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RESEARCH

Behavioral Intention of Paddy Farmers Towards Adoption of Organic Sources for Soil Nutrient Management Consequent to Policy Decision to Ban Agro-chemicals in Sri Lanka: A Case Study.

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ABSTRACT

This study was aimed at investigating the behavioral intention towards and factors influencing adoption of organic soil nutrient management by paddy farmers, consequent to the banning of agro-chemicals in April 2021 in Sri Lanka. A questionnaire survey, supplemented by key informant discussions was used to collect the primary data after six months of the banning when farmers were preparing for the next *Maha* season (starting from November 2021). Paddy farmers (N=120) from the Mahailluppallama irrigation block of the Mahaweli system H in Anuradhapura district were randomly selected as the respondents. The Theory of Planned Behavior (TPB) was used as the conceptual framework of the study. The study revealed that the majority (85%) of farmers did not agree with the sudden decision of the government to ban agro-chemicals to enable a complete transformation of agriculture to one that is totally organic. Only 11% of the farmers preferred a fully organic paddy production system. The majority (58%) preferred to use both organic and inorganic fertilizers. However, 31% of the farmers preferred conventional farming as usual. Perceived difficulties were the major barriers for farmers to use organic fertilizers. Attitude on production, age, perceived knowledge of organic agriculture, and farming income significantly affected ($P < 0.1$) paddy farmers' intention to adopt organic fertilizers. It is concluded that a scientifically designed gradual transition would be more appropriate for nutrient management in paddy cultivation.

INTRODUCTION

Sri Lanka's conventional agriculture sector mostly depended on chemical fertilizers for over six decades. Before that, the country had a traditional agriculture system based on organic inputs, which were more sustainable in relation to environmental health. Soil and water are the most basic resources used in agriculture. Soil fertility is important in determining the crop productivity. Crop varieties introduced with the green revolution have led to a significant productivity improvement in the agriculture sector worldwide. The introduction of synthetic fertilizer has contributed to this increased production to a greater extent because the high yielding new-improved crop varieties including those of paddy are more responsive to chemical fertilizers. As a result of the green revolution, the production of cereal crops tripled worldwide with only a 30% increase in the land area cultivated (John and Babu, 2021).

Organic agriculture is defined as a production system that sustains the health of the soil, ecosystems, and people (FiBL and IFOAM, 2018). The organic movement of the world aims at the export market (Issa and Hamm, 2017) healthy food (Saba and Messina, 2003), and environmental sustainability (Best, 2008). However, only 1.6% of the world's agricultural lands are under organic cultivation systems (FiBL and IFOAM, 2023). The land extent under organic agriculture in Sri Lanka is 66,623 ha and it is only 2.4% of the total agricultural land (FiBL and IFOAM, 2023). Organic agriculture has a vast array of benefits such as the increased quality of products, economic value, environmental friendliness, and social well-being. However, existing policies, a lack of information and knowledge, weak infrastructure and other economic challenges, misperceptions, and cultural biases are some of the barriers to transforming from conventional (with synthetic inputs) into organic production systems (Reganold and Wachter, 2016). This transformation is not a simple process, and the time required for the transformation depends on the correct attitude, knowledge, skills, and access to needed resources (Bwambale, 2015). Further, the question of to which extent this transformation should happen is controversial and debatable especially because of the low productivity in organic agriculture as generally accepted. Yields of organically cropped legumes were 20% and non-legumes 40% lower than those of conventionally grown crops (Kirchmann, 2019).

Rice is the staple food in Sri Lanka and provides the livelihood of most rural communities. The government of Sri Lanka has been subsidizing the fertilizer for paddy cultivation for more than five decades. The fertilizer subsidy program introduced in 1962 is the longest-lasting, most expensive, and most politically sensitive policy implemented to promote rice cultivation in Sri Lanka (Weerahewa *et al*., 2010; Senanayake, 2022). However, consequently, misuse of chemical fertilizer has damaged the balance and sustainability of natural ecosystems. Government support is an important factor in the conversion of conventional agriculture into organic agriculture (Manideep, 2020; Asadollahpour *et al*., 2014).

The Cabinet of Ministers of Sri Lanka on the 27th of April 2021 approved a ban on the importation of agrochemicals (synthetic fertilizers and pesticides) with the initial objective of a complete organic transformation of Sri Lankan agriculture. However, this policy decision became a controversial issue among scientists, farmers, the public, environmental activists, policymakers, and also the political arena of the country.

