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Accounting for Rice Productivity Heterogeneity in Ghana: The Two-Step Stochastic Metafrontier Approach

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Abstract : Rice yields among agro-ecological zones are heterogeneous. Farmers, researchers and policy makers are making frantic efforts to bridge rice yield gaps between agro-ecological zones through the promotion of improved agricultural technologies (IATs). Farmers are also modifying these IATs and blending them with indigenous farming practices (IFPs) to form farmer innovation systems (FISs). Also, different metafrontier models have been used in estimating productivity performances and their drivers. This study used the two-step stochastic metafrontier model to estimate the productivity performances of rice farmers and their determining factors in GSZ, FSTZ and CSZ. The study used both primary and secondary data. Farmers in CSZ are the most technically efficient. Technical inefficiencies of farmers are negatively influenced by age, sex, household size, education years, extension visits, contract farming, access to improved seeds, access to irrigation, high rainfall amount, less lodging of rice, and well-coordinated and synergized adoption of technologies. Albeit farmers in CSZ are doing well in terms of rice yield, they still have the highest potential of increasing rice yield since they had the lowest TGR. It is recommended that government through the ministry of food and agriculture, development partners and individual private companies promote the adoption of IATs as well as educate farmers on how to coordinate and synergize the adoption of the whole package. Contract farming concept and agricultural extension intensification should be vigorously pursued to the latter.

Keywords : efficiency, farmer innovation systems, improved agricultural technologies, two-step stochastic metafrontier approach
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