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IMPACT OF VERMICOMPOST ON GROWTH, NUTRITIONAL STATUS, PRODUCTIVITY AND SOIL MICROBIAL COUNT OF FLAME SEEDLESS GRAPEVINE ORCHARD UNDER DESERT CONDITION

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ABSTRACT

This experiment was carried out during 2015 and 2016 seasons on Flame Seedless grapevines grown in sandy soil under drip irrigation system at Khatatba district, in Menofia Governorate, Egypt. The aim of this research is to reduce the mineral nitrogen fertilizer by using vermicompost to improve vegetative growth, nutritional status, productivity and microbial count of flame seedless grapevines orchard. Six fertilization treatments were carried out as follows: T1(100% vermicompost+0% mineral nitrogen), T2 (80% vermicompost+ 20% mineral nitrogen), T3 (60%vermicompost+40% mineral nitrogen), T4 (40%vermicompost +60% mineral nitrogen), T5 (20%vermicompost +80% mineral nitrogen) and T6(100% mineral nitrogen control).Data presented that T3 and T4 improved the vine vegetative growth (i.e, bud burst%, number of leaves/shoot, leaf area, and total chlorophyll content). In addition, they increased leaf nutrient content (N-P- K- Mn- Cu- Fe- Zn) and decreased leaf heavy metal content (Cd- Ni- Pb- Co). Anyhow, the partial substitute with 60 % organic /vine induced the highest increased the total microbial count in the soil compared with mineral nitrogen fertilization alone. In addition, T3 gave the highest total yield.

Key words: grapevine, fertilization, microbial count, nutritional status, vermicompost.