Effectiveness of neem seed oil (Azadirachta indica A. Juss: Meliaceae) on Syllepte derogata Fabricius, Lepidoptera: Pyralidae

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ABSTRACT

Objective: Synthetic insecticides have long been used for cotton protection, resulting in pest resistance, toxicity and environmental pollution. Biopesticides have been suggested as alternatives to synthetic pesticides. Both field and laboratory experiments were conducted to evaluate the effectiveness of neem oil in controlling Syllepte derogata (Fabricius), a cotton phyllophagous pest.

Methodology and Results: In the field trials, effect of neem oil was compared to that of conventional insecticides; while in the laboratory direct larval immersion and leaf dip method using EMA SUPER 56DC and neem oil were tested. Decrease in damage by S. derogata for about 63 and 86% was recorded with neem oil and synthetic insecticides. In the laboratory, the mortality of S. derogata after 24 hours exposure to neem oil and Ema Super was significantly higher (2.5 to 100%) than that of the control. The mortality of larvae of S. derogata was positively correlated with the concentration of neem oil and exposure time. Lethal Concentration (LC50) after 24 hours exposure of larvae was respectively 4.03 10^-4 ml/l and 51.13 ml/l for leaf dipping method and larval immersion.

Conclusion and application of results: Overall, these results showed the efficacy of neem oil in controlling S. derogata, as a biopesticide. This oil could also constitute a successful alternative to synthetic
pesticides. However, the effectiveness of neem oil appeared to be weakened by the rapid degradation of the active substances, azadirachtin in particular. Indeed, azadirachtin, the main active ingredient of neem is photo and heat labile. It easily degrades under high solar radiations and high temperatures, hence the need for stabilization.

**Keywords:** Phyllophagous pest, integrated pest management, leaf-dipping method, larval immersion, Lethal Concentration.