

The Effect of Incorporating Organic Household Waste on Productivity and Economic Gains in Vegetable Farms in South-Borgou, Benin

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Abstract

This study evaluates the effect of incorporating organic household waste on the productivity of urban and peri-urban vegetable farms in the municipalities of Parakou, Tchaourou, and N'Dali, located in northern Benin. Faced with the growing challenges of urban waste management and the depletion of agricultural soils, recycling household waste into compost represents a promising circular economy solution for developing countries. The main objective of this empirical research is to estimate the causal impact of this practice on agricultural yields, while identifying its determinants.

Primary data were collected from a representative sample of 288 vegetable-farming households through face-to-face interviews. To address endogeneity issues related to self-selection and omitted variables, the quasi-experimental instrumental variables (IV) approach was employed, using the possession of a household waste management system as the instrumental variable.

The econometric results reveal that the possession of a waste management system, income level, the gender of the head of household, and the production of biodegradable waste (leaves and branches) significantly influence the adoption of composting. Furthermore, the impact assessment indicates that the use of this compost significantly increases agricultural yields by 1,397.23 kg/ha. Access to information and the availability of a waste collection service also contribute to improved productivity. In conclusion, the study recommends promoting composting training, recycling household biodegradable waste, and targeting public policies to encourage the adoption of circular agricultural practices in order to ensure food security.

Keywords

Household waste, vegetable farming, instrumental variables, circular economy, agricultural yield.