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Entitled

*BIOLOGICAL EFFICIENCY OF BASIDIOMYCETES FUNGI IN DATE PALM LEAF WASTE COMPOSTING AND
SUITABILITY AS GROWING MEDIA*

by

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Abstract

Soil quality and fertility status is grossly poor in arid region soils. The problem is compounded due to lack of organic matter in the coarse sandy soil. Therefore, agricultural practices tend to use different organic materials like peat moss, perlite, etc., as organic materials. Despite the role of these growing media in improving the chemical and physical properties of soils, they are non-renewable resources and have high price in the market which make cultivation noneconomical. Hence, renewable resources like biowaste such as date palm leaf waste has been used as alternative source in the experiment to compare with other composting materials. The main objective of this study is to evolve a compost of date palm leaf waste which is generated abundantly but grossly underutilized. In the light of the above, basidiomycetes fungi have been grown on date palm leaf waste to produce mushrooms and to utilize the spent substrate as soil ameliorant. Two crops were selected viz., watermelon (*Citrullus lanatus*), and sweet melon (*Cucumis melon*) as test crops, and four compost materials viz., spent waste of date palm leaves (DPLC), organic compost, peat moss and without organic matter separately were used in the cultivation of the crops. Plant growth characters, and soil characteristics to improve the soil properties were assessed. The experiments were conducted in the open field at Al Foah Research farm, under the College of Food and Agriculture, United Arab Emirates University. The experiment was conducted with eight treatments; four substrates and two plantspecies, replicated five times. Treatments included two plants that cultivated in DPLC, peat moss, organic compost, and without organic matter (WOM). The pH, EC, water holding capacity, mineral content, and C/N ratio of the substrate were measured to investigate the quality of substrates. The plant characters studied include plant height, fruit production (Yield), number of leaves, flower number, plant biomass, TSS, total sugar, and reduced sugar content in the fruits, chlorophyll, carotene, and mineral content in the plant. The analysis of results indicate that spent substrate of date palm leaf waste is an excellent source of compost to ameliorate the sandy soils to improve the soil qualities, fruit yield and quality to enhance the growth and production of the watermelon and sweet melon. It is comparable to any other substrate that is being used currently. It could be concluded that date palm leaf waste is a good source to generate an eco-friendly substrate in the UAE for undertaking cultivation.

Keywords: Growing media, date palm waste, substrates, TSS, reduced sugar, carotene.