

Role of Vermicompost in Organic Vegetable Production Under Resource-Constrained Farmers in Zimbabwe

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Abstract

Organic farming has emerged as a sustainable alternative strategy for achieving food security in Zimbabwe because the system creates a sustainable high farm output with minimal reliance on off-farm inputs. Contrary to industrialized agriculture, organic farming does not have negative impacts on people's health, ecosystem stability and immensely reduces climate change. Moreover, there is a significant increase in demand for organically produced vegetables because they contain zero chemical residues as no synthetic chemicals are used. Generally, crop yield under organic management is relatively lower per unit area compared to the non-organic production system. However, the yield under organic farming can be improved by enhancing the efficacy of the organic manure though a challenge. Organic manures from composts, leaf litter, cattle, goat, and chicken are usually used for soil fertility management in communal areas of Zimbabwe. Unfortunately, most of the available livestock manures are of poor quality ($C:N > 35$) caused by poor quality fodder in the communal rangelands. Poor quality manure has low efficacy, thereby reducing soil and crop productivity. The low crop productivity can scare-out farmers from organic farming regardless of associated socio-economic and environmental benefits. It is imperative to devise technologies to enhance the efficacy of organic manures, e.g., vermicomposting. Vermicomposting turns the organic wastes into high-quality ($C:N < 35$) nutrient-rich organic fertilizer called vermicompost. Vermicompost is an acceptable source of fertilizer in organic farming as it is cheap and readily available hence a sustainable fertilizer among the resource-constrained farmers. Unfortunately, the role of vermicompost as a vegetable fertilizer is poorly researched in Zimbabwean horticulture so numerous gray areas on its effects on soil and plant quality and application rates in different soils exist. Therefore, this chapter assessed use of vermicompost among the resource-constrained organic vegetable producers. The aim is to increase vegetable productivity, thereby achieving food security among resource-constrained farmers in Zimbabwe.