

Female sex pheromone of brinjal fruit and shoot borer, *Leucinodes orbonalis* (Lepidoptera: Pyralidae): trap optimization and application in IPM trials

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Abstract

Delta and wing traps baited with synthetic female sex pheromone of *Leucinodes orbonalis* Guenée were found to catch and retain ten times more moths than either Spodoptera or uni-trap designs. Locally-produced water and funnel traps were as effective as delta traps, although 'windows' cut in the side panels of delta traps significantly increased trap catch from 0.4 to 2.3 moths per trap per night. Trap catch was found to be proportional to the radius of sticky disc traps in the range 5–20 cm radius, discs with a 2.5 cm radius caught no moths. Wing traps placed at crop height caught significantly more moths than traps placed 0.5 m above or below the crop canopy. Replicated integrated pest management (IPM) trials (3 × 0.5 ha per treatment) were conducted in farmers fields with young and mature eggplant crops. Farmers applied insecticides at least three times a week in all check and IPM plots. In addition pheromone traps were placed out at a density of 100 per ha and infested shoots removed weekly in the 0.5 ha IPM plots. Pheromone trap catches were reduced significantly from 2.0 to 0.4 moths per trap per night respectively in check and IPM plots in a young crop and 1.1 to 0.3 moths per trap per night in check and IPM plots respectively in a mature crop. Fruit damage was significantly reduced from an average of 41.8% and 51.2% in check plots of young and mature crops respectively to 22% and 26.4 respectively in the associated IPM plots. Significant differences in pheromone trap catches and fruit damage were attained four and two weeks respectively after IPM treatments began in the mature crop whereas in the immature crop significant differences were not observed for the first eight to nine weeks respectively. The relative impact of removing infested shoots and mass trapping on *L. orbonalis* larval populations was not established in these trials but in both cases there was an estimated increase of approximately 50% in marketable fruit obtained by the combination of control techniques compared to insecticide treatment alone.

Introduction

Demand for year-round production of vegetables in many parts of south Asia has resulted in a serious escalation

in the prevalence of pests and diseases in many crops. Currently, smallholder vegetable farmers rely almost entirely on pesticides for control of serious pest and disease problems. Poor application methodology, under-dosing and use of inappropriate products have enabled target pests to become increasingly resistant to conventional insecticides in recent years (Kabir *et al.*, 1996). Problems associated with the

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