

# **Assessing four winter squash cultivars as trap crops to improve cucumber beetle management in organic cucumber production**

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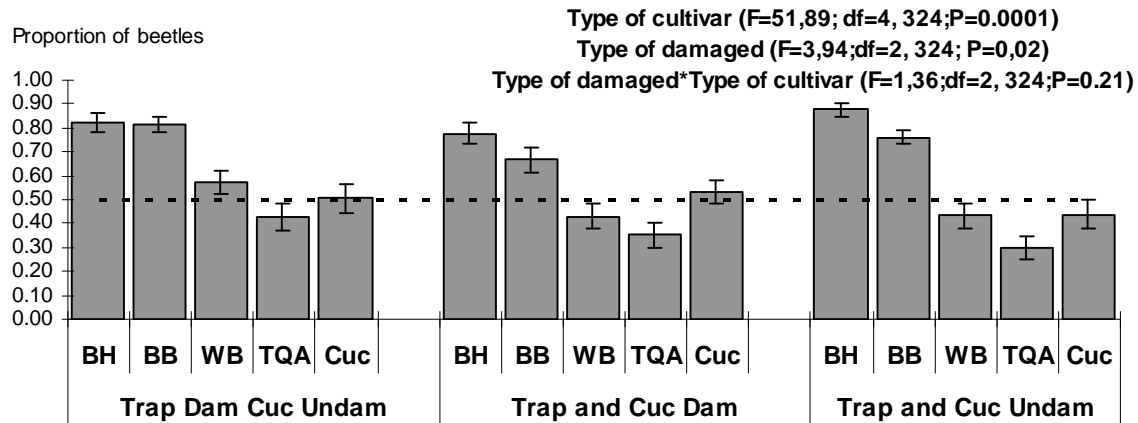
## **Abstract:**

The purpose of this trial was to compare the attractiveness of four winter squash cultivars that are available as organic seed or untreated seed to striped cucumber beetles in order to assess their potential as a trap crop. The four cultivars used were Blue Hubbard, Burgess Buttercup, Waltham butternut and Table Queen Acorn. We compared attractiveness each of these four cultivars with one cultivar of cucumber ‘Cobra’, a widely grown slicing cucumber. We also studied the change in attractiveness of these pair of cultivars when subjected to artificial damage, simulating cucumber beetle feeding that would occur in the field. Here we report results from a greenhouse test in 2007, and work from a companion field test in 2008.

In a greenhouse, beetles were released on the paired plants (one squash cultivar each paired with cucumber) in cylindrical cages. The beetles were released in the cages 12 days post plant emergence when the plants had one true leaf fully expanded in order to simulate arrival of adult beetles when seedling as emerging in the field.

The cultivars Blue Hubbard and Burgess Buttercup are most attractive to cucumber beetles with around 80% of beetles found on them (Figure 1). The cultivar Waltham Butternut has the same attractiveness as cucumber with around 50% of the beetles found it. The cultivar Table Queen Acorn was less attractive to beetles than

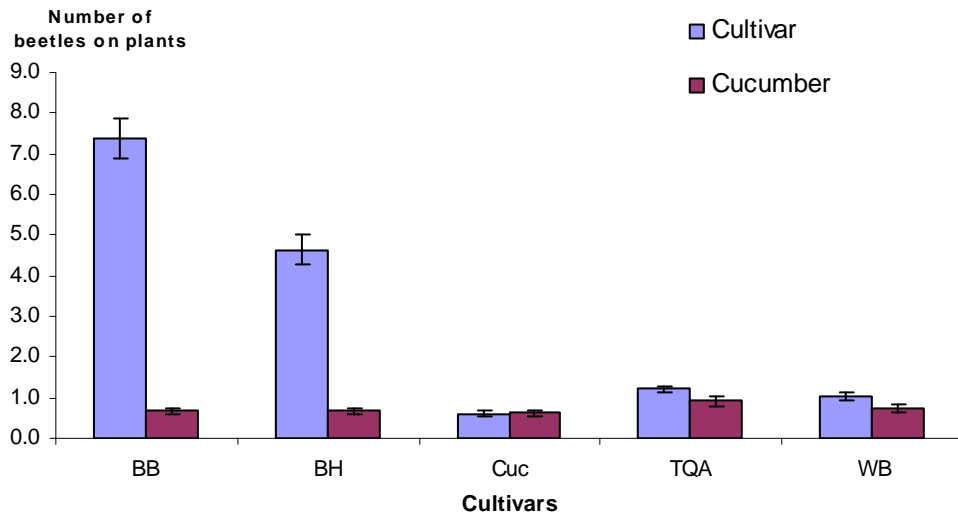
cucumber. We also observed a difference between different simulating feeding treatments. The proportion of beetles found on squash was higher when only the squash has simulated damaged. On average across all the cultivars, simulated feeding damage on squash made the squash more attractive to beetles compared with a cucumber which received no simulated feeding damage. The cultivars Burgess Buttercup and Blue Hubbard were always highly attractive compared with cucumber, with or without damage to the plants.



**Figure 1: The proportion of beetles on squash (number of beetles on trap crop divided by number of beetles on trap crop + cucumber), by type of damage, and cultivars. “Trap Dam Cuc Undam” = Leaves of trap crop damaged and leaves of cucumber undamaged; “Trap and Cuc Dam” = Leaves of trap crop and cucumber damaged; “Trap and Cuc Undam” = Leaves of trap crop and cucumber undamaged and BH = Blue Hubbard; BB= Burgess Buttercup; WB = Waltham Butternut; TQA = Table Queen Acorn; Cuc = Cucumber.**

Companion work was conducted in a field setting in 2008 at Michigan State University. Similar results were seen (analysis is process, Fig 2 shows averages of full season means). The cultivars Burgess Buttercup and Blue Hubbard were always highly

attractive compared with cucumber. These cultivars are available as organic seed, and should be considered for those considering use of a squash trap crop to improve cucumber beetle management in organic cucumber production.



**Figure 2: Number of beetles found on squash and paired cucumber. BH = Blue Hubbard; BB= Burgess Buttercup; WB = Waltham Butternut; TQA = Table Queen Acorn; Cuc = Cucumber.**