

Paddy farmers' perception on banning of inorganic fertilizer: A case in Mapalana village in Sri Lanka

P.N.M.M. Wijerathna, D.M.M. Sandeepani*, G.C. Samaraweera

Department of Agricultural Economics, Faculty of Agriculture, University of Ruhuna, Matara, Sri Lanka

**madusha0906@gmail.com*

1. Introduction

In Sri Lanka, rice can be identified as the major food and is approximately grown over 983,550 ha (Department of Agriculture, 2018). Outstanding growth in paddy production has arisen due to the introduction of high-yielding varieties and they are in high demand for fertilizer. Moreover, government subsidies have influenced farmers to apply higher degrees of fertilizer (Ekanayake, 2009). However, the overuse and mismanagement of fertilizer may cause undesirable impacts including ground and surface water contamination, soil acidification etc. (Lan & Xia, 2008). Fertilizers applied in rice cultivation may accumulate high concentrations of heavy metals in soil and eventually cause Chronic Kidney Disease (CKD) (Chandrajith et al., 2010). In 2020, 325,000 metric tons of fertilizers were imported for paddy cultivation and the cost of the subsidy program for paddy and other crops was \$253 million (Mariano et al., 2021). Ultimately, this can be a threat to the national economy. In this context, attention should be paid towards alternatives such as organic farming that improves soil productivity and helps to solve soil pollution problems (Siavoshi et al., 2011). Accordingly, farmer perception should be taken into account, as they are the grass root level players in paddy cultivation. However, adequate attention is not given to farmers' thoughts within Sri Lankan decision-making processes. Hence, this study focused to identify paddy farmers' perception on inorganic fertilizer banning while assessing its impact and examining alternatives for inorganic fertilizer usage. The findings will give new insights for policymakers to become more concerned about banning inorganic fertilizer in the Sri Lankan context.

2. Materials and Methods

This study was quantitative in nature and a convenient sampling technique was adopted. The farmers of Mapalana village belonging to the Kamburupitiya DS division in Matara district were selected as the respondents of the study. Structured questionnaires were administered among the farmers and 32 dully filled questionnaires were collected. This study was conducted during June-August in 2021. The questionnaire consisted of three sections; respondents' demographic information, respondents' perception on the banning of inorganic fertilizer and alternative suggestions for this decision. Five point Likert scale (1= strongly disagree, 2=disagree, 3=no idea, 4=agree, 5=strongly agree) was adapted to access respondents' perception on banning of inorganic fertilizer. Secondary data were collected from research articles and reports of the Central Bank of Sri Lanka. SPSS version 25 software was mainly utilized for analytical purposes and the collected primary data were analysed by using descriptive methods and inferential statistical methods such as the Wilcoxon Signed Rank test.

3. Results and Discussion

According to the results, a majority of the sample consisted of male farmers (87.5%) and there were 12.5% of female farmers. When the farmers' level of education is taken into account, 53.1% were educated up to A/L, while 25% had diploma level qualification, 18.8% respondents were educated up to O/L and only 3.1% had degree level qualification. The majority of the respondents (43.8%) have been engaged in paddy cultivation for more than 10 years while 43.8% and 12.5% have been involved for 5-10 years and for less than 5 years respectively.

Table 01 shows the results of the Wilcoxon Sign Rank Test obtained from responses with respect to each statement on the perception of banning inorganic fertilizer and promoting organic farming given by the respondents.

Table 01. Farmers' Perception on banning inorganic fertilizer and promoting organic farming

No	Statement	Mean	Test value	P value
1	Banning inorganic fertilizer and promoting organic farming is a timely decision	1	-4.759	.000
2	Banning inorganic fertilizer and promoting organic farming is a necessity for the paddy cultivation	1	-4.590	.000
3	This will ultimately strengthen Sri Lanka economy	1	-5.027	.000
4	Banning inorganic fertilizer in paddy farming will protect the biodiversity	1	3.838	.000
5	The application of organic substances will eventually decrease the yield of the paddy cultivation	1	-6.80	.496
6	The use of organic fertilizer will increase the cost of production	1	2.887	.004
7	The application of organic fertilizer will improve the efficiency of nutrient use to produce more robust crops	1	1.86	.853
8	Organic farming will improve the fertility of the soil	1	0.655	.513
9	Promoting organic farming will contribute towards the effective waste management	1	.000	1.000
10	Promoting organic substances will create more employment opportunities and reduce the rate of unemployment in Sri Lanka	1	2.524	.012
11	Banning inorganic fertilizer will help in reducing non-communicable diseases	1	-1.500	1.34

Significance level = 0.05

According to Table 01, the respondents' perception of timeliness and requirement of the decision on banning inorganic fertilizer and promoting organic proved valid and significant. As per the respondents' points of view, organic farming results in a beneficial impact on the environment by protecting biodiversity and it also strengthening the country's economy and creating employment opportunities while they stated that organic fertilizers increase the cost of paddy production in Sri Lanka. Further, respondents revealed that promoting organic farming will not result in reducing non-communicable diseases, contributing to effective waste

management, improving soil fertility and nutrient utilization. According to the responses, the yield of the paddy cultivation would not be decreased by the application of organic substances.

As per the results, the majority of the respondents (62.5%) stated that banning inorganic fertilizer and promoting organic farming may have a direct impact on their economy, while 6.3% stated that there may be an indirect impact and 31.3% stated that there may be both direct and indirect economic impact of banning inorganic fertilizer.

As an alternative to inorganic fertilizer, the farmers suggested a mixture of neem (10%) as an insecticide, gliricidia (35%), cow dung (25%) and chicken manure (15%) as organic fertilizers. According to the findings, the majority of farmers (62.5%) suggested utilizing a low quantity of inorganic fertilizer and applying a high quantity of organic substances such as gliricidia, cow dung and chicken manure is the best option while 21.9% suggested applying equal quantities from both organic and inorganic is the best. However, 15.6% of them suggested the best option is applying only organic substances to the cultivation

4. Conclusions

According to the view of paddy farmers, banning inorganic fertilizer and promoting organic farming may have a positive impact on the Sri Lankan environment and economic condition. As the farmers have a negative mindset regarding organic farming, the attention of respective parties will be required to give further awareness to farmers on the advantages of organic agriculture. Having considered the findings reported, the best method is not going for 100% organic farming but applying high rates of organic matters with low rates of inorganic fertilizer. The findings of this study provide an overview for the policymakers to become more concerned about banning inorganic fertilizer in the Sri Lankan context.

5. References

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