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## Investigations on Pheromone Blend Variation among Geographically Different *Maruca vitrata* Populations

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### Abstract

The larvae of the legume pod borer, *Maruca vitrata* (Lepidoptera: Crambidae), cause severe damage on leguminous crops throughout the tropics. Pest control relies mainly on insecticides but results are not satisfactory because the larvae feed predominantly protected inside of plant organs. Pest monitoring by pheromone lures can help to perform more target-oriented control measures. Previously, (*E,E*)-10,12-hexadecadienal was identified as the major sex pheromone compound of *M. vitrata*, and (*E,E*)-10,12-hexadecadienol and (*E*)-10-hexadecenal were described as minor pheromone components. A blend of these components in a ratio of 100:5:5 attracted males in field trapping experiments in Benin, but not in Taiwan, Thailand, and Vietnam. These findings indicate geographic variation in the sexual communication among *M. vitrata* populations.

We investigated the pheromone composition of insect populations from Thailand, Taiwan, and Vietnam compared to a reference population from Benin. We developed a sensitive gas chromatography – mass spectrometry method using selected ion monitoring to analyse single pheromone gland extractions. In behavioural experiments, we compared responses of male moths from Taiwan and Benin to calling females and pheromone gland extracts of females from both origins.

We confirmed the presence of (*E,E*)-10,12-hexadecadienal and (*E,E*)-10,12-hexadecadienol in all target populations, but surprisingly (*E*)-10-hexadecenal could not be detected in any sample. However, the ratio of (*E,E*)-10,12-hexadecadienal and (*E,E*)-10,12-hexadecadienol did not vary significantly between the different *M. vitrata* populations. Males from Taiwan and Benin were similarly attracted to all pheromone sources.

So far, we did not identify differences in the sexual communication between Asian and African insect populations which explain the low success of synthetic pheromone lures

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