

Comparative effects of emamectin-benzoate and vermicompost tea on fall armyworm

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The rate of application of emamacin–benzoate to control fall armyworm (*Spodoptera frugiperda*) – an invasive species on maize plant is increasingly alarming in Nigeria and little or no attention is paid to its residual effect on soil properties and soil fauna. This study was conducted to test the insecticidal effect of vermicompost tea as a viable and sustainable option to emammacin-benzoate on fall armyworm. A comparative study was carried out to test the effectiveness of vermicompost tea over emamectin-benzoate. Vermicompost tea was produced from the mixture of organic materials, characterized and screened in the laboratory to determine the lethal concentration and time. The vermicompost and emamectin-benzoate were subjected to spectroscopic analysis to identify their functional groups using Fourier Transform Infra-Red (FTIR). Elemental composition of the vermicompost was determined using ICP. Data obtained were subjected to analysis of variance and mean values was separated using Fischer's LSD0.05. The FTIR result of vermicompost and emamectin-benzoate revealed similar functional groups like amides and haloalkanes which could be responsible for their insecticidal efficacy against fall armyworm. The insecticidal effect of vermicompost tea at 100 % concentration against fall armyworm was not significantly different from effect of emamectin-benzoate on maize plant tissues. Vermicompost tea applied at all levels effectively reduced number of damaged leaves and improved maize yield, similar to the effect of emamectin-benzoate. No significant effect of vermicompost tea and emamectin-benzoate was observed on soil fauna and soil properties except soil pH. However, vermicompost tea should be subjected to more instrumental analyses to establish its structure.