An Improved Insecticidal Bait To Control Invasive Technomyrmex vitiensis (Fijian White-Footed Ants)

Willis, Heleina (School: Fa'asao Marist High School)

The Fijian white-footed ant, Technomyrmex vitiensis or T. vitienis, native to Southeast Asia and some Pacific islands, has become a serious pest in American Samoa. It can reach high densities causing invasions of homes, gardens, and farms. These ants indirectly harm plants by defending certain sap-sucking pests, including scale insects, mealybugs, and aphids, from their natural predators in exchange for the sugary honeydew these insects produce. Methods that are used to control other ant species are less effective for T. vitiensis. One common method uses an insecticidal bait with sugary carbohydrates as the bait matrix. However, with carbohydrates in the form of honeydew from sap-sucking insects already abundant, T. vitiensis may be more attracted to baits made from other nutrients that are scarcer in the environment. To evaluate this alternative approach, it was hypothesized that the ants will consume more of a noncarbohydrate bait than a carbohydrate bait. 5 different baits were placed—fishmeal, grape jam, liver powder, peanut butter, and Spam—at each of 20 stations in an area where T. vitiensis were abundant. After an hour, each bait was collected and the ants were counted. Spam attracted the most ants. A protein and fat-containing food such as Spam, that is favored over a carbohydrate-based food, such as grape jam, could be the basis for a more efficient insecticidal bait. A bait that is more attractive to T. vitiensis would result in increased dose and longer duration of exposure of the ants to an insecticide mixed with the bait.