

## **A Comparative Analysis of the Private and Social Benefit-Cost Ratios of Organic and Inorganic Rice Farming: Case Study of Smallholder Farmers in the Aveyime Community, Ghana**

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**Abstract :** The Aveyime community in the Volta region of Ghana is one of the major hubs for rice production. In the past, rice farmers applied organic pesticides to control pests, and compost as a soil amendment to improve fertility and productivity. However, the introduction of chemical pesticides and fertilizers have led many farmers to convert to inorganic system of rice production, without considering the social costs (e.g. groundwater contamination and health costs) related to the use of pesticides. The study estimates and compares the private and social BCRs of organic and inorganic systems of rice production. Both stratified and simple random sampling techniques were employed to select 300 organic and inorganic rice farmers and 50 pesticide applicators. The respondents were interviewed with pre-tested questionnaires. The Contingent Valuation Method (CVM) which elucidates organic farmers' Willingness-to-Pay (WTP) was employed to estimate the cost of groundwater contamination. The Cost of Illness (COI) analysis was used to estimate the health cost of pesticide-induced poisoning of applicators. The data collated, was analyzed with the aid of Microsoft excel. The study found that high private benefit (e.g. increase in farm yield and income) was the most influential factor for the rapid adoption of pesticides among rice farmers. The study also shows that the social costs of inorganic rice production were high. As such the social BCR of inorganic farming (0.2) was low as compared to organic farming (0.7). Based on the results, it was recommended that government should impose pesticide environmental tax, review current agricultural policies to favour organic farming and promote extension education to farmers on pesticide risk, to ensure agricultural and environmental sustainability.

**Keywords :** benefit-cost-ratio (BCR), inorganic farming, pesticides, social cost

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