

Chlorpyrifos causes decreased organic matter decomposition by suppressing earthworm and termite communities in tropical soil

P. Mangala C.S.De Silva^{a, b, ·}, Asoka Pathiratne^c, Nico M. van Straalen^a, Cornelis A.M. van Gestel^a

^a Department of Animal Ecology, VU University, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands

^b Department of Zoology, Faculty of Science, University of Ruhuna, Matara, Sri Lanka

^c Department of Zoology, Faculty of Science, University of Kelaniya, Kelaniya, Sri Lanka

Abstract

Effects of pesticides on structural and functional properties of ecosystems are rarely studied under tropical conditions. In this study litterbag and earthworm field tests were performed simultaneously at the same tropical field site sprayed with chlorpyrifos (CPF). The recommended dose of CPF (0.6 kg a.i. ha⁻¹) and two higher doses (4.4–8.8 kg a.i. ha⁻¹) significantly decreased litter decomposition during the first 3 months after application, which could be explained from lower earthworm and termite abundances during this period. Species-specific effects of CPF on organism abundance and biomass were observed, with termites being mostly affected followed by the earthworm *Perionyx excavatus*; the earthworm *Megascolex* sp. was least affected. Recovery was completed within 6 months. Decomposition in the controls and lowest two treatments was completed within 4 months, which suggests the need for modification of standard test guidelines to comply with faster litter degradation under tropical conditions.

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