Farmers are affected to varying extents by the policy directives relevant to agriculture. According to a simulation tool developed by Wijetunga and Saito (2017), farmers are unfavorably affected with a 40% reduction in farm profit by a complete cut down of the fertilizer subsidy for paddy. Remaining in conventional agriculture or the shift to organic agriculture is debatable due to the pros and cons of both approaches. Conventional agriculture, especially using synthetic fertilizers has a huge productivity advantage (Kirchmann, 2019), while organic agriculture claims a wide range of environmental advantages (Best, 2008). In

this context, this study investigated the behavioral intention of the paddy farmers and the factors influencing the behavioral intention on nutrient management with organic fertilizers at a time of policy reform for organic agriculture in Sri Lanka. It is vital to understand the ground reality of the issue for further interventions and policy reform.

METHODOLOGY

In Sri Lanka, there are two main cropping seasons. *Maha* is the main cultivation season covering the months of October to February, and *Yala* is the minor cultivation season covering the months of March to September. Irrigated paddy farming is mainly concentrated in the low-country dry zone of Sri Lanka. There are five districts namely Ampara, Polonnaruwa, Kurunegala, Anuradhapura, and Hambantota identified as the major rice growing districts where the productivity and production of paddy is the highest and therefore, fertilizer usage is high as well (Paddy statistics, 2021). The study was conducted in the paddy farming community of the Mahailluppallama block of the Mahaweli irrigation system H in the Anuradhapura district of Sri Lanka during the *Maha* Season (commencing from October 2021). About 120 farmers were randomly selected as the respondents since the paddy farming system in the area is homogeneous with irrigated water supply. A social survey was conducted for the data collection using a semi-structured questionnaire.

The Theory of Planned Behaviour (TPB) (Ajzen, 1988; Chen and Yang, 2019) was adopted in this study (Figure 1). Social psychologists have long used the Ajzen models of behavioral intentions with great success in practical applications and basic research (Krueger and Carsrud, 2010). According to TPB, the three factors that are affected by any kind of behavioral intention of a person are attitude toward behavior, subjective norms, and perceived behavior control (Halberg, 2012). The additional variables to the theory were adopted according to Reimer et al. (2012). Attitude toward the behavior explains what degree the subjected person will like or dislike the behavior or practices. Subjective norms refer to the social pressure on the subjected behavior or practices (Chen and Yang, 2019). Perceived behavioral control included the perceived difficulty and perception of risk of the behavior (Yanakittkul and Aungvaravong, 2020).

