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Stalk Borers Moving in Southern Iowa

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Abstract

Iowa has been slowly accumulating degree day temperatures in 2013; the state is about four weeks behind 2012. About 10 percent of common stalk borer larvae can begin moving to corn after accumulating 1,300-1,400 degree days (base 41 degrees F). This week, some parts of southern Iowa reached this important benchmark (Fig. 1). Scouting for migrating larvae in corn should begin this week to make timely treatment decisions.

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Stalk Borers Moving in Southern Iowa

By Erin Hodgson and Adam Sisson, Department of Entomology

Iowa has been slowly accumulating degree day temperatures in 2013; the state is about four weeks behind 2012. About 10 percent of common stalk borer larvae can begin moving to corn after accumulating 1,300-1,400 degree days (base 41 degrees F). This week, some parts of southern Iowa reached this important benchmark (Fig. 1). Scouting for migrating larvae in corn should begin this week to make timely treatment decisions.

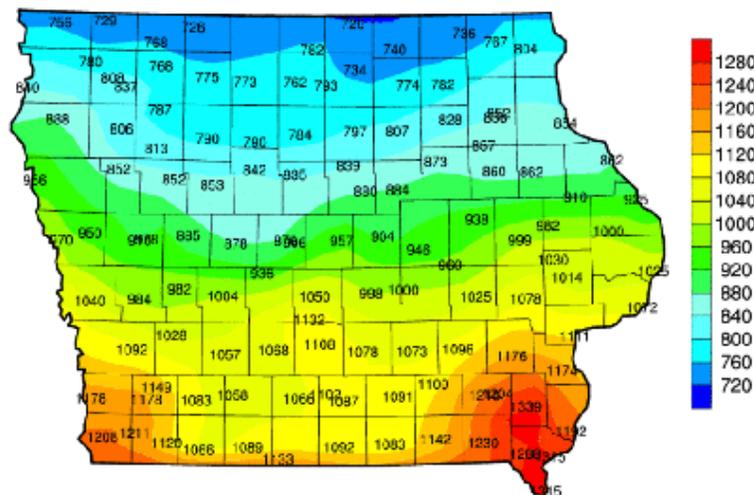


Figure 1. Growing degree days accumulated (base 41 degrees F) for stalk borer in Iowa (January 1 – June 2, 2013). Begin scouting around 1,300-1,400 degree days. Map courtesy of Iowa Environmental Mesonet, ISU Department of Agronomy.

Stalk borer larvae in central and northern Iowa should accumulate enough degree days to begin migration next week. But to more accurately predict larval movement in May, [use this website](#) to generate up-to-date information. Click on the “View Degree Day Map” button in the 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 degrees F and ceiling temperature to 86 degrees F.

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. A distinctive feature 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 1. Common stalk borer larva. Photo credit Marlin E. Rice.

Biology. Stalk borers have one generation 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 growing degree days. Young larvae will feed on grasses and weeds until they outgrow the 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 growing degree days, with 50 percent adult emergence at 3,537 growing degree days. Peak adult flight occurs during the first two weeks of September.

Corn adjacent to grassy and weedy areas become a suitable host during migration. The most susceptible stages of infestation are at 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 2). 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 2. Stalk borer can shred corn leaves and destroy the growing point.

Control. Stalk borer infestations are more likely 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 discourage egg laying. 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 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.

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 tunneled into 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 (seven true leaves).

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 treatment 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 a 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.](#)"

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