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## REFINEMENT OF ROOTWORM THRESHOLDS FOR NEW, COMMERCIALY-AVAILABLE STICKY TRAPS

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Sampling adult corn rootworms is a proven method of gathering information about the insect population to assist corn growers in managing this pest. Specifically, if the adult population reaches a prescribed density, a corn grower should consider rotating to a crop other than corn or apply a rootworm insecticide if planting corn the following spring. Conversely, if the adult population fails to reach this density, a corn grower can forego a control option without expecting to suffer economic yield losses.

Sticky traps are a relative sampling method that can reliably be used to compare populations from location to location, or from time to time. Relative sampling methods cannot be used to determine population densities unless they are "calibrated" by comparison with absolute estimates, or by experimentally relating trap data to the event to be predicted. This was done in 1985 with the Trece™ Inc. Pherocon® AM trap. The investigators established a threshold of six corn rootworm beetles per trap per day. Beetle catches at or above this level were considered high enough to warrant crop rotation or a planting-time rootworm insecticide if corn was planted the following year. Since then, a new brand of trap is being marketed: the Scentry™ Multigard®.

During 1991, Iowa State University Extension personnel observed the Pherocon traps were not catching as many rootworm adults as the Multigard traps. An experiment was created in early September to compare three different sticky traps: the Pherocon trap, the Pherocon trap with additional adhesive (manually applied), and the Scentry trap. These traps were used in a side-by-side comparison with twelve repetitions. The catches for the three traps were 2.7, 6.6, and 14.0 beetles/trap/day, respectively.

Problems in pest management decision-making occur when beetle numbers caught by different brands of sticky traps have not been related to resulting larval populations. While the source of the numerical discrepancy (trap color, adhesive, size, orientation, etc.) may be a desirable research goal for trap manufacturers, it seems more appropriate for university researchers to develop an adjusted economic threshold that may be incorporated into a grower's pest management program.

During 1992, the two traps were again used in a side-by-side comparison with twelve repetitions. Near the end of July, the traps were placed in ten fields which provided a range of beetle densities. Traps were replaced, and whole-plant beetle counts were taken weekly until the

first week of September. The beetle counts are the absolute population estimates that will be used to calibrate the sticky trap data.

This research project will be continued in 1993 by establishing insecticide treated and untreated strips within the study fields. Root damage ratings (ISU 1-6 scale) and corn yields will be determined to quantify the economic impact of larval rootworm damage. Trap thresholds will be calculated by regressing root damage ratings and yields, as well as the beetle counts, on the trap catches by week and trap type.

The proposed research will accomplish the goal of allowing the newer sticky traps to be properly utilized by commercial corn growers. The net effect of this research will be to use an effective scouting tool to help reduce the amount of corn rootworm soil insecticides applied to the environment.