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Bioefficacy of Novaluron[®], a chitin synthesis inhibitor against the tropical warehouse moth, *Ephestia cautella*.

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ABSTRACT:

The tropical warehouse moth, *Ephestia cautella* (Lepidoptera: Pyralidae) is a major pest of stored maize in Ghana. It is controlled mainly by the use of synthetic insecticides which has become a major challenge in the stored product industry in Ghana. Both laboratory and field trials were conducted to evaluate the efficacy of novaluron, a chitin synthesis inhibitor against *E. cautella*. Five concentrations of Novaluron (0.1, 0.2, 0.3, 0.4 and 0.5 mL/L of water) were prepared and each concentration was topically applied on the notal regions of 10 fifth instar larvae of *E. cautella* per concentration. At 0.4 mL/L and 0.5 mL/L treatments, larval mortality ranged between 50-80% after 96 h of exposure. Also, Novaluron (0.5 mL/L) was used to treat four surfaces (concrete, wood, glass and plastic) usually encountered in structural insect pest management systems and the larvae exposed to these surfaces. Hocklicombi[®] (5 mL/L) served as positive control. Larval mortality (35.5-97.5%), pupation (0.0-35.0%) and adult emergence (0.0-20.0%) in surfaces treated with Hocklicombi[®] compared favourably with those treated with Novaluron (25.0-97.5%), (2.5-60%) and (0.0-42.5%), respectively. A simulated field experiment was conducted in which four batches of 5 kg of maize in miniature bags were pretreated with 0.4 mL/L Novaluron and 50 unsexed adults were introduced. This was left in a crib at the University of Ghana farm for 60 days. The field experiment showed that after 60 days of storage there was a lower weight loss in the Hocklicombi[®] (6.6%) and Novaluron (6.8%) treatments compared to the negative control (11.3%).

Keywords:

Novaluron, Hocklicombi[®], *Ephestia cautella*, warehouse moth, chitin, loss assessment.