

Kitchen Plant Waste as Source for Organic Composting Serving Circular Economy. Effects of Vermicompost on the Growth of Greenhouse Vegetables (I)

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Abstract

Since we live in a context in which waste production is continually increasing and the economic activity linked to them is becoming increasingly important, reusing, recycling or recovering waste is to be prioritized wherever feasible. Kitchen waste from homes, restaurants, catering services, nursing institutions, and from food processing plants are classified as domestic biodegradable waste (Demirbas, 2011). Direct composting of kitchen plant waste is rather recalcitrant due to its physicochemical characteristics (Peng et al., 2022). Vermicomposting is a green technique that produces vermicompost from different types of organic wastes using specific earthworm species, while it plays a vital role in organic and sustainable agriculture, due to its ability to increase soil fertility and crop nutrition (El Jawaher A. Bin Dohaish, 2020). This study investigated co-composting of kitchen plant waste of a psychiatric hospital with vermi-composted cow manure and evaluated its exploitation as soil amendment to produce organic early crops vegetables, in the light of sustainable development and circular economy. Specifically, the effects of the co-compost application on the chemical and microbial properties of greenhouse soil of the Green Unit of the Psychiatric Hospital of Thessaloniki were investigated and then related to growth responses and crop production of *eruca vecisaria*, parsley, celery, and dill, cultivated in the greenhouse. Foliar and root analysis was also performed for every crop. The results indicated that the growth height and the plant mass for all crops increased, while nutrients analysis proved that plant waste vermi-compost could effectively be used as organic soil amendment, enhancing green house vegetables without added fertilizer.

Keywords: vermicompost, kitchen plant waste, greenhouse vegetables, cow manure, circular economy

References

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