

Distribution and Patterns of Movement of the Weevil *Diaprepes abbreviatus* in Eucalyptus (*Corymbia torelliana*), a Fast-Growing Biofuel Crop

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Because a previously identified male pheromone failed to attract females in the wild, these experiments were designed to gain understanding of the distribution and movement patterns of the weevil *Diaprepes abbreviatus* in *Eucalyptus torelliana*, a fast-growing biofuel crop. *Diaprepes* are invasive pests of citrus, sugarcane, and other crops and have no cost-effective treatment. In test A, weevils were separated by sex in a grid to analyze weevil movement when separated from the opposite sex. Test B placed 40 weevils in a small area to see how weevils would disperse from a high population density environment. Weevils were collected from the field, marked, released, and recaptured. Recapture of marked weevils approached 50%. Displacement of males and females was similar at all times after release, and movement of aggregated weevils was equivalent to that of nonaggregated weevils. Contrary to the hypothesis, males moved to females more than females moved to males, suggesting the presence of a female-produced pheromone. The behavior observed in the field suggests that the chemical ecology of the weevil is more complex than can be explained by just the presence of a male pheromone. The direction of weevil movement was correlated with wind direction, but the magnitude of displacement was not correlated with wind speed. Finally, there was a positive correlation between tree height and number of weevils per tree. These experiments contribute to an understanding of the chemical ecology and ethology of *Diaprepes* and should contribute to the eventual discovery of a semiochemical-based control method.

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