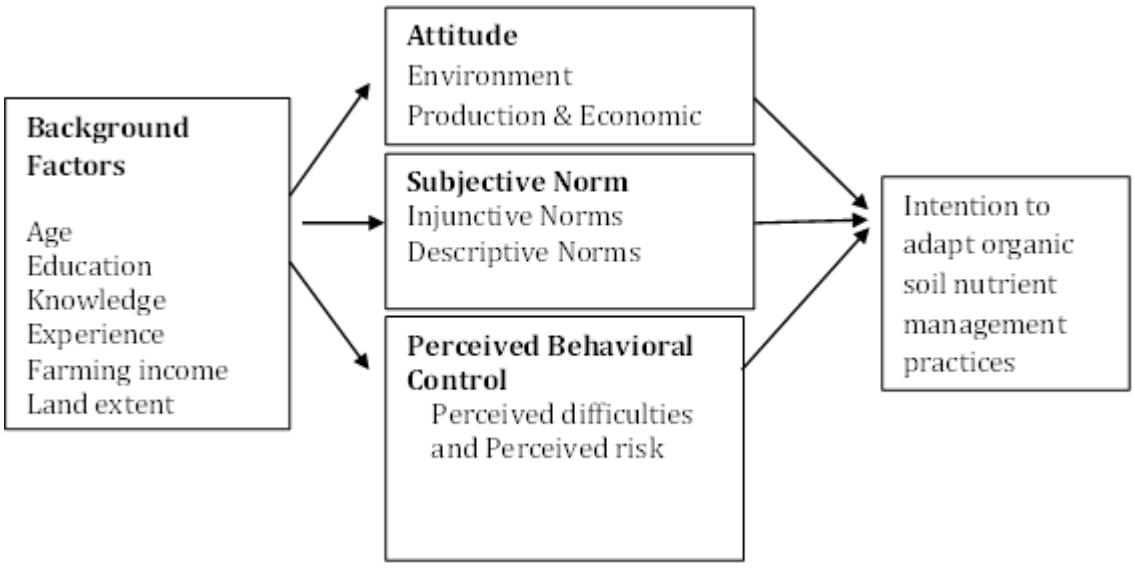

Figure 1: Conceptual Framework

Background factors were added to the model as adopted by Reimer *et.al*. (2012). The intention of the farmers to adapt organic soil nutrient management practices was measured. Both descriptive and inferential statistics were used to analyze the data and it included coding, data entry, verification, data cleaning, and analysis. About 38 items were used to construct the TPB variables in this study. Those 38 TPB variable were: 1) Using inorganic input is economically profitable compared to organic agriculture; 2) Conventional agriculture (using inorganic input) gives high yields; 3) Cost of conventional agriculture is less compared to organic agriculture; 4) Conventional agriculture is easy to practice compared to the organic agriculture; 5) Conventional agriculture (using inorganic input) is environmentally unsustainable; 6) Using inorganic input is not good for human health; 7) Conventional agriculture should be transformed into sustainable production systems; 8) Organic agriculture is environmental friendly; 9) Organic agriculture is more profitable than conventional agriculture; 10) The use of chemical input is negative for health of people and animals; 11) Agrochemical is a causative factor for CKDu; 12) Organic agriculture strengthen the livelihood of the rural people; 13) Organic agriculture gives more production than conventional agriculture; 14) Organic production has a high-quality; 15) As a farmer, I agree with the government's decision to ban agro-chemical for a fully organic transformation; 16) I do not agree with the present policy on organic agriculture since it is difficult to adopt due to risk and uncertainty on the success; 17) Organic policy is not well planned with a long-term vision with necessary prerequisites; 18) I would like to adopt organic agriculture if it is planned by step with a long term plan; 19) I believe organic agriculture is the best option according to my religious belief; 20) I support organic agriculture since it has a long history or tradition in our country; 21) My view on organic agriculture is influenced by the views of my family members; 22) I support organic agriculture since that matches with my political ideology; 23) My view on organic agriculture is influenced by the philosophy of my life; 24) Many fellow farmers in my community prefer organic farming over conventional farming; 25) Many fellow farmers in my community are in the process of converting from conventional to organic farming; 26) Many fellow farmers close to me encourage me to convert to organic farming; 27) Organic yields are too low; 28) Organic agriculture requires a high investment cost; 29) Organic agriculture is not profitable; 30) I don't have the required knowledge and skills on organic agriculture; 31) Organic agriculture input (fertilizer) required bulk in quantities to give required nutrients in particular; 32) Organic agriculture is not practical at all; 33) I have to work hard for organic nutrient management; 34) Without using Inorganic fertilizer crop yield will be drastically reduced; 35) Weed control is difficult in organic agriculture; 36) Less yield will affect the food security of the family; 37) Less yield will affect the socio-economic status and well-being of the family; 38) Fully organic approaches will not be successful at all. From among these, the items 1 to 18 were attitude TPB variable items, items 19 to 26 were subjective norm TPB variable items; whereas, items 27 to 38 were perceived behavioral control TPB variable items (Perceived difficulties and Perceived risk). Principle Component Analysis (PCA) under the dimensionality reduction techniques was adopted to identify the relationship within the variables (Manideep, 2020). Binary logistic regression analyses were adopted to investigate the factors affecting the behavioral intention of farmers toward organic soil nutrient management.

RESULTS AND DISCUSSION

Sample Profile

Sample characteristics are given in Table 1.

Most of the respondents (83%) were male farmers. The majority (66%) of the study sample was around 45 to 65 years of age with a mean of 54.5 years (SD=10.5). The farming experience ranged from 20 to 40 years with a mean of 31.28 years (SD=11.9) which indicates that the respondents were experienced farmers.

