ABSTRACT

EFFECT OF MULCHING AND REDUCED TILLAGE ON DIVERSITY AND ABUNDANCE OF SOIL BEETLES IN SUGARCANE FIELDS

By

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This study was aimed to determine the effect of mulching and reduced tillage on the diversity and abundance of soil beetles in sugarcane fields. Beetle sampling using pitfalls was done in the sugarcane fields of PT Gunung Madu Plantations at Terusan Nunyai area of Central Lampung in three occassions, i.e. January, July and December of 2011. Experiment was done using a 2x2x5 split-plot design with two treatment factors (mulching and tillage) and five replicates. Mulching and tillage consisted of two levels, respectively, i.e. no-bagasse mulch, with bagasse mulch, no-tillage, and full-tillage. The recovered soil beetles were identified up to the familial level. The diversity was expressed as family number, Shannon's index and Simpson's index while the abundance was expressed as number of beetle individuals. Data were analysed using F-tests at 1% or 5% of significance.

This study showed that soil beetles in the sugarcane fields were adequately diverse and their dynamics could be affected by soil tillage. Eighteen beetle families were recovered from the study site, i.e. Anthicidae, Cicindellidae, Carabidae, Chrysomelidae, Coccinellidae, Curculionidae, Dytiscidae, Eucnemidae, Elateridae, Hydrophilidae, Pselaphidae, Nitidulidae, Ptilidae, Scaphidiidae, Scarabaeidae, Scydmaenidae, Tenebrionidae and Staphylinidae. Mulching or interaction of mulching and tillage did not affect beetle diversity and abundance but reduced tillage was found to increase beetle diversity (famili number, Shannon's index and Simpson's index) and abundance, especially those sampled in January 2011.

Key words: mulching, reduced tillage, soil beetle, sugarcane.