

Economic Value of Water Functioning System of Paddy Field in Sri Lanka

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Abstract

Paddy farming in Sri Lanka can be divided in to tree schemes according to the source of water availability for farming. In addition scale of cultivation depends on the schemes. Naturally paddy field acts as a multifunctional surface due to its structure. Then paddy field helps to mitigating flood, recharging groundwater and purifying water which was determined previous studies. Then, the study focused on estimating economic value of those non-market benefits and find out how does the magnitude effects of those benefits vary within the cultivation schemes in Sri Lanka based on non-market evaluation methods of Replacement Cost Method (RCM) and Contingent Valuation Method (CVM). Primary data was collected by using structured interview method and experiment method. Further one-way ANOVA was utilized to achieve the objective of the study. Further the result shows that the Economic Water Functioning system of Paddy Field is vary within the cultivation schemes and allocated as 172421.8LKR, 63320.7LKR and 32996.66 in major irrigated scheme, minor irrigated scheme and rain-fed scheme respectively per acre.

Keywords: Paddy farming, Economic value, Non-market evaluation, Replacement Cost Method, Contingent Valuation Method, External benefits, water management

1. Introduction

Paddy cultivation areas in Sri Lanka are divided into three Schemes according to the water availability namely, major irrigated, minor irrigated and rain-fed. The major irrigation scheme contains the paddy cultivation areas which are irrigated by irrigation systems with more than 80 ha command areas. The Minor irrigated scheme covered the paddy cultivation areas which are provided the water from the irrigation systems where the command area is lesser than 80 ha including both tanks and anicuts (Nishantha, 2014, DOASI, 2006). One of the intrinsical feature of paddy cultivation is that the fields are usually filled with water. The water percolates through soil; part of them return to the downstream river, stabilizing base stream flow in rivers; parts seep into the ground providing valuable water source during drought seasons which is mainly used for living and industrial purposes. , during rainy period paddy field acts as an artificial wetland to control flood and as a major source of ground water recharge (Tsai, 1993). Ridges surrounding the paddy field helps to prevent or mitigate the damage of flooding (Yoshida, 2001). Flood mitigation, fostering water resources, preventing soil erosion, purifying water, cooling air temperature, refreshing atmosphere, Soil erosion and recreation are some positive external effects that are generated by paddy production process (Chiueh, 2008; Huang *et al.*, 2006; Matsuno *et al.*, 2005; Yoshida, 2001 and Tsai, 1993). In the context of Sri Lanka, flood mitigation, recharge groundwater level and purification of water can be identified as main social benefits sources of water functioning system of paddyfield. Therefore the study analyzed the economic value of those benefits and how does it vary within the cultivation schemes.