Table 1: Sample characteristics of the respondents

Demographic factors	Categories	Percentage
Sex	Male	83.0
	Female	17.0
Age distribution	Age Between 25-45 years	20
	Age 45-65 years	66.0
	Age more than 65 years	14.0
Education level	Grade 0-5 (primary education)	8.0
	Grade 5-10 (secondary education)	18.0
	O/L	61.0
	A/L	11.0
	Diploma	1.0
	Degree	1.0
Farming experience	Below 5	2.0
	Between 5- 10	4.0
	Between 10-15	7.0
	Between 15-25	18.0
	More than 25	68.0
Lowland extends	Small Scale (>1Ha)	70.0
	Medium (1-2 Ha)/ Large Scale (<2Ha)	30.0
Upland extends	Small Scale (>1Ha)	93.0
	Medium (1-2 Ha)/ Large Scale (<2Ha)	7.0
Lowland ownership	Own	82.0
	Rented	16.0
	Other	2.0
Upland ownership	Own	97.0
	Other	3.0

Most farmers have reached secondary education and had sat for the General Certificate of Ordinary Level Examination. There was only 1% having degree-level education among the respondents. The mean value of the education level was 9.97 (SD=2.9). Many of the respondents (70%) owned small-scale lowland lands (less than 1.01 Ha) and the rest had medium to large-scale (1-2 Ha) land for cultivation. Similarly, the majority (93%) of the uplands were small-scale lands. Only 7% of the uplands were medium to large scale. The majority (82%) of the farmers in lowland cultivation owned lands while 16% was rented for the cultivation. The remaining 2% of the lands had other types of ownership such as rented out for others and shared lands.

The immediate problems and challenges faced by farmers with the policy reform

Soil fertility is a main parameter determining agricultural productivity. Therefore, initially, the farmers may have to shift to organic manures from chemical fertilizers during conversion into organic agriculture. The problems faced by farmers, especially in the production and the use of organic manures were investigated as shown in Figure 2 and 3.

Figure 2 illustrates that many farmers (60%) faced difficulties in finding an adequate amount of raw materials and extra time to produce organic manure (57%). The discussions with the key informants and the farmers revealed competition among farmers due to the shortage of raw materials. Further, 45% of the farmers claimed that it was difficult for them to find quality raw materials, especially nutrient-rich plant materials and animal excreta that were needed in producing quality compost. Furthermore, 46% of the farmers perceived that they do not possess the required know-how to produce organic manure. The high cost of transportation when collecting input material was a problem for 46% of the farmers. The other problems stated by farmers were not having credit facilities (38%) and difficulty in finding laborers for the different steps in the organic manure production process (33%). Not having the required space to produce organic manure and infrastructure facilities for transportation were not significant problems.

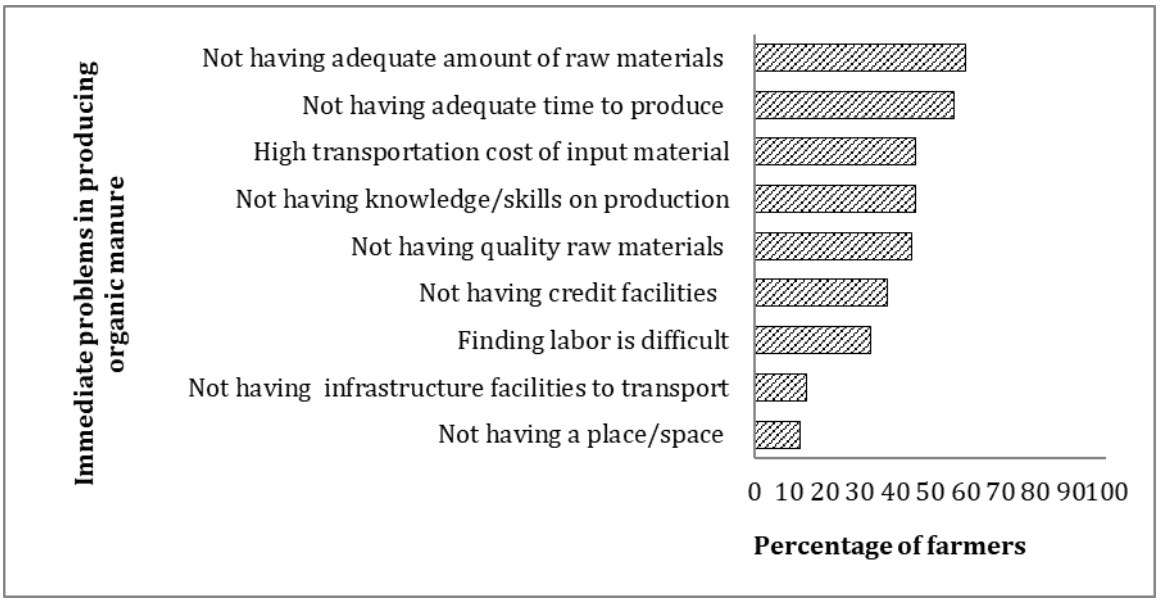

Figure 2: Problems identified by farmers in producing organic manure (Field data: 11/2021)

