

Dectes Stem borer (aka Soybean stem borer) in Kentucky Grown Soybeans

***Dectes texanus texanus* LeCont. Coleoptera: Cerambycidae**

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The Dectes (or soybean) stem borer is a small, long-horned beetle that attacks soybeans. The adult beetle is pale gray and about 3/8 inch long. It has prominent black and gray banded antennae that are as long as or longer than the body.



Single eggs are deposited in cavities that female beetles chew into leaf petioles or stems. If eggs are laid in leaf petioles, larvae will feed in the petiole for several days before tunneling into the stem. The trifoliolate leaf and the petiole then wilts, dries up and drops from the plant. Dead leaves can be observed in the canopy for a number of days.

After the leaf drops from the plant, reddish scar tissue may develop around the entrance hole, a sign of an infested plant. Larvae are legless with small, brown heads. Their bodies are deeply segmented in an accordion-like fashion and conspicuously enlarged near the head with the body gradually tapering toward the rear end. Fully-grown larvae are creamy white and 1/2 to 5/8 inch long.

Life History

The soybean stem borer overwinters as a larva in the base of hollow, girdled stems. Recent research in KY indicates that larvae begin to pupate around the beginning of May. Adults begin to emerge in June. Adults lay eggs during July and August, and some live into September. Larvae tunnel up and down the stems until late August or September. By the time plants mature, larvae will have tunneled down to the base.

Larvae are cannibalistic, with only one survivor per plant. In preparation for overwintering, many larvae girdle the interior stem surface at a point near or just above the soil line. Plants break off easily where girdling occurred, allowing them to lodge. Girdling generally occurs when plants are mature and ready for harvest.

The yield losses caused by larval tunneling appear to be in the range of 7 – 12%. Significant losses can occur when plants are girdled and lodging occurs before harvest. Timely harvest can be effective in reducing yield losses.

History of Problems

Though not technically a new pest, the Dectes stem borer has been little noticed in past years. Conversely, stem bore infestations have been more noticeable in the Jackson Purchase area. It appears that in the production year 2002, Dectes caused considerable damage in fields in the Green River area. Upon discovering these infestations and identifying the cause as Dectes, several individuals now think they have seen the same problem widely distributed in the Green River, Pennyryle and Purchase areas. Field infestations have been reported as far east as LaRue County. In three years of field plots in the UK-REC in Princeton, KY, stem borer infestations rates varied between 36 and 83% of stems infested. Research studies in 2005-06, in Fayette Co. (Lexington) produced only a single infested stem (2006) in the two-hundred fifty stems examined in each of the two production seasons.



In west Tennessee this pest was first seen in the late 70's as a sporadic problem (Patrick 1973), and has been increasing over the last several years. (Patrick et al. no date). In Kansas, Dectes problems first discovered in 1987, have increased in significance considerably over the last five years (Sloderbeck et. al. 2003)

Why this pest appears to be on the increase is unknown. It may be associated with wide spread use of no-till which leaves the plant crowns undisturbed. Another idea proposes that the recent “warmer than normal” winters have allowed the pest to survive in “greater than usual” numbers. It may simply be that people are now actively looking for the pest.

Chemical Control

This pest is difficult to control because the insect spends most of its life inside plant stems, protected from standard chemical controls. Planting time insecticides have been ineffective because of the length of time between planting and emergence of beetles. Lay-by soil insecticides, while reducing larval infestations, generally have not been economical. The only exposed stage of this pest is the adult. Adults are active for several weeks in the summer, making insecticide timing difficult. While field trials in Kansas have shown that insecticides applied when adults are present will temporarily reduce beetle numbers, control has not significantly reduced stem borer damage (Sloderbek et al. 2004). Trials of both foliar applications of non-systemic insecticides and systemic insecticides applied “at plant” and as foliar applications have not show any consistent ability to protect against yield loss. In one trial during 2004, a single systemic insecticide applied as a foliar application did provide significant yield protection as compared to the check. That insecticide is not labeled for use on soybean (Bushman et al. 2005). More effective insecticides strategies may be developed when more is known about the adult beetles' egg-laying period and better scouting procedures have been devised.

Host Plant Resistance

Host plant resistance is a common way to reduce the economic impact of many crop pests. In recent studies, numerous varieties in the Kansas soybean performance trials were sampled for resistance to soybean stem borer infestation, or lodging. Differences among varieties were generally not significant. Where differences were detected among the varieties, the relationships among the varieties varied greatly depending on location. Varieties that had low levels of soybean stem borer larval infestation or lodging at one location often had moderate to high infestation or damage levels at another. This lack of consistency among locations suggests that differences might be due to factors other than host plant resistance. No trends were observed in the relationship between soybean maturity and percentage of plants lodging. Thus, no evidence of true resistance to soybean stem borer was detected among the varieties sampled.

Cultural Control

Since resistant varieties and chemical controls for this insect are not available, cultural controls are the only means of reducing losses from the soybean stem borer. Crop rotation and timely harvesting have been suggested as beneficial management strategies. These beetles are not strong flyers, and when soybean production in an area is limited, crop rotation can limit the potential for damage. Unfortunately, in areas where soybeans are commonly grown and beetle populations are high, the value of crop rotation is limited. Fields should be sampled before maturity for the presence of stem borer tunneling and live larvae by carefully splitting stems at several locations throughout the field. Fields with high percentages of infested stems should be harvested as soon as possible to avoid girdling and lodging.

Fall tillage also has been shown to reduce winter survival. Research in North Carolina has shown that burying stubble 2 to 3 inches deep in the fall by discing or bedding can reduce winter survival by as much as 60 to 70 percent. The increase in reduced tillage that has taken place in the last few years may be one reason the incidence of the soybean stem borer has been increasing. Conversely, even in a no-till situation, a light discing to “tear” the plant crowns from the soil may be of benefit. Solid contact with soil provides moderation of winter temperatures and thus better overwintering survival. Removal of the crown from this moderating environment may increase larval death. In addition, researchers found that soil moisture and type can be a factor in reducing soybean stem borer infestations. Wet soils seemed to harbor fewer larvae than well-drained soils. Clay soils are suspected to limit infestations because hard-packed or crusty soils inhibited adult emergence. Stubble in low, wet areas led to 50 to 70 percent larvae mortality, while well-drained areas experienced only 11 to 38 percent mortality. Weed control may be another way to reduce stem borer problems. Stem borers are known to use wild sunflower, ragweed and cocklebur as alternate hosts.

Good weed management in fallow fields and fencerows may help reduce soybean stem borer losses. Some consultants advise avoiding early planted, short-season soybean varieties to reduce losses from this pest. These varieties often mature rapidly and appear to have more lodging before harvest than longer season varieties. This is because later-maturing varieties mature during cooler weather, allowing a more timely harvest before plants are susceptible to lodging.

Best Management Practices

Until other control options are developed, fields should be sampled before maturity for tunneling and live larvae. Fields with high percentages of infested stems

should be harvested as soon as possible to avoid girdling and lodging.

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