

## CONTROLLING CORN ROOTWORMS: OLD TECHNOLOGY VERSUS NEW

Jon J. Tollefson  
Professor of Entomology  
Iowa State University

As is typical with corn rootworms, densities during 1997 varied dramatically throughout the Corn Belt and even within states. Iowa and some of the states east were abundantly blessed with corn rootworms. To the north and west of Iowa, the insect was less abundant, even hard to find at times. Within states where numbers were generally high, there were pockets of very high numbers spread among more typical densities. The result was that there were numerous reports of poor soil insecticide performance, usually clumped within areas. In Iowa I was in a "hot spot" east of Maquoketa where a number of the registered products did not provide adequate root protection. Illinois reported that, at two of their research sites, none of the registered chemicals satisfactorily protected roots from larval feeding. A summary of the Iowa State University soil insecticide data, updated to include the 1997 results, will be distributed at the breakout session.

### Area-Wide Management of Corn Rootworms

A project began during 1997 to determine if rootworms could be managed more efficiently by reducing adult numbers with an insecticide applied broadcast before they laid their eggs. It is believed that this tactic would be most effective if all the growers throughout a large area coordinated the management practice. A 16 square mile area (4 by 4 miles) in eastern Iowa was selected to test the premise. These 16 sections are on the northern Clinton county border. The northern edge of the project area is one mile south of the town of Miles.

The topography of the study area is rolling and much of the land is listed as "highly erodible." Because the land is hilly, the two crops that predominate are hay and corn planted after corn, 90% of the corn planted is planted where corn was grown the previous year (continuous corn). The practice of planting continuous corn has produced abundant corn rootworm populations. The 10,240 acres in the study site are managed by 40 farmers who planted 118 fields to continuous corn, totaling slightly more than 6,000 acres.

Adult corn rootworm emergence began in the area on July 12, about 10 days later than normal. Pherocon AM sticky traps were placed in cornfields during July 21 through 25. A treatment threshold of 6 beetles/trap/day was reached in about 30% of the fields by July 28-29. Females were found to contain eggs on August 5 and broadcast applications of the semiochemical bait, SLAM, began that week. When emergence ended on August 19, it was determined that the initiation of spraying coincided with peak emergence, August 5-6. 5,607 acres (93%) of the corn were sprayed once. The SLAM provided about 14 days of residual activity. When beetle numbers began to rebound, a second treatment was applied if the numbers exceeded 4 beetles/trap/day. Re-sprays began on August 22 and 3,020 (54%) acres received a second treatment. Treatments were discontinued on September 12 as the corn matured and beetle numbers declined. The applications of SLAM maintained adult corn rootworm densities below the economic threshold throughout the egg-laying period. It is expected that the growers will not have to apply an insecticide to the soil next spring and rootworm abundance should be sufficiently reduced so that beetles will have to be controlled in fewer fields next year.

Dr. Billy Fuller, Entomologist, South Dakota State University, used pitfall traps to determine differences in beneficial populations between SLAM-treated and untreated fields. He also examined and counted beneficial insects on plants to determine differences between treated and untreated fields.

All cornfields in the four core sections were monitored for black cutworms. Little or no cutworm activity was found. First generation European corn borers were scouted in the core fields and treatment thresholds were not reached. Corn stalks were split to determine the total amount of European corn borer tunneling in the four core sections and in seven Companion-area fields outside the area-wide study. In the core area, 75% of the plants were infested with 1.1 bores/plant. Companion fields averaged 77% infested with 1.4 bores/plant. This indicates that SLAM applications, as expected, did not have any effect on second-generation corn borer populations.