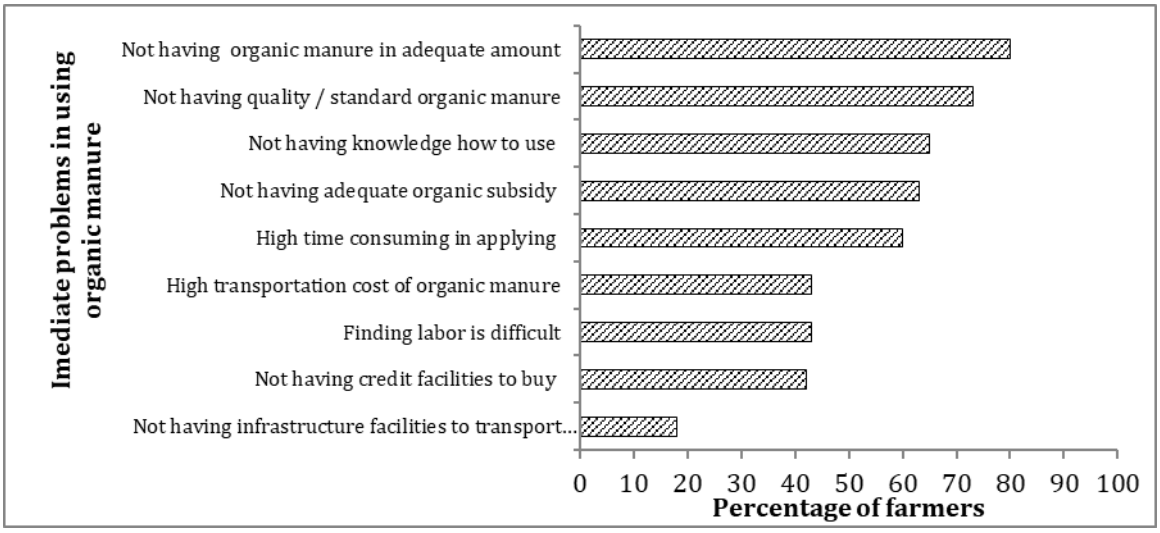

Figure 3: Problems identified by farmers in using organic manure (Field data: 11/2021)

Figure 3 illustrates that not having an adequate amount of organic manure (80%) and poor quality/standard of organic manure (73%) were the most serious issues for the farmers to use organic manure in their cultivation. Farmers claimed that it was difficult for them to obtain standard or quality-assured organic manure in bulk quantities at an affordable price. However, the amount of organic manure produced by the farmers themselves was not adequate to meet the recommended amount in most of the cases. About 65% of the farmers stated that they did not have adequate knowledge of the use of organic manure. They were not aware especially about the quantity required for their land, the method of application, and the time of application. Furthermore, the extra time-consumed in organic manure application compared to the application of chemical fertilizers was a problem for 60% of the farmers, and finding the labor to apply organic manure was a problem for 43% of the farmers. The main reason for these two problems is the requirement of organic manure in high quantities compared to the chemical fertilizer application that they adopted in conventional agriculture for decades. About 65% of the farmers had the problem of the high transport cost of organic manure to the field. Moreover, 63% of the farmers claimed that not having a subsidy for organic manure and not having a credit facility to buy organic manure (42%) are problematic for them to use organic manure.

Due to the problems and challenges faced by the farmers, the majority (85%) did not agree with the sudden decision of the government to ban agro-chemical for a fully organic transformation.

Possibility of using different nutrient sources for producing organic manure as perceived by farmers

If the farmers produce organic manure, then it is essential to source raw materials by themselves. The raw materials are derived from plant materials and animal excreta. The probability of using different plant and animal-based raw materials to produce organic manure was explored as perceived by respondents (Figure 4).

Figure 4 illustrates that rice straw was highly probable and feasible (61%) to use as a raw material since the respondents are paddy farmers. However, 4% of the farmers stated that rice straw is not possible to be used as it is used to feed animals. Next, to paddy straw, the most probably used raw material was Gliricidia (*Gliricidia sepium*) leaves. The aquatic weed namely, Japan Jabara (*Eichhornia crassipes*), was identified by many respondents (highly probable 30% and probable 47%) as an alternate source for organic material that can be obtained from the reservoirs and irrigation canals in the study area. Consequently, cleaning of tanks and irrigation canals was observed.

