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DECTES STEM BORER FACTS

Common names: Dectes stem borer, soybean stem borer

Latin name: Dectes texanus, family Cerambycidae

- The Dectes stem borer is a small, long-horned beetle whose larvae attack soybeans. It is a native insect species in North America east of the Rocky Mountains.
- Cultivated sunflowers were historically the preferred host plant for Dectes stem borer, and it was not considered a major pest of soybean. Damage to soybeans has been reported since the 1970s, but it has generally been sporadic.
- In recent years, however, reports of damage in soybeans have increased, both in frequency and in geographic range in the U.S.
- Instances of Dectes stem borer damage to soybeans have spread northward in the last several years, likely due to increasing temperatures.

IDENTIFICATION

- Larva: creamy white to dull yellow in color, without legs, ½-inch long with “accordion-style” segments (Figure 1).
- Adult: gray-colored beetle with long black-and-gray banded antennae; length is ½ inch (13 mm) (Figure 2).
- Egg: very small, white-colored egg laid inside soybean petiole where female cuts a scar.

Figure 1. Dectes stem borer larvae.



Figure 2. Adult Dectes stem borer.



Figure 3. Egg scars on a soybean stem.



INJURY AND PEST SYMPTOMS

- Larvae damage soybeans by: 1) tunneling inside the stem, which can reduce yield production capacity, and 2) girdling, which causes plants to lodge.
- Larvae girdle stem one to two inches above soil line.
- Girdling, and subsequent lodging, tend to be most severe in early planted, short-season soybean varieties.

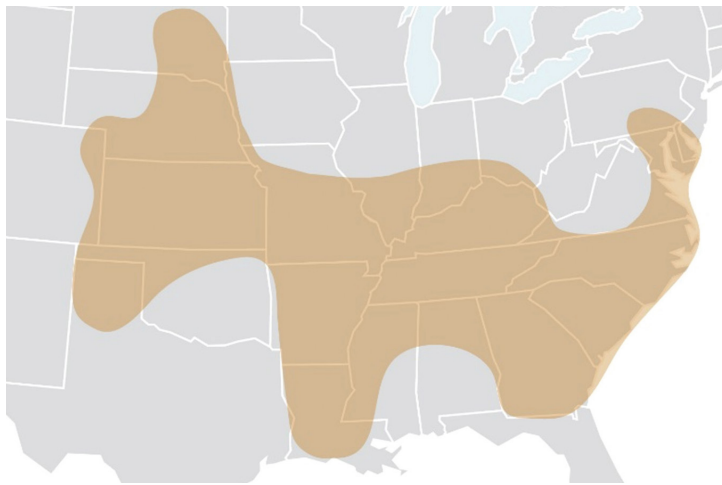
Figure 4. Dectes stem borer larva tunneling inside a soybean stem.



PEST STATUS AND ECONOMIC IMPORTANCE

- Dectes stem borer has increased in importance as a soybean pest in recent years. Increased infestation may be due to:
 - Increased adoption of no-till, which leaves the habitat of overwintering larvae undisturbed.
 - Warmer winter temperatures, which may allow greater numbers of larvae to survive the winter.
- Yield losses of 7 to 12% caused by larval tunneling have been reported.
- Greater yield losses can result from lodging caused by the girdling of stems prior to harvest.
- Dectes stem borers are also a pest of sunflowers, in which they cause similar damage by tunneling and girdling the stems.
- The geographic range in which Dectes stem borer damage to soybean has been observed has expanded over the past several years (Figure 5).
- Populations infesting sunflowers have been documented further north in the Great Plains, extending into North Dakota.

Figure 5. Approximate area of *Dectes* stem borer infestation in soybean based on Field Agronomist observations, October 2018.



LIFE CYCLE

- *Dectes* stem borers go through one generation per year.
- Adults emerge over an extended period during mid-summer.
- Sunflower is the preferred host; soybean is a secondary host. Weed species, such as cocklebur and giant ragweed, can also serve as larval hosts.
- Adults live an average of 23 days on soybean, but 53 (males) and 76 (females) days on sunflowers.
- Adults mate and feed on stems and petioles of host plants, leaving longitudinal feeding scars.
- Adults are not strong fliers and will not travel any further than necessary to find a host plant.
- Females lay eggs primarily in leaf petioles. A female will chew a hole in the petiole and then deposit a single egg.
- Larvae tunnel down the leaf petiole and into main stem, feeding on the pith.
- Multiple eggs can be laid in a plant, but larvae are cannibal-istic and typically only one will remain at the end of the season.
- By the time a soybean plant reaches maturity, the larva will have tunneled down to the base of the plant, where it will overwinter as a mature larva.
- To create a protective cell for overwintering, the larva girdles the interior of the stem at a point near or just above the soil line and plugs the stem with its frass (Figure 6).



Figure 6. Soybean stems girdled and tunnels plugged with frass.

SCOUTING

- Adults can be found in the soybean canopy throughout most of the summer with peak emergence often occurring in late June or early July and beetle activity extending as late as September.
- As newly hatched larvae tunnel through the petiole toward the main stem, the affected trifoliate will die but remain hanging in canopy for some time. A dead trifoliate surrounded by healthy leaves is a telltale sign that *Dectes* stem borer is present (Figure 8).



Figure 7. Lodging due to stem girdling by *Dectes* stem borer larvae.



Figure 8. Dead trifoliate from *Dectes* stem borer larva tunneling.

MANAGEMENT

Cultural Practices

- Harvest: the best method of reducing yield losses from *Dectes* stem borer is to harvest heavily-infested fields as soon as possible to minimize lodging loss.
- Planting time: avoid early planting with short-season varieties in areas with known problems.
- Plant resistance: no known resistant soybeans.
- Cropping pattern: avoid crop rotation into commercial sunflowers infested the previous year.
- Tillage: disking or burying infested soybean stems after harvest can reduce subsequent populations.

Insecticides

- Insecticide applications targeted at controlling adults have often had limited effect due to the extended adult emergence period.
- More favorable results have been achieved with applications made prior to egg laying that provide control of the young larvae within the petioles.
- Proper timing of insecticide application is critical for best results:
 - Use GDUs to determine application date (Base 50, starting January 1st).
 - Spray within 7 to 10 days of accumulating 1,250 GDUs.
- Consider an insecticide application in soybean fields that will be harvested last or late, which will have a higher risk of yield losses due to girdling/lodging.
- Always read and follow insecticide label guidelines.

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