Contribution to the field statement

Frontiers in Ecology & Evolution

Manuscript:

Experimental evidence reveals that vector host preference and performance across hostplants is not altered by vector-borne plant viruses

Authors:

Robert E. Clark

Diego F. Rincon

Ying Wu

David W. Crowder

Sanford D. Eigenbrode

Statement (200 word limit):

Insect herbivores grow faster or slower depending on the species of plant they are feeding on. How many insects that are found on plants are influenced by their reproduction and also their behavior. Many ecological changes can influence reproduction (performance) and feeding behavior (preference). Sometimes insect herbivores like aphids can show signs of local adaptation to a single plant species, and they will begin to prefer that plant over others and grow faster as well. Similarly, sometimes plants infected with pathogens are actually easier for aphids to feed on and aphids will prefer them as well. To our knowledge, no one has looked at these two hidden ecological factors together. We therefore completed greenhouse experiments to see how different “host races” of aphids performed on five host plant species (alfalfa, fava, lentil, pea, and vetch) with subsets infected with two different plant viruses. We collected data on differences in preference and performance and found large differences in the performance of the two host races, and small but significant differences depending on whether a plant was infected. To our surprise, both could operate at the same time and dramatically increase the abundance of aphids in the environment.