ABSTRACT

Insect-vectored plant viruses are a major problem in agricultural systems, and traditional control strategies focusing on chemical suppression of vector populations can be ineffective because many viruses spread quickly even when vector numbers are low. Improved understanding of the interactions among plants, pathogens, and insect vectors may aid in the development of new, ecologically-sustainable management strategies. To this end, the proposed project explores interactions among an economically important virus (*Cucumber mosaic virus*), two aphid vectors, and a cucurbit host. My initial work has demonstrated that virus-infected plants are poor hosts for aphids, but that aphids are nevertheless attracted to infected plants because they emit elevated levels of odor cues that aphids use for host location. This pattern appears to favor virus transmission as aphids are attracted to infected plants on which they probe (acquire virions) but then rapidly disperse. My findings contrast with those reported for plant viruses exhibiting a different transmission mechanism, and suggest that the mode of transmission influences pathogen effects on plant chemistry. To build on this work, I propose to examine the mechanisms by which *Cucumber mosaic virus* influences plant quality for aphids by documenting virus-induced changes in plant defenses and the nutritional quality of phloem.