

ABSTRACT

Plants do not passively undergo damage by herbivorous insects. They naturally possess highly efficient, chemical/morphological defense mechanisms which are induced when herbivores are detected. This defense strategy primarily involves the activation of specific genes, which effectiveness depends on how early herbivores are detected. Here we propose that generalist predators may work as the earliest, environmental clue of the proximity of herbivores. Our preliminary experiments on the cosmopolitan, generalist predator *Orius insidiosus* provides evidence that 1) The presence of a predator on tomato leaves may indeed activate plant defense pathways; 2) The level of defense induction depends on the predator's life stage, gender and reproductive status. The insect characters detected by tomato as clues of the closeness of herbivores are currently unknown. However, we hypothesize that *Orius* nymphs, males, virgin and mated females may have distinctive behaviors associated to their different foraging strategies. We are planning to test a possible correlation between the different components of the behavior of 2 *Orius* species and defense induction in tomato. Such knowledge is critical for the development of enhanced IPM models, based on crop breeding programs integrating crop inducible resistance and the optimized use of *Orius* species in conservation and augmentation biocontrol strategies.