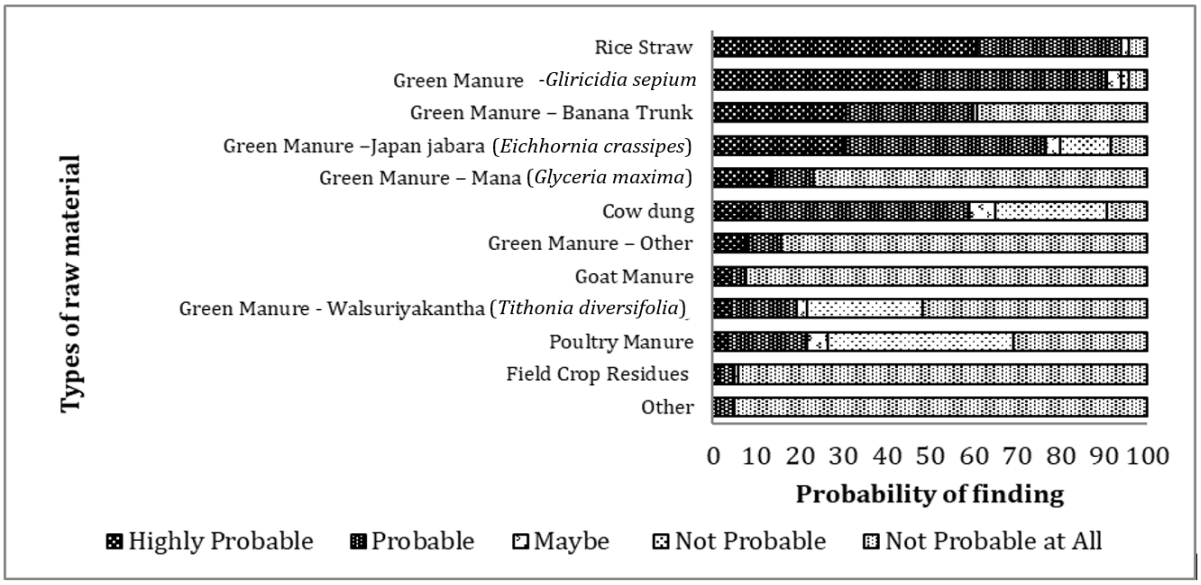

Figure 4: The possibility of finding different nutrient sources for organic manure production.

Cow dung was the next most preferred animal-based raw material (highly probable 11% and probable 48%) to produce compost. Although in the past, cow dung was freely available in the area, its availability was scarce after the implementation of the policy as the demand for cow dung has increased. The probability of using poultry manure was low (21%) compared to cow dung. The respondents claimed that poultry manure was given freely by poultry farms before implementing the policy but not after implementing the policy due to the increased demand. Other animal excreta like goat manure were not probable to use. Accordingly, both plant-based, and animal-based raw materials to produce compost were not available adequately.

Knowledge and training

Most farmers in Sri Lanka were using agrochemical inputs at the time of imposing the agrochemical ban. Therefore, their knowledge and experience were more toward using synthetic inputs in agriculture. However, a sound knowledge of organic agriculture is needed before adopting the production system. Agricultural extension and training play a key role in this regard. More than half of the respondents (56%) have participated in training on the production of composts. The training programs conducted by the government authorities after implementing the policy were basically on compost production but not on the broad aspects of organic agriculture.

Results revealed that no farmer in the study sample practiced total organic paddy farming before the policy was implemented. Moreover, only 10 % of the farmers used organic fertilizers in a small quantity together with chemical fertilizers. The majority (90%) practiced conventional paddy production using chemical fertilizers and other agrochemicals.

Attitude, subjective norm, and perceived behavior control

The Theory of Planned Behaviour (TPB) (Ajzen, 1988; Chen and Yang, 2019) was adopted in this study to investigate the factors affecting the behavioral intention of paddy farmers in organic soil nutrient management at a time of policy reform to ban agro-chemicals. Accordingly, the influence of attitude, subjective norm, and perceived behavior control was investigated.

