

## **Production Function for Rice in Kirindi Oya Major Irrigation System in Sri Lanka**

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*Understanding the input use patterns and input-output relationships is important for resource allocation decisions. The objectives of this study were to estimate a production function for rice using a water quantity indicator and other data collected from farmers in the Kirindi Oya Irrigation and Settlement Project (KOISP) in Southeastern Sri Lanka, and to use the estimated input function for welfare comparisons and policy analysis. Data for cultivation seasons, Maha 2006/07 and Yala 2007 were used. T-tests were used in comparing input use differentials between seasons and locations (old and new area). Production function of Cobb-Douglas form was estimated using Ordinary Least Squares.*

*Results indicate differences in mean quantities of water applied by seasons and locations, but no differences in fertilizer application levels. Mean fertilizer use was less than the government recommendation. Parameter estimates for six production input variables and non-input variables of farming experience, and schooling were positive and statistically significant. Marginal Value Products (MVPs) of water ranged between a low of 3.2 SLR/m<sup>3</sup> for the highest water user to a high of 4.7 SLR/m<sup>3</sup> for the lowest water user. Ratios of MVPs and opportunity costs for water (foregone revenues if water is used for reservoir fisheries) and fertilizer (cost insurance freight price of urea) were greater than unity suggesting that an additional unit of water and/or fertilizer in rice production will generate additional net revenues.*

*Additional water available from Veheragala Diversion Project was allocated among sub strata (season and subarea) at the level that equated MVPs of water. Application of fertilizer at recommended levels would improve farm net revenues. Water quantity indicator used in this study is applicable in irrigation systems elsewhere with peasant farming conditions. Findings on fertilizer application indicate the usefulness of production functions in evaluating the fertilizer subsidy scheme of the Government of Sri Lanka.*

**Keywords:** Cobb-Douglas production function, Differential water access, Irrigated rice, Marginal value products, Net rice income