




Economics of small-scale aquaponics system in West Africa: A SANFU case study

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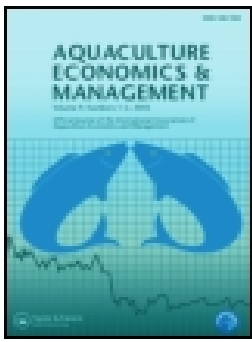
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ABSTRACT

The combination of hydroponics and aquaculture in a closed system is the essence of aquaponics and soilless agriculture. Aquaponics is hypothesized to have the potential to improve nutrition security in developing countries, but this is an issue that has received limited attention. This study evaluates data from the small-scale aquaponics project “Sustainable Aquaponics for Nutritional and Food Security in Urban Sub-Saharan Africa” (SANFU). The SANFU aquaponics system primarily relied on relatively expensive foreign sourced components to validate the technical feasibility of this production system. This aquaponics set-up can yield ca. 27.9 kg of fish and 3 kg of vegetables per annum with a nitrogen outflow of 48.5 g. This corresponds to a rather unfavorable Net-Discounted Benefit-Cost Rate (DBCR) of 0.08 over a 20-year period. Conversely, the same system that uses locally sourced components and a higher fish stock density was simulated to have a DBCR of 1.12. Thus, aquaponics systems may be economically feasible if fabricated with local materials, which contributes to food and nutrition security of the beneficiaries.

KEYWORDS

Aquaponics; fish; nitrogen out-flow; profitability analysis; vegetables



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