The mean of the attitude on the environment (3.04) showed that the farmers have a more positive attitude towards the environment friendliness of organic agriculture (Table 2). Injunctive norms (2.52) which are associated with social rewards and punishments for engaging in a particular behavior and

Table 2: Construct validity and reliability of the measurement model

Construct **Scale item**	**λ[1]**	**Mean**	**SD**
Attitude on environnement CM[2]:3.04(S.D.:0.57), α[3]:0.788,CR[4]:0.853, AVE[5]:0.598			
The use of chemical inputs is negative for the health of people and animals	0.809	3.21	0.7
The present agricultural production system of using inorganic fertilizer is not good for human health	0.768	3.06	0.7
Organic farming is environmentally friendly	0.763	3.19	0.5
Agrochemical is a causative factor for CKDu	0.739	2.57	1.1
Injunctive Norms CM[2]:2.52(S.D.:0.94),α[3]: 0.851, CR[4]:0.877, AVE[5]:0.703			
I believe organic agriculture is the best option according to my religious belief	0.857	2.49	1.0
My view on organic agriculture is influenced by the philosophy of my life	0.830	2.63	1.1
I support organic agriculture since it has a long history/ tradition in our country	0.828	2.43	1.1
Descriptive Norms CM[2]:1.41(S.D.:0.98),α[3]: 0.830, CR[4]:0.886, AVE[5]:0.726			
Many fellow farmers in my community prefer organic farming over conventional farming	0.941	1.35	1.0
Many fellow farmers in my community are in the process of converting from conventional to organic farming	0.937	1.47	1.1
Many fellow farmers close to me encourage me to convert to organic farming	0.645	1.40	1.2
Perceived difficulties CM[2]:2.52(S.D.:0.76),α[3]: 0.745, CR[4]:0.828, AVE[5]:0.616			
Difficult to convert into organic agriculture since organic yields are too low	0.833	2.77	0.8
Organic nutrient management is not profitable	0.770	2.66	0.9
Organic nutrient management is difficult since it requires high investment costs	0.749	2.12	1.0
Attitude on production and economic wellbeing CM: 1.64(S.D.:0.66),α: 0.690, CR:0.797, AVE:0.567			
Organic agriculture Gives more Production than conventional	0.813	1.55	0.8
Organic agriculture Strengthen the Livelihood of the rural people	0.722	1.81	0.8
Organic Farming is more profitable than conventional farming	0.721	1.56	0.8

Note: λ[1]: factor loadings, CM[2]: construct mean (maximum value of 4 and minimum 0), α[3]: Cronbach's alpha, CR[4]: composite reliability, AVE[5]: average variance extracted

descriptive norms (1.41) which are influenced by the adaptive behavior of the represented community were not positive (Table 2). Perceived difficulties (2.52) related to the transformation of the conventional agricultural system into an organic agricultural system more positively impacted the farmer's intention toward moving into organic agriculture (Table 2). Attitude related to organic farming and economic wellbeing (1.64) showed the intention of farmers toward organic agriculture (Table 2).

There were 38 items used to measure the attitude, subjective norm, and perceived behavioral control according to the TPB. According to the principal component analyses, 16 variables were extracted under five components (Table 3). About 71.8% variation was explained by these five components and Eigenvalues were 4.710 (attitude related to the environment), 2.021(injunctive norm), 1.873 (descriptive norm), 1.548 (perceived difficulties), and

Table 3: Discriminant validity index summary

	1	2	3	4	5
Attitude on environment (1)	0.773				
Injunctive Norms (2)	0.350	0.838			
Descriptive Norms (3)	0.172	0.296	0.852		
Perceived difficulties (4)	0.239	0.193	0.219	0.785	
Attitude on production (5)	0.267	0.316	0.133	0.238	0.753

1.349 (attitude on production and economic wellbeing of the farmers).

A binary logistic regression was adopted to investigate the factors affecting the intention of the farmers toward organic agriculture. This analysis was done in two steps to identify the R square change. Background factors namely, age, education level, farming experience, sex, farming income, land extent, land ownership, and perceived risk and knowledge were added as the variables in the first step. The model was statistically significant at P=0.008 (Table 4). In the first step, the model explained between 15.8% (Cox & Snell R Square) of the variance in the dependent variable and correctly classified 90% of the cases. According to the results, age, farming income, and perceived knowledge significantly contributed to the model ($p<0.1$).

In the second step, age, perceived difficulties, attitude toward production, farming income, and perceived knowledge ($P<0.1$) have significantly contributed to the model (Table 4). The age-odd ratio suggests that for every increase in age in years the farmers were 1.119 folds more likely to prefer to transform to a fully organic approach. When considering the perceived difficulties, an odd ratio suggested that for every increase in perceived difficulties, the farmers were 0.154 folds less likely to prefer to transform to a fully organic approach. The attitude on production odd ratio suggests that for every increase in the positive attitude about organic agriculture related to production and economic well-being of the farmers 12.289 folds more likely to prefer to transform to a fully organic approach.

