

**Kansas Soybean Commission Annual Report of Progress
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Principal Investigators and Units: L.L. Buschman, Dept. of Entomology, SW Res./Extn. Center, (620) 276-8286, C. Michael Smith, Dept. of Entomology, (785)-532-4751, P.E. Sloderbeck, Southwest Area Ext. Office and Dept. of Entom, (620) 275-9164, W. Schapaugh, Dept of Agronomy, (785) 532-7242, H. Trick, Dept. of Plant Pathology, (785) 532-1426

Project Title: “Development of Soybean Host Plant Resistance and Other Management Options for the Soybean Stem Borer”

Amount of Funding: \$ 30,000

Final Progress Report: March 1, 2007 – February 29, 2008

Projected Completion Date: Feb. 29, 2008

Accomplishments since last report:

Objective 1: Continue screening soybean germplasm accessions for resistance to soybean stem borer. We planted 3 Plant Introduction lines together with a standard commercial variety that was treated or untreated with fipronil seed treatment. The Fipronil was used as a positive control to show good antibiosis. Two of the PI lines had significant antixenosis—reduced oviposition. All three PI lines had significant antibiosis—reduced numbers of larvae. In one of the PI lines the ratio of oviposition punctures to live larvae which we are using as an index of resistance, was equivalent to that of the fipronil seed treatment. This means we have seen resistance in the same PI lines for 3 seasons—it seems to be repeatable. Now we plan to evaluate the leaf morphology to see if that might be responsible for interfering with *Dectes* oviposition leading to the reduced number of larvae in the PI lines.

Objective 2: Evaluate the yield response of different soybean varieties to soybean stem borer feeding using systemic insecticides. At three sites in Kansas we installed a foliar treatment test and a seed treatment test. We planted the 4 commercial varieties with that were untreated or treated with foliar fipronil treatment. The insect control for foliar treatments was 65 to 95% at the three locations. We also planted a commercial variety with 4 rates of fipronil seed treatment including an untreated control. The insect control was 45 to 100%. Lower treatment rates did not give complete control at higher levels of infestation. The yield increase of 10% to *Dectes* control was significant for the foliar treatment at one location. BASF is now looking to develop data to support an application for a Section 18.

Objective 3: Conduct a survey of the occurrence of soybean stem borer across the High Plains and Midwest to determine if the problem is widespread enough to encourage registration of insecticides against this pest. In an email survey we found that the soybean stem borer occasionally reached pest status in three major areas: a band from Eastern NE through KS into TX, a band along the Mississippi and Ohio rivers and along the Atlantic coast (MD & DE). We have received reports of serious soybean stem borer infestations in Missouri, Kentucky and Tennessee during 2007.

Objective 4: Expand web pages and other educational materials associated with soybean insect pests. The Soybean Insect Management Guides have been revised so that treatment options and insecticide usage information are listed in tables so we can reduce the size of the printed document. On the other side, the KSU website has been revised to include separate web pages for each of the common soybean pests in Kansas. For each pest there is information on identification, biology, management and a list of insecticide treatment options if applicable. We are currently working to add more pictures of the pests to the web site and have links to a soybean insect photo gallery.