Pheromone Aided Trap Cropping of the Harlequin Bug

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The harlequin bug, Murgantia histrionic Hahn. (Hemiptera:Pentaomidae), is the most significant pest of cole crops such as broccoli, cabbage, collards, kohlrabi, kale, mustard and radish in the southern United States. In this experiment, the harlequin bug's aggregation pheromone was added to different combinations of both cole crop host plants and non-host plants such as the soybean. The goal of this experiment was to determine the most effective combination of plant and pheromone to use as a trap crop depending on which cash crop will be planted. We tested combinations of two crops with and without pheromones using two-way field choice tests with a factorial design. Each plant was tested against collard, and each plant/pheromone combination covered four field blocks. The number of harlequin bugs found at the site of the plant and pheromone combination were collected and sexed. It was found that the addition of pheromone to mustard, collard, rabe and kale increased their attractiveness significantly when compared to the other host crops without pheromone. When placed on the non-host soybean, the plant proved to be significantly attractive over the host plant, collard. This indicates that the attractive quality of the pheromone may trump the attractiveness of the host plant volatiles, and increase the attractiveness of a trap crop when a host plant is used. This research suggests the future possibility of using a purely pheromone and volatile based trap eliminating the cost and upkeep needed for an actual plant, and also leads to the possibility of a wider plant range for trap cropping.

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