

Research Article

Development of mass trapping technique for control of brinjal shoot and fruit borer, *Leucinodes orbonalis* (Lepidoptera: Pyralidae)

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Abstract

Locally-produced clear plastic water traps (12 cm × 14 cm base and 21 cm height) were optimized for use in large-scale mass trapping trials for control of brinjal fruit and shoot borer, *Leucinodes orbonalis* Guenée. Changing the shape (square and triangular) and number (two and four) of entry holes in the water trap had no significant effect on trap catch. Significantly more male moths were caught in traps treated with water containing powdered detergent than liquid detergent, light gear oil or insecticide. All water traps tested caught significantly higher numbers of moths than sticky delta traps with open sides under farmers' field conditions. Trap catches per 100 m² were found to increase with increasing number of traps from 3 to 6 but the difference in catch between 4 and 6 traps per 100 m² was not significant. Two small-scale replicated integrated pest management (IPM) trials were conducted consisting of the optimized water trap placed out with 10 m spacing (4 per 100 m²) and infested shoots pruned and destroyed. The first season trial had two treatments, IPM and farmers' practice in which farmers applied insecticide every two days in the peak harvest period. Overall, the percentage of healthy fruit and yields in both treatments were comparable at 53.8 and 49.6% and 20 and 19.4 tonnes per ha in the IPM and farmers' practice plots respectively. However, the initial infestations in the IPM plots (68%) were significantly higher than in farmers' practice plots (16%) due to the proximity of the nurseries used for the IPM plots to stacks of brinjal crop residues from the previous season that acted as a source of infestation. The second season's trials contained a third treatment in which IPM and farmers' practice were combined. The percent total healthy fruits harvested were 46.1, 58.6 and 69.1% respectively for the farmers' practice, farmers' practice plus IPM and IPM alone. Averaged total fruit yields were approximately 12 tonnes per ha for the farmers' practice plots and 30 tonnes per ha for each of the IPM-treated plots. The IPM plot had significantly fewer infested fruit than the IPM plus farmers practice plots and this was attributed to the activity of the larval parasitoid *Trathala flavo-orbitalis* (Cameron) that was suppressed in trial plots treated with insecticides.

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