Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Comparison of Neem Soil and Foliar Treatments for Controlling the Whiteflies *Aleyrodes proletella* and *Trialeurodes vaporariorum*

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Abstract

The control of insect pests has largely relied on regular application of synthetic pesticides. However, the development of resistance against major classes of chemicals, pest resurgence, environmental damage and adverse effect to non-target organisms pose a great challenge. Owing to the demand for insecticide residual free food and better ecological approaches to pest control, there is increasing interest in the use of biopesticides such as Neem. This compound has been shown to affect many important pests of different crops; a systemic feeding deterrent, repellent and growth-regulating properties. The potential for their use in the control of crop pest peculiarly whiteflies in organic farming system warrant investigation. Most of the registered products in the market are formulated for foliar application. Despite their high efficacy when in direct contact with the target organism, the oil-based foliar formulations rapidly degrade under high temperatures and UV light. Soil application and uptake of active ingredients by the root systems could avoid this negative effects hence attain higher level of pest control sustainably. The aim of this study, therefore, was to evaluate the efficacy and persistence/ residual effect of neem compounds, applied to the soil either as water based solution or as granules compared to spray application in the control of *Aleyrodes proletella* L. and *Trialeurodes vaporariorum* West. This was done using a foliar spray formulation NeemAzal-T/S (1 % Azal) and two soil applied formulations; NeemAzal-T (1 % Azal) and NeemAzal granules, (7 % Azal). The treatments were done 0, 3, 5, 7, and 14 days before the plants were exposed to adult whiteflies. All basic experiments were conducted in a greenhouse. Larval and pupal mortalities of the whiteflies were analysed using binomial generalised linear models. From our results, neem extracts were effective against whitefly immature stages although efficacy of foliar formulation significantly decreased with time probably because of photodegradation under high temperature. On the other hand, soil-applied formulations attained fast efficacy and long persistence which could indicate fast uptake and systemic translocation of active ingredients but reduced photo-degradation. Therefore, soil application of neem gave the most intensive control and was more persistent than foliar formulation.

Keywords: Formulations, neem, whiteflies

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