

**SYNERGY EFFECTS OF SELECTED PLANT
EXTRACT AGAINST
TEA SHOT-HOLE BORER (*Xyleborus fornicatus*)**

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ABSTRACT

Tea shot-hole borer is one of major insect pests of tea in Sri Lanka. Chemical insecticides cause serious negative effects to the environment and human health. Therefore, there is increasing trend for organic tea cultivation. Most botanicals have insecticidal properties. A study was conducted to determine the efficacy of the synergists prepared using selected plant extracts, against *Xyleborus fornicatus* and to determine the LC_{50} of the most effective synergist. Same aged adult female shot-hole borer beetles were collected from Glen Alpine tea estate, Badulla. Neem seed kernel extract (*Azadirachta indica*) was used as a basic component of synergists and extracts of Castor seeds (*Ricinus communis*), Lantana green berries (*Lantana camara*), Ginger rhizomes (*Zingiber officinale*) and Garlic bulbs (*Allium sativum*) were used as synergizes. Cold water extracts of selected plants were prepared separately and each of the extracts at different concentrations (20%, 10%, 5%, 2.50% and 1.25% W/V), were synergized separately with neem seed kernel extract at 1:1 ratio on volume basis. Bio-assays were carried out on the petri dishes (100 × 15 mm) with artificial feed by adding two adult female beetles to each petri dish. The topical application of neem extract alone and each synergist were done to the beetles in the petri dishes in eight replicates. Petri dishes were kept in the incubator at 28°C for providing stable, ambient temperature. 5 treatments were done according to Complete Randomized Design (CRD) experimental design. Mortality rate of beetles due to contact toxicity was counted (24h, 48h, 72h and 96h after treatment). The neem aqueous extract alone presented a good efficacy for contact toxicity and neem and ginger synergist was the most effective synergist among all (LC_{50} value of 26.24 g L^{-1}) against *Xyleborus fornicatus*. Data revealed that the neem and ginger botanical extract was most promising for the control of tea shot-hole borer, which is safer and less hazardous for human health, and other favourable insect in the environment.

Key words: Shot-hole borer, Botanical extracts, Synergists, Bio-assay, Contact toxicity