



# Agronomic Alert

## Soybean Stem Borer

- Tunneling and stem girdling can cause reduced soybean yield potential.
- Insecticide applications have not been successful in significantly reducing potential yield losses from soybean stem borer.
- Timely, early harvest can help reduce lodging losses due to soybean stem borer damage.

### Distribution

Soybean stem borers (*Dectes* stem borer) are reported most frequently in areas across the western plains states (TX panhandle, KS, NE, CO), along the Mississippi and Ohio rivers (LA, MS, AR, MO, TN, KY), and along the Atlantic coast (SC, NC, VA, MD, DE, NJ). The insect can be present in more northerly states, like Iowa and the Dakotas, but not generally in damaging populations.<sup>1</sup> The increased use of no-till combined with warmer winters may explain the increased number of damage reports attributed to this insect.

### Identification and Life Cycle

The adult soybean stem borer (SSB) is a grey, long-horned beetle with long antennae that are banded black and grey (Figure 1). The larvae are legless, creamy white or yellow in color, and have an “accordion-like” appearance (Figure 2). The larva can move into the main stem of a soybean plant, where it tunnels until the plant matures and can cause damage.<sup>2,3</sup>

Adults emerge from June through August. Female beetles chew into the soybean leaf petiole, laying a single egg. Typically, the petiole and leaf will wilt and drop from the plant, leaving a reddish scar where the petiole was attached to the stem.

After hatching, the larvae feed for several days on the outer stem before boring into the main stem. Larvae tunnel throughout soybean stems during July and August. The larva will eventually tunnel to the base of a mature soybean plant and girdle the stem at a point near or just above the soil line. Peak girdling activity generally occurs in September and October when soybean plants begin to senesce. The mature larva creates a chamber by girdling the inside of the plant and depositing a frass plug immediately below the girdled area of the stem in preparation for overwintering. The pest overwinters in the stubble of soybeans, as well as in other host plants of sunflower, cocklebur and ragweed.<sup>2,3,4</sup>

### Soybean Damage

Soybean yield potential can be reduced if plants lodge as a result of the stem girdling, particularly if harvest is delayed. Physiological losses due to tunneling may be as high as seven



Figure 1. Soybean stem borer adult. Photo courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org

percent.<sup>5</sup> Girdling can be most severe with earlier maturing soybean products, and lodging can be most severe in earlier planted soybeans.<sup>3</sup>

### Scouting

Sweep net sampling can be used from late June to August to identify fields that have SSB adults. When scouting for SSB, look for initial damage at the petiole and leaf tissue that wilts, dies, and eventually falls off the plant, leaving behind a reddish scar around the entrance hole. Dying mid-canopy leaves can



Figure 2. Soybean stem borer larva. Photo courtesy of Frank Piers, Colorado State University, Bugwood.org

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be evidence of a soybean stem borer infestation. To see a number of good diagnostic photos for SSB go to <http://extension.udel.edu>.<sup>5</sup>

To confirm an SSB infestation, cut soybean stems lengthwise and look for a larva and feeding damage (Figure 3). Determining that a field is infested can help ascertain the potential risk for lodging and whether early harvest should be considered in heavily infested fields.

## Management

Insecticide applications, at-planting or foliar, have not been successful in significantly reducing potential yield losses from SSB.<sup>3,5,6</sup> An extended period of adult emergence makes timing of applications difficult. Once the larvae enter the plant, they are protected from foliar insecticide treatments. Currently, there is not an established threshold for soybean stem borer adults. Although some foliar insecticides can provide initial control of SSB adults, applications may result in late season outbreaks of spider mites or soybean aphids by reducing natural enemy populations.<sup>6</sup>

## Management Options

Insecticide applications can provide only limited success in reducing the damage caused by SSB. There are currently no soybean products that have resistance to SSB. Cultural control practices are the most effective means to help reduce potential losses from the soybean stem borer.

- **Early or timely harvest** has been shown to significantly reduce lodging losses as a result of soybean stem borers. Scouting can help identify fields with high infestations of SSB and potential lodging risks.
- **Fall tillage** has been shown to reduce winter survival of soybean stem borers. Tillage that buries residue 2 to 3 inches deep is recommended. A light disking to tear up the plant crowns from the soil can also be of benefit.
- **Weed control** within and around the perimeter of fields is important to control alternative host plants such as giant ragweed, common cocklebur, and wild sunflowers.
- **Soybean product selection** may help reduce risks. Early planted, short-season soybean products have been observed to be more prone to lodge as a result of soybean stem borer damage.<sup>3,5</sup> Soybean cyst nematode (SCN) resistant products can be less susceptible to lodging compared to SCN susceptible products.<sup>5</sup>
- **Narrow row spacing** (7 to 15 inches) can help reduce lodging losses because the lodged plants can be held up, to some degree, by the surrounding plants.

- **A sunflower trap crop** could be used in some areas to protect adjacent soybean fields. Soybean stem borers have been found to prefer commercial sunflowers to soybeans.<sup>3</sup>
- **Crop rotation** can be effective when soybean production in an area is limited, because soybean stem borers are not considered “strong” fliers. In areas where soybeans are commonly grown and beetle populations are high, the value of crop rotation is limited.

Soybean fields should be scouted and watched during August and September for evidence of a soybean stem borer infestation. Fields with extensive stalk tunneling of greater than 50% of plants by the soybean stem borer are at risk for lodging and harvest losses. These fields should be targeted for early harvesting to minimize potential harvest losses due to soybean stem borer injury.



Figure 3. Soybean stem borer larva tunneling damage in soybean stem.

### Sources:

- <sup>1</sup>Buschman, L. and Sloderbeck, P. 2007. Pest status of the soybean stem borer, *Dectes texanus*, in North America. Kansas State University. Poster presented at ESA North Central Meeting, March 2007. <http://www.entomology.ksu.edu> (last verified 8/19/2011).
- <sup>2</sup>Sloderbeck, P. et.al. 2003. The soybean stem borer. Kansas State University. Extension publication MF-2582. June 2003. <http://www.ksre.ksu.edu> (last verified 8/19/2011).
- <sup>3</sup>Wright, R. and Hunt, E. 2011. Soybean stem borers in Nebraska. University of Nebraska-Lincoln NebGuide. May 2011. <http://www.ianrpubs.unl.edu> (last verified 8/19/2011).
- <sup>4</sup>Stewart, S., McClure, A. and Patrick, R. 2009. Dectes stem borer. University of Tennessee extension publication W197. <https://utextension.tennessee.edu> (last verified 8/19/2011).
- <sup>5</sup>Whalen, J. and Cissel, B. 2014. Dectes stem borer management in soybeans. University of Delaware Cooperative Extension IPM-7, <http://www.ag.udel.edu> (verified 8/02/2014).
- <sup>6</sup>Wright, R. 2014. Dectes stem borer emerging in soybeans. University of Nebraska CropWatch, <http://cropwatch.unl.edu> (verified 8/02/2014).

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