

Title: Evaluate Soybean Varieties for Management of Dectes Stem Borer in Soybeans

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Objectives:

Evaluate Soybean Varieties for Resistance to Lodging from the Dectes Stem Borer

Background and Review of Activities:

Despite efforts to find an effective control measure to control the Dectes stem borer and to reduce the lodging losses from this insect pest, there has been little success in reducing yield losses. Results of the University of Delaware's 2009 Soybean Variety Trials indicate that there were several varieties that had significantly less lodging compared to other varieties. With the introduction of new varieties and recent promising research at Kansas State University, the usefulness of host plant resistance as a viable method for Dectes stem borer management needs to be re-evaluated. In 2010, replicated research plots were established at the University of Delaware's Demonstration Farm near Middletown, DE and at the Carvel Research and Education Center located near Georgetown, DE. Results from this study indicated that there were significant differences in the percentage of infested stems and lodging losses between varieties in the Georgetown location. However, there were no significant differences in yield. At the Middletown location, there were no significant differences in percent infested stems, lodging losses, or yield.

The 2010 study included a limited number of varieties. Therefore in 2011, a demonstration plot of fifty-one soybean varieties (non-replicated) was established on June 9 at the University of Delaware's Demonstration Farm near Middletown, DE. in an effort to identify varieties for future evaluations. Data collected included Dectes stem borer adult sweep counts and larval stem infestation rates, lodging losses, and yield. Each plot was 6.25 ft wide (5 rows planted on

15 inch centers) by 18 ft long. Dectes adult beetle populations were monitored on a weekly basis from late June through to mid August by taking 5 sweep net samples per plot. Before physiological maturity, 10 stems were collected from each plot to determine the percentage of infested stems with Dectes larvae. At physiological maturity, the soybeans were harvested on November 3 and the plots were surveyed for lodging losses. None of the plots exhibited any lodging losses due to the timeliness of harvest.

Discussion: Unfortunately, none of the varieties in the demonstration had significantly lower levels of Dectes stem borer stem infestations. In addition, no lodging losses occurred due to timely harvest. Although adult population levels were low throughout the season (0-2 per 100 sweeps) over the 2 month sampling period, larval infestation levels in all plots were above 15% infested stems. One variety had 20% infested stems and two varieties had 30% infested stems. Larval infestations in the majority of the plots ranged from 40% to 90 % infested stems. It appears that the only true way to manage Dectes will be through host plant resistance. Although one variety has been identified in the national seed bank that exhibits true resistance to the Dectes stem borer, soybean breeders will need to incorporate this trait into commercially acceptable varieties.

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