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**Farmer level constraints in use of eco-friendly technologies against synthetic chemical fertilizer in paddy farming in Sri Lanka**

**H.M.L.V. Herath<sup>1\*</sup>, U.K. Jayasinghe-Mudalige<sup>1</sup>, A.P. Silva<sup>1</sup>, J.A.S.N.S. Jayakodi<sup>1</sup>, H.A.C.K. Jayathilake<sup>2</sup>, R.S. Dharmakeerthi<sup>3</sup> and W.S. Dandeniya<sup>3</sup>**

<sup>1</sup>Department of Agribusiness Management, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka, Makandura, Gonawila (NWP), 60170, Sri Lanka

<sup>2</sup>Information and Communication Technology Center, Wayamba University of Sri Lanka, Makandura, Gonawila (NWP), 60170, Sri Lanka

<sup>3</sup>Department of Soil Science, Faculty of Agriculture, University of Peradeniya, Peradeniya, 20400, Sri Lanka

**Abstract**

An excessive use of synthetic chemical fertilizer (CF), mostly with low quality standards, has resulted significantly adverse effects from the socio-economic and environmental points of view. Further, these have recently been led to create turbulences in the fields of political and legal. As a remedy to overcome the negative issues of CF, a package of eco-friendly technologies (EFTs) including a "Bio Fertilizer" (BF) and 'Bio-char' (BC) was invented through a multi-objective multi-phased research. BF was formulated by using microbial inoculants to improve the soil nutrient content, while BC would assist to sustain systematic nutrient release to the soils. This study was focused to explore the potential constraints faced by farmers to adopt those EFTs generated in paddy farming over the use of CF. The potential constraints pre-identified by way of a series of multi-stakeholder consultations were enlisted to receive farmer responses on a likert-scale directed from '-5' ("highly negative") to '+5' ("highly positive") with '0' as "neutral/no-difference". The structured questionnaire contained those were administered with a cross section of farmers registered under this project (n=85) from the *Kurunegala* and *Anuradhapura* districts to gather data through face-to-face interviews during October/November 2020. The Exploratory Factor Analysis carried out with the values of Mean Attribute Score [MAS] derived has classified those constraints into five key factors, including: (1) 'Market' [4.53]; (2) 'Price' [10.0]; (3) 'Government' [3.17]; (4) 'Information' [5.38], and (5) 'Production' [5.28]. It was revealed that the 'Price' related factors highly affected the farmers, and they were mostly suffered by 'market price volatilities' of essential inputs and the outputs. Overall, the outcome of analysis stresses the value of formation of a sensible policy framework reflecting the principles of co-regulation (i.e., public/government & legal systems jointly with markets/private) and follows the merits of science, system, and practical orientation. In fact, minimizing those constraints in that way would guarantee achieving the goals of the state of transforming to an 'eco-friendly green economy' at its earliest possible.

**Keywords:** Chemical fertilizer, Constraints, Eco-friendly technologies, Green agriculture, Paddy sector

**\*Corresponding Author:** vindulaherath94@gmail.com