

PERIMETER TRAP CROP EVALUATION WITH BLUE HUBBARD FOR CUCUMBER BEETLE AND SQUASH BUG CONTROL IN PUMPKIN

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Introduction

Field research was conducted to determine if 'New England Blue Hubbard' (*Cucurbita maxima*) would attract both striped cucumber beetles (*Acalymma vittatum* (Fabricius)) and spotted cucumber beetles (*Diabrotica undecimpunctata howardi* Barber) away from a main crop of pumpkin when planted as a perimeter trap crop (PTC). Cucumber beetle is the main insect pest of cucurbit crops in New Jersey and can greatly reduce plant survival due to the transmission of the bacteria *Erwinia tracheiphila* that causes the disease bacterial wilt of cucurbits.

Materials and Methods

A demonstration was conducted at the Rutgers Agricultural Research and Extension Center in Bridgeton, New Jersey in spring of 2007. The pumpkin variety 'New England Pie' was seeded on Jun 5 at a spacing of 3 ft between plants in a row and 6' between rows with 16 rows 120 ft. in length. On the same date, two rows of hubbard were seeded at the same in row and row spacing around the field of pumpkin. In an adjacent field separated from the PTC field by a 60 ft buffer 18 rows of pumpkin, 120 ft long at the same spacing, were seeded also on Jun 5. Field scouting of pumpkin seedlings began twice weekly on Jul 5 and ended on Jul 16.

Results and Discussion

The first scouting event showed no cucumber beetle in the pumpkin crop within the PTC. Cucumber beetles were found in the hubbard perimeter trap crop and in the pumpkin field without a PTC. During later scouting events there were significantly higher levels of live cucumber beetles, adult squash bugs, and squash bug egg masses in the hubbard PTC. As a PTC for pumpkins, 'New England Blue Hubbard' is highly attractive to squash bugs and cucumber beetles. Hubbard has a low susceptibility to wilt, the seed is relatively inexpensive, seeds germinate quickly, seedlings grow rapidly, and growers may be able to market the hubbard squash. Future studies using a neonicotinoid insecticide at planting or monitoring the hubbard and spraying carbaryl insecticide at first indication of cucumber beetle may make prove to this system a viable option for pumpkin growers.

Table 1. Number of live cucumber beetles per ten plants during scouting events.

No. cucumber beetle per 10 plants				
Treatment	5 Jul	7Jul	13Jul	16 Jul
Hubbard PTC	0.6 ns	1.2 ns	5.6 b	24.4 b
Pumpkins within PTC	0.0	0.5	1.4 a	10.0 a
Pumpkins without PTC	0.2	1.2	1.6 a	11.8 a

Table 2. Number of live squash bug adults per ten plants during scouting events

No. live adult squash bugs per 10 plants			
Treatment	7 Jul	13Jul	16 Jul
Hubbard PTC	0.6 ns	0.2 ns	3.0 b
Pumpkins within PTC	0.2	0.2	0.6 a
Pumpkins without PTC	0.4	0.0	0.4 a

Table 3. Number of squash bug egg masses per ten plants during scouting events

No. squash bug egg masses per 10 plants			
Treatment	7Jul	13Jul	16 Jul
Hubbard PTC	0.4 ns	1.8 ns	3.0 b
Pumpkins within PTC	0.0	0.4	0.5 a
Pumpkins without PTC	0.2	0.6	0.5 a