In the second step, TPB variables were included in the model as attitude related to the environment, injunctive norm, descriptive norm, perceived difficulties, and attitude on production and economic wellbeing of the farmers (Table 2). The model was statistically significant and Chi-square (14, 43.695) significant at $P<0.001$. The model explained between 30.5% (Cox & Snell R Square) of the variance in the dependent variable and correctly classified 93.3% of the cases. According to the results, R-Square has been changing 14.7 % and has a significant effect from the TPB variables to the model.

Manideep (2020), Nguyen et al. (2021), and Terano et al*.* (2015) have adopted the TPB to predict the factors affecting the farmers' intention to adapt organic agriculture. According to them, the main factors of the TPB (attitude, subjective norm, and perceived behavioral control) are affected in different ways according to the subject context. As an example, in a study with Indian farmers, the affecting factors were attitude and perceived behavior control, and subjective norms did not significantly contribute to the model (Manideep, 2020). Nguyen et al*.,* (2021) in a study with Iranian paddy farmers showed that attitude and subjective norms positively and significantly contributed to the model. In another study with Malaysian paddy farmers (Terano et al*.,* 2015) attitude, perceived behavior control, and background factor of age significantly affected the model. As shown in Table 4, the respondents' perceived behavioral control and attitude are the TPB variables significantly influenced the model. The age of the farmers significantly influenced the model as a background factor. Old farmers were more likely to adapt to organic agriculture than younger farmers.

Table 4: The factors affecting the intention of farmers toward organic agriculture

Steps	variables	Step 1		Step 2		
		B	Sig.	B	Sig.	O. R
1	Age	0.131	0.006	0.112	0.044	1.118
	Education	0.408	0.107	0.071	0.821	1.073
	Experience	-0.055	0.133	-0.017	0.738	0.983
	Sex (Male – 1)	0.622	0.531	-2.067	0.188	0.127
	Lowland extent (large scale-1)	-0.351	0.675	1.056	0.375	2.875
	Lowland ownership (Owned-1)	0.685	0.464	1.998	0.280	7.371
	Perceived knowledge	0.720	0.085	1.637	0.084	5.137
	Farming income	0.000	0.059	0.000	0.086	0.999
2	Attitude on environment			1.180	0.264	3.254
	Injunctive norm			0.866	0.211	2.377
	Descriptive norm			-0.403	0.459	0.668
	Perceived difficulties			-1.873	0.025	0.154
	Attitude on production			2.509	0.036	12.289
	Perceived Risk			-0.549	0.268	0.578
Models' Summaries	significant	0.008			0.000	
	df	8			14	
	Chi-Square	20.602			43.695	
	Predicting percentage	90%			93.3%	
	-2 Log likelihood	61.722			38.629	
	Cox & Snell R Square	0.158			0.305	
	R Square change			**0.147**		

Furthermore, perceived knowledge and farming income have significantly (P<0.1) influenced the model.

CONCLUSION

The respondent farmers were left with limited options for the kind of organic fertilizers to be used in their paddy fields, with the imposition of the ban on importing agrochemicals. The farming community faced challenges in the production and use of organic fertilizers, especially with limited production/supply and availability. The limited quantities available in the market were not up to the quality standards, and lack of labour, and cost of transportation have affected the paddy farmers adapting to the organic policy. These have resulted in severe competition among the farmers for the limited quantities of organic material available. Perceived difficulties were the major barriers for farmers to use organic fertilizers. Attitude on production, age, perceived knowledge of organic agriculture, and farming income significantly affected

paddy farmers' intention to adopt organic fertilizers. Most farmers have received knowledge and training on compost production as organic fertilizer, but not on the amount of compost needed, the appropriate time for application, and the method of application. The respondents also had a limited knowledge of organic agriculture.

Farmers need more time to adapt to new strategies of organic farming. Most farmers preferred to use both organic and inorganic input in soil fertility and nutrient management, with few willing to move into organic farming. These factors should be considered in policymaking and interventions related to soil nutrient management in paddy farming. Newly introduced production strategies should follow a stepwise implementation and the recommendations should be technically, economically, and socially viable to achieve sustainability.

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