(220)

Sustainability Assessment of Wetland Rice Farming in Sri Lanka: A Case Study in Kaduwela Wetland Ecosystem

Ranasinghe R.D.A.K.[1*], Ginigaddara G.A.S.[1], Gunawardena U.A.D.P.[2]

[1]Department of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura
[2]Department of Forestry and Environmental Science, University of Sri Jayewardenepura
**aranikranasinghe@gmail.com*

Abstract

Achieving sustainability in farming systems which are in close connection with natural ecosystems is a challenging task for farmers, researchers and policy makers. There is long history for use of floodplains for agriculture, due to their high fertility created by regular flooding events. Kaduwela wetland ecosystem is such floodplain which is situated in Colombo district. Paddy is the most prominent cultivation in this area and intensive farming practices hence has led to continuous reduction of sustainability and natural biodiversity of this wetland ecosystem. The objective of the study is therefore to calculate a total sustainability index (TSI) for the paddy farmers with social, economic and environmental components. A household survey using a pre-tested questionnaire was conducted among randomly selected 100 paddy farmers from Dedigamuwa Grama Niladhari Division of Kaduwela Divisional Secretariat Division. Key informant interviews were also conducted to collect information. Thirteen different indicators were developed to analyse economic, social and environmental sustainability. These data were used to derive an Economic Efficiency Index (EEI), Social Security Index (SSI) and an Environmental Security Index (ESI). Total Sustainability Index (TSI) was calculated finally combining all indices. According to the results only 3% (TSI>0.5) of paddy farmers were totally sustainable within the system. Overall results emphasized that only 13%, 8% and 4% of paddy farmers respectively were economically, socially and environmentally sustainable. Further, as a result of continuous reduction of paddy productivity and higher labour cost, 87% of paddy farmers were economically vulnerable while overuse of fertilizers and agrochemicals has lead to reduction of environmental sustainability of the system. Lack of proper extension services and poor women involvement in agriculture has lead 92% of paddy farmers towards the social vulnerability. The study concludes that lack of adequate knowledge on sustainable farming systems and unfamiliarity with resource conserving practices negatively related to less adoption of sustainable agricultural practices. Finally the study suggest that government support and intervention in agricultural advisory services can serve as an engine to promote sustainability in paddy production while conserving the natural characteristics of this wetland ecosystem.

Keywords: Paddy farming, Sustainability index, Wetland ecosystem