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# Phenology of Striped Cucumber Beetle, Squash Bug, and Squash Vine Borer on Muskmelon and Butternut Squash

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## **Abstract**

Striped cucumber beetle (*Acalymma vittatum*), squash bug (*Anasa tristis*), and squash vine borer (*Melittia cucurbitae*) cause substantial economic losses on several cucurbit crops.

## **Keywords**

RFR A1026, Plant Pathology and Microbiology

## **Disciplines**

Agricultural Science | Agriculture | Horticulture

# Phenology of Striped Cucumber Beetle, Squash Bug, and Squash Vine Borer on Muskmelon and Butternut Squash

## RFR-A1026

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### Introduction

Striped cucumber beetle (*Acalymma vittatum*), squash bug (*Anasa tristis*), and squash vine borer (*Melittia cucurbitae*) cause substantial economic losses on several cucurbit crops.

Timing of insecticide sprays, deployment of row covers, and other management practices are likely to be more effective if they correspond to the timing of arrival of these pests. Thus, to aid in the development of degree-day models for cucumber beetles, squash bugs, and squash vine borers, a preliminary observational study was held in Iowa the summer of 2010. This project is part of a collaboration with Pennsylvania State University and University of Kentucky, funded by the USDA Organic Research and Extension Initiative (OREI) program.

### Materials and Methods

On May 3, one flat of 2-week-old squash seedlings (cv. Blue Hubbard) was placed in each of 10 arbitrarily selected locations at the ISU Horticulture Farm to monitor for squash bug and striped cucumber beetle activity. These flats were passively sampled by adjacent yellow sticky traps (Gemplers RSTRIP), and actively sampled by visual inspection three times per week.

On June 11, these flats were replaced by two field plots (phenology plots) that enabled insect observations. Phenology plots consisted of two adjacent 50-ft-long rows of butternut squash (cv. Betternut) and muskmelon (cv.

Strike). Ten arbitrarily selected plants of each cultivar were inspected bi-weekly for the presence of striped cucumber beetle adults and squash bug eggs, nymphs, and larvae.

Beginning on June 14, squash vine borer was monitored weekly in one of the plots using two Hart stack traps containing pheromone lures.

### Results and Discussion

The early-season flats provided little data about when the insects (squash bug and striped cucumber beetle) emerged from their overwintering sites, since a total of only eight beetles were observed during the 6-week period.

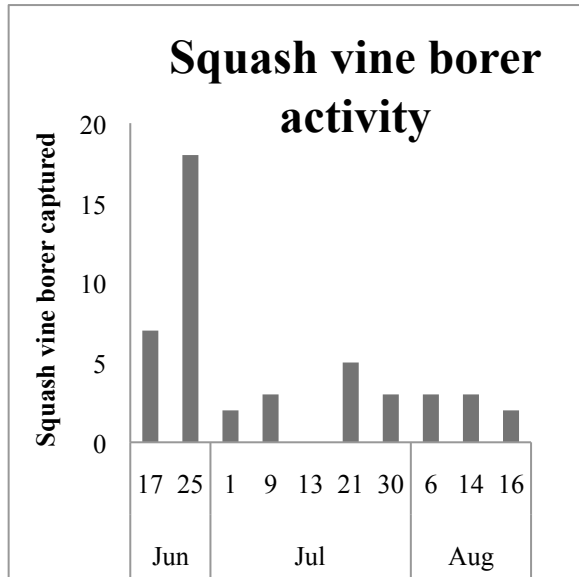
In the phenology plots, squash vine borer activity displayed an early-season peak in week 2 (Figure 1). Following the peak, capture was fairly consistent throughout the season. Captures were recorded beginning the first week of trap placement. Next season, we plan to set up traps earlier in the season to catch the first-arriving borers.

The squash bug activity curve displayed an exponential increase (Figure 2). Egg-laying adults were first observed, followed by nymphs, and finally adults. By the end of the season, squash bugs in all different life stages were observed. Squash bugs were never observed in muskmelon rows; therefore, all observations were recorded in squash plants.

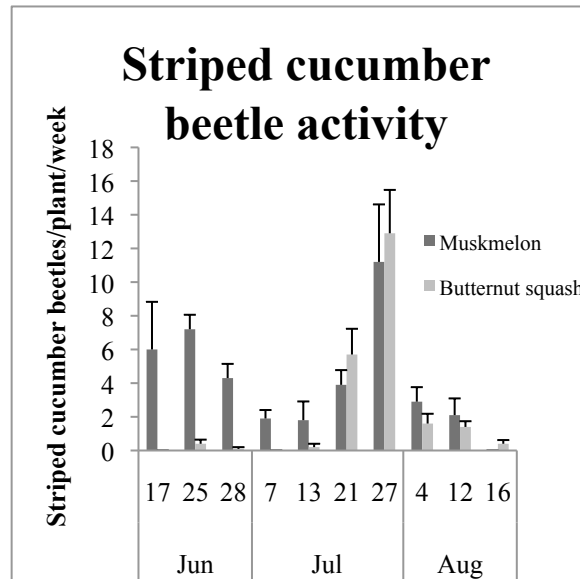
Striped cucumber beetle activity displayed two distinct generational peaks in muskmelon and only one late-season peak in squash plants (Figure 3).

**Acknowledgements**

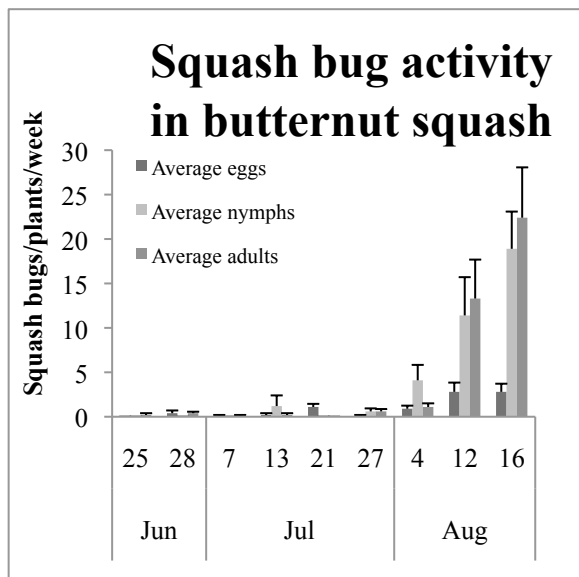
Thanks to Nick Howell, the ISU Horticulture Farm crew, and the 312 Bessey field crew for crop planting and maintenance. Special thanks to our collaborators at Pennsylvania State University and University of Kentucky.



**Figure 1. Squash vine borer activity. Adults trapped in pheromone traps during the season.**



**Figure 3. Adult striped cucumber beetle activity in butternut squash (cv. Betternut) and muskmelon (cv. Strike) plants in phenology plots.**



**Figure 2. Egg, nymphs and adult squash bugs observed on butternut squash plants (cv. Betternut) in phenology plots.**