

# RESIDUAL PERFORMANCE OF AN ALPHA-CYPERMETHRIN/ FLUFENOXURON MIXTURE AGAINST GERMAN COCKROACHES, *BLATTELLA GERMANICA* (L.) (DICTYOPTERA: BLATTELLIDAE)

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Residual performance of a pyrethroid/chitin synthesis inhibitor (alpha-cypermethrin/flufenoxuron) suspension concentrate formulation on plywood panels against German cockroaches was examined in the laboratory for up to 6 months of aging using three evaluation methods (forced-contact, self-contact and effect on population growth). In the forced-contact method, test cockroaches were introduced into treated plywood panels and their knockdown was observed at selected time intervals of up to two hours, at 1 day, 1 week, 2 weeks, 4 weeks, 8 weeks, 16 weeks and 24 weeks post-treatment. At a recommended rate of 7.5/7.5 mg/m<sup>2</sup>, the mixture provided 50% knockdown of test cockroaches (adult males and females) within 24 minutes of exposure (LT<sub>50</sub> range = 13.2 – 23.3 min), except for residual panels aged 24 weeks. Under the self-contact method, test cockroaches were placed in a test arena with harborages and allowed to feed on food and water which were placed at the centre of the recommended dose-treated panel at 14 days exposure time. Panels used were aged for 1 day, 1, 2, 4 and 6 months. At residual age up to 2 months, the mixture performed well against adult males (>80% mortality), but its efficacy against females, mid- and late nymphs was not satisfactory. In the third evaluation method, twenty cockroaches from each sex/stage (males, non-gravid females, gravid females, late instars, mid-instars and early instars) were introduced into a test container and a freshly treated panel was placed on one side of the container with food and water sources at the centre of the panel. The number of cockroaches in each population was counted manually at 1 month, 2 months, 3 months and 6 months post-treatment. Two concentrations were evaluated, i.e. 1.5/1.5 mg/m<sup>2</sup> (sublethal concentration) and 7.5/7.5 mg/m<sup>2</sup> (recommended concentration). The mixture suppressed population growth with total population wipe-out at the second month when the recommended concentration was used. However, population growth was partially suppressed when 1.5/1.5 mg/m<sup>2</sup> was used. Intrinsic rate of increase ( $r_n$ ) for control population was estimated at  $0.028 \pm 0.009$  and was significantly higher ( $P < 0.05$ ) than those populations under treatment of 7.5/7.5 mg/m<sup>2</sup> ( $r_n = -0.0437$ ) and 1.5/1.5 mg/m<sup>2</sup> ( $r_n = 0.0152 \pm 0.0052$ ). This study suggested that the alpha-cypermethrin/flufenoxuron mixture is an effective insecticide formulation against German cockroaches when long-residual effect is required.