

Effect of oil palm industry wastes on the growth and reproduction of the earthworm *Eisenia* spp.

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Abstract

Since oil palm is the oleaginous crop with the highest yield per unit of land, it is one of the most important crops in the Venezuelan agricultural sector, Inadequate management of wastes and effluents from the oil extracting industry is causing serious pollution problems, and increasing biological demand of oxygen in water sources. Vermiculture is a practice that permits organic wastes to be recycled and transformed into a soil additive which would return part of the extracted nutrients to the soil, without environmental damage. A study was conducted to assess the suitability of these waste, oil palm husks (C) and oil palm fruit fiber (F), either alone or mixed with cattle manure as a vermin-composting substrate. Proportions of 0, 20, 30, 40, 60, 80 and 100% of C and F, for a total of 11 treatment were tested. Cattle manure (E) alone was used as the control. The experimental design was completely randomized with 5 repetitions. Worm biomass and cocoon production were the dependent variables recorded. Evaluations were performed during eight weeks with a pairs of adult worm, *Eisenia* spp., in a 355 ml plastic container. Statistical differences were found among mixtures ($P < 0.05$) for biomass and cocoon production. The highest biomass production (1131 mg/ worm pair) was record for the mixture 20% oil palm fiber and 80% cattle manure, and the lowest (853 mg/worm pair) for the treatment of 100% of oil palm fiber. The highest cocoon production (8.3 cocoons/worm pair) was reached with the mixture of 40% oil palm husk and 60% cattle manure, and the lowest (3.23 cocoons/worm pair) with the 100% oil palm husk treatment. The conclusion is that oil palm industry wastes can be used as a substrate for vermi-composting purposes.

Key words: wastes, Oil palm, vermin-composting, biological behavior, red worm.

Recibido el 11-3-2002 ● Aceptado el 15-6-2002

1 Proyecto de Investigación S1- 2000000792, financiado por FONACIT

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