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Sustainable Aquaculture for a Secure Future

Title: Efficiency of Resource Use Among Pond Fish Farmers in Central Uganda: A Stochastic Frontier Production Function Approach

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Abstract: This article presents the use of a stochastic frontier production function to examine the efficiency of resource utilization in pond fish farming in Uganda. The study draws on data from a field survey administered to 200 small-scale fish farmers in three major fish farming districts in Central Uganda: Mukono, Mpigi and Wakiso. The districts were part of a large aquaculture development project funded by the United States Agency for International Development-Aquaculture and Fisheries Collaborative Research Support Program. Productive efficiency was analyzed using stochastic frontier analysis with a translog production function while assuming a truncated-normal distribution for the inefficiency term. The output variable was total quantity of fish produced, while input variables were quantity or value of inputs used in the production process, namely labor, pond size, stocking density, capital and feeds. The estimated index of resource-use efficiency revealed that small-scale farmers were inefficient in resource allocation by over-utilizing labor with an estimated allocative efficiency index of 0.94 and grossly under-utilized pond size, feeds and fingerlings with allocative efficient indices of 1.15, 1.64, 3.71, respectively. The results suggest that there is considerable scope to expand output and also productivity by increasing production efficiency at the relatively inefficient farms and sustaining the efficiency of those operating at or closer to the frontier.

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