THE INTERACTION BETWEEN *DIATRAEA SACCHARALIS* (LEPIDOPTERA, CRAMBIDAE) AND SUGARCANE: CHANGES IN PLANT'S PROTEOME

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The crescent global demand for renewable energy sources to replace fossil fuels has given a great interest to sugarcane (*Saccharum* sp.). Brazil is the main world producer, where sugarcane has been cultivated in 8.5 million hectares producing up to 600 million metric tons in 2012/2013. Biotic stress is responsible for significant sugarcane losses and it has been estimated that around 10% of this crop losses are caused by insect pests, from which the sugarcane stem borer (*Diatraea saccharalis*) is the most important. In order to reduce insect damage, plants have evolved complex and varied defense mechanisms, including, physical barriers, toxic and volatile metabolites, and defense proteins. Here, by using a two-dimensional electrophoresis (2-DE) and matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF/TOF), we identified the proteins in phenolic extracts of leaves that both were wounded and treated with oral secretion (OS) of *Diatraea saccharalis*. The phenolic extracts yielded approximately 650 protein spots, and 169 of them were altered by elicitation. In general, proteins that had an increased expression are involved in primary metabolism, defense, and transcriptional and translational regulation; while those that had a decreased expression are involved in photosynthesis. Systemic suppression of photosynthesis in herbivory by caterpillars has often been described for other plants. We concluded that the the response of the plant´s proteome to herbivory is complex, however the integration of proteomics and the chemical ecology may facilitate the understanding of this ubiquitous ecological interaction and so enable the pest management.

PRACTICAL APPLICATION OF A SEX PHEROMONE FOR MONITORING THE JAPANESE MEALYBUG, *PLANOCOCCUS KRAUNHIAE* (HOMOPTERA: PSEUDOCOCCIDAE)

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The Japanese mealybug, *Planococcus kraunhiae* is distributed in Japan (west from the Southern Kanto district), China, Eritrea, and North America. It is a serious pest of persimmons and grapes in Japan. Fruit damage by this species has increased gradually since the 1990s, so establishment of monitoring by attractant-baited traps has been desired. 2-isopropyliden-5-methyl-4-hexen-1-yl butyrate has been identified as a sex pheromone of the Japanese mealybug. The sex pheromone is emitted by females to attract males. Narai et al. gave a poster presentation on sex pheromone quantity per lure at APACE 2009 in Hawaii, so we studied a pheromone trap with the sex pheromone for monitoring. Experiments to clarify pheromone quantity per lure, active life, and shelf life were conducted in grape orchards and a persimmon orchard in Shimane prefecture (Western Japan). A red rubber septum (8 mm o. d., Sigma-Aldrich Co.) containing the sex pheromone was used as a lure. A triangular trap with the lure was hung from a branch of a tree at a height of 1.5 m. The interval between traps was about 10 m. A pheromone trap had a capturing efficacy of 90% four weeks after placement (80% eight weeks later) when a lure with 100 µg of the sex pheromone was used. Lures in an air-tight bag could be stored for one year after manufacture in a refrigerator. However, capturing efficacy decreased to 60%, when a lure was kept at 25 degrees Celsius in a dark place.
Sugie et al. 2008. *Appl. Entomol. Zool.* 43, 369-375.