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Sampling for Corn Flea Beetles Using Yellow Sticky Cards Placed at Different Heights and Orientations

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Abstract
When developing reliable disease management programs, it is important to ascertain the most reliable method to quantify the potential sources of inoculum for an epidemic. In the Stewart's disease of corn pathosystem, the primary source of inoculum is the corn flea beetle (*Chaetocnema pulicaria*). This is because the transmission and survival of *Pantoea stewartii*, the causative organism, occurs by this vector. Management for Stewart's disease focuses on reducing feeding by the corn flea beetle, thereby reducing transmission of the bacterium. Although there are management protocols currently in place that use visual counts for corn flea beetles to help make management decisions (i.e., insecticide spraying), it may be more practical to assess the number of corn flea beetles using yellow sticky cards. The objective of this study was to determine the optimum height and orientation for placing yellow sticky cards to sample for corn flea beetles.

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Introduction

When developing reliable disease management programs, it is important to ascertain the most reliable method to quantify the potential sources of inoculum for an epidemic. In the Stewart's disease of corn pathosystem, the primary source of inoculum is the corn flea beetle (*Chaetocnema pulicaria*). This is because the transmission and survival of *Pantoea stewartii*, the causative organism, occurs by this vector. Management for Stewart's disease focuses on reducing feeding by the corn flea beetle, thereby reducing transmission of the bacterium. Although there are management protocols currently in place that use visual counts for corn flea beetles to help make management decisions (i.e., insecticide spraying), it may be more practical to assess the number of corn flea beetles using yellow sticky cards. The objective of this study was to determine the optimum height and orientation for placing yellow sticky cards to sample for corn flea beetles.

Materials and Methods

To monitor the number of corn flea beetles captured per day on yellow sticky cards, traps were placed at five different heights (0.15, 0.30, 0.45, 0.60, and 0.90 m) in the field. Each trap height then had yellow sticky cards placed on them at one of three orientations: at a 30° angle relative to the ground, side-facing (90° to the ground), and top-facing (perpendicular to the ground). Each trap and card was replicated five times using a multifactorial randomized complete block design. Corn flea beetle populations were monitored at various times throughout the season by counting the number of corn flea beetles captured per day on each of the traps. Treatment means were analyzed using LSMEANS with a Tukey's adjustment for multiple comparisons of the means ($P \leq 0.05$).

Results and Discussion

During the period from the end of July through early September, significant differences were observed among the means for the different treatment combinations of yellow sticky cards (Table 1). Yellow sticky cards placed at 0.30 m trapped significantly more corn flea beetles compared with other heights, whereas side-facing traps consistently captured more corn flea beetles per day. Within a given sampling period, the number of corn flea beetles captured per day for the 0.30 m and side-facing cards ranged from approximately 1.1 to 35 times more than any other treatment combination of yellow sticky cards. The results of this study suggest that placing yellow sticky cards 0.30 m high with a side-facing orientation along a field edge will best monitor corn flea beetle populations.

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