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"Bridging the gap between increasing knowledge and decreasing resources"

# Irrigation Technology, Technical and Resource-Use Efficiencies in Smallholder Urban Vegetable Farming in Lagos State, Nigeria

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**Abstract**

The study assessed the level of technical efficiency and resource-use efficiency in urban vegetable production for different irrigation technologies. It employed a cluster sampling procedure to obtain information from 142 smallholder urban vegetable farmers in Lagos State. Results showed that 18.3 % and 81.7 % of the farmers were using motorized pumps and manual irrigation (watering cans) methods, respectively. Also, 61.5 % and 35.3 % of motorized pump users and manual irrigation users had continuously used their land for more than five years. The results of the stochastic frontier model showed that quantity of irrigation water ($p < 0.01$) and pesticide ($p < 0.10$) had positive effects on vegetable output while fertiliser ($p < 0.05$) had negative influence on the productivity of urban vegetable production overall. The urban vegetable farmers were also operating at decreasing returns to scale (0.5284). Also, attainment of technical education ($p < 0.10$) and years of urban vegetable farming experience ($p < 0.01$) improved technical efficiency of the farmers. Results further showed that manure, fertiliser, herbicides, hired labour and family labour were under-utilised while land, pesticides and seeds were over-utilised. The inefficiency model revealed that male farmers ($p < 0.01$) were more technically efficient than their female counterparts. Thus, it is expedient for government to support the female farmers to improve their level of technical efficiency through skill acquisition e.g. in the use of motorized pumps for irrigation. The study also found that the farmers were using too much fertilisers which reduced their level of productivity. Therefore, there is the need for to channel agricultural extension services to these food producers to assist vthem with an optimum use of fertiliser and thereby enhance their productivity.

**Keywords:** Irrigation technology, resource-use efficiency, technical efficiency, urban agriculture, vegetable

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