

**EFFECT OF WEED CONTROL METHODS ON SOIL
INVERTEBRATE COMMUNITY IN CINNAMON
[*Cinnamomum zealanicum* Blum] LANDS**

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ABSTRACT

Weeding is one the most important cultural practices that is used in cinnamon field because it helps to increase the productivity of cinnamon cultivation. The most common weed management methods, which are being practiced in commercial cinnamon cultivations are mamoty weeding, slash weeding and chemical weeding. This study was carried out in Cinnamon Research Station, Matara during the period of June – August, 2013 to determine the effect of three main weed control methods on the abundance and diversity of invertebrate communities of cinnamon soil and to find out whether there is a relationship of selected soil properties and soil invertebrate community. Three different weed control methods practiced for longer term namely chemical weeding, mamoty weeding and slash weeding were tested consecutive three months with no weeding (control) as the main treatments, in different level of soil depths: litter layer, 1-10 cm, 11-20 cm and 21-30 cm layers as the sub treatments with three replicates in split-plot design. Extracts taken from undisturbed soil samples of different weed control method adopted plots and control plots were tested through stereo microscope. Common soil invertebrate groups were identified using a dichotomous key and counted. Modified Berlese - Tullgren funnel was used to extract the soil invertebrates and standard soil tests were performed to determine organic matter content, bulk density, pH and moisture content. There was a significant ($p < 0.05$) effect of weed control methods on soil invertebrates. Slash weeding was not harmful for the soil invertebrate community among the given weed control methods. The abundance and diversity of soil invertebrate community was declined with the soil depth. Significant ($p < 0.05$) negative correlation was observed between soil bulk density and some components of soil invertebrates' community such as diversity and abundance of the soil invertebrates and soil invertebrate species such as earthworms, mites and collembolans. But other soil characteristics did not show any relationship with soil invertebrates. Slash weeding is the most efficient and eco-friendly weed control method for commercial cinnamon cultivation in Sri Lanka.

Keywords: Cinnamon, soil invertebrates, slash weeding, weed control, diversity