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Efficiency in Production by Smallholder Rice Farmers under Cooperative Irrigation Schemes in Pwani and Morogoro Regions, Tanzania

Abstract

Tanzanian produced rice is not competitive because of high production costs. To increase competitiveness will require improvements in production efficiency. This study was conducted to analyse production costs and factors influencing choice of inputs provider in smallholder irrigated rice production. Specifically, it focused on comparing costs of production, determining factors that influence the choice of input providers by smallholder irrigated rice farmers, and analysing production cost efficiency. Data were collected from 200 farmers that belong to four cooperative irrigation schemes in Pwani and Morogoro regions. Production costs were estimated quantitatively using the enterprise budgeting technique. Differences were analysed using the t-test statistical technique. Factors influencing choice of inputs provider were determined using the Logit model. The translog stochastic cost frontier was used to analyse cost efficiencies. Study data suggest that total costs of production are US\$315.47/MT. Farmers purchasing inputs through irrigation scheme cooperative had lower production costs than farmers purchasing from other input providers. Factors influencing the choice of production which input providers to use were distance from the cooperative to nearest town, membership in other organizations, extension services, input quality satisfaction and availability of cash and credit payment mode which were all statistically significant at the $p < 0.05$ level. Rice output and prices for labour, fertilizer and irrigation water significantly affected costs of production. Unit cost of production were reduced by increasing rice productivity ($p < 0.05$). Production efficiency was significantly influenced by farming experience, planting methods, frequency of weeding, degree of specialization and source of purchased inputs. These factors accounted 82.08% of the variability in costs of production ($p < 0.05$). A major conclusion is that production efficiency is reduced by high production costs relative to rice output produced, input prices, source of purchased inputs and other agricultural practices. Use of labour saving technologies, the purchase of inputs from irrigation scheme cooperatives and greater economies of scale resulting from increased specialization can increase profits.