seven days after a slow burndown herbicide. Border treatments should be considered if infestations are localized. Insecticides must be well-timed so that products are reaching exposed larvae before they burrow into the stalk. Make sure to read the label and follow directions, especially if tank-mixing with herbicide, for optimal stalk borer control.

For more information on stalk borer biology and management, read a Journal of Integrated Pest Management article by Rice and Davis (2010), called "Stalk borer ecology and IPM in corn" at this [website](#).

*Erin Hodgson is an associate professor of entomology with extension and research responsibilities; contact her at [ewh@iastate.edu](mailto:ewh@iastate.edu) or by calling 515-294-2847. Adam Sisson is an Integrated Pest Management extension specialist; contact him at [ajsisson@iastate.edu](mailto:ajsisson@iastate.edu) or by calling 515-294-5899.*

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