



# Analysis of Factors Influencing the Shift from Conventional to Organic Tea Farming in the Uva High Grown Region

K W T T H Vijesooriya<sup>1</sup>, M K S L D Amarathunga<sup>1\*</sup>, K A D P Kumarasingha<sup>1</sup>, U Jayasinghe<sup>2</sup>, and C H M Baanagala<sup>1</sup>

<sup>1</sup> Export Agriculture Department, Faculty of Animal Science and Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka

<sup>2</sup> Stassen Bio Tea Garden, Haldummulla, Sri Lanka  
lalithsenaka30@gmail.com

**Abstract.** Organic tea cultivation has gained significant prominence within Sri Lanka's agricultural sector due to its inherent capacity to address sustainability concerns and cater to the escalating global demand for organic products. This study aims to explore the factors influencing farmers' decisions to adopt organic practices and examines the challenges associated with the transformative process. The sample of the study was 100, consisting of 50 organic farmers and 50 conventional farmers. Primary data were collected using a semi-structured questionnaire encompassing socio-demographic characteristics, key drivers for transformation, awareness level of organic cultivation, attitudes towards organic cultivation, farmers' level of organic cultivation and compliance with organic standards. The questionnaire was pre-tested to ensure its reliability. Descriptive analysis and binary logistic regression were used to analyze data. Higher profits and environmental friendliness are compelling reasons to choose organic tea farming over conventional tea cultivation. The results indicate that farmers are substantially aware of organic farming practices. Farmers' compliance behaviour towards organic standards (OS) is not universally consistent and can vary across different standards due to several factors. These factors include the availability of support services, financial capacity, and the level of awareness regarding potential hazardous contaminants. Land Extent, higher profit, attitude on organic tea cultivation, and farmers' knowledge about organic tea cultivation are statistically significant with  $p < 0.05$ . This study contributes to the existing body of knowledge by shedding light on the drivers and barriers of transitioning from conventional to organic tea cultivation in Sri Lanka. The outcomes hold practical implications for policymakers, researchers and stakeholders seeking to facilitate and promote sustainable agricultural practices within the tea industry.

**Keywords:** Transformation, Organic, Conventional, Tea cultivation

# 1 Introduction

The tea industry has undergone significant changes in response to shifting consumer preferences, sustainability concerns, and the need for healthier agricultural practices. One notable transformation is the shift from conventional to organic tea cultivation. Conventional methods, reliant on synthetic pesticides and fertilizers, are increasingly being replaced due to the recognized environmental, economic, and health benefits of organic practices [Sultana et al., 2014]. This transition aims to reduce the environmental footprint of tea production, promote biodiversity, and safeguard the health of tea-growing regions [Doanh et al., 2018].

Beyond environmental concerns, organic tea can command premium prices in the market, catering to health-conscious consumers and supporting sustainable agriculture. This can lead to improved livelihoods and economic stability for tea growers [Doanh et al., 2018]. This study explores the motivations, challenges, and outcomes associated with adopting organic tea farming methods [Bui et al., 2020].

In Sri Lanka, many tea producers are transitioning to organic farming to meet global sustainability trends [Anuradha, 2019]. They adopt practices like natural fertilization and pest control, adhering to international organic certification standards [Karalliyadda and Kazunari, 2019]. This prioritization of environmental stewardship minimizes synthetic chemical use while promoting conservation. Despite facing challenges such as high certification costs and pest management difficulties, Sri Lankan organic teas are prized in international markets and often fetch premium prices, bolstering the economic viability of organic farming.

While the benefits of organic tea cultivation are clear, the journey from conventional practices poses financial and logistical challenges for growers, emphasizing the need for ongoing support and knowledge-sharing in the sector.

## 1.1 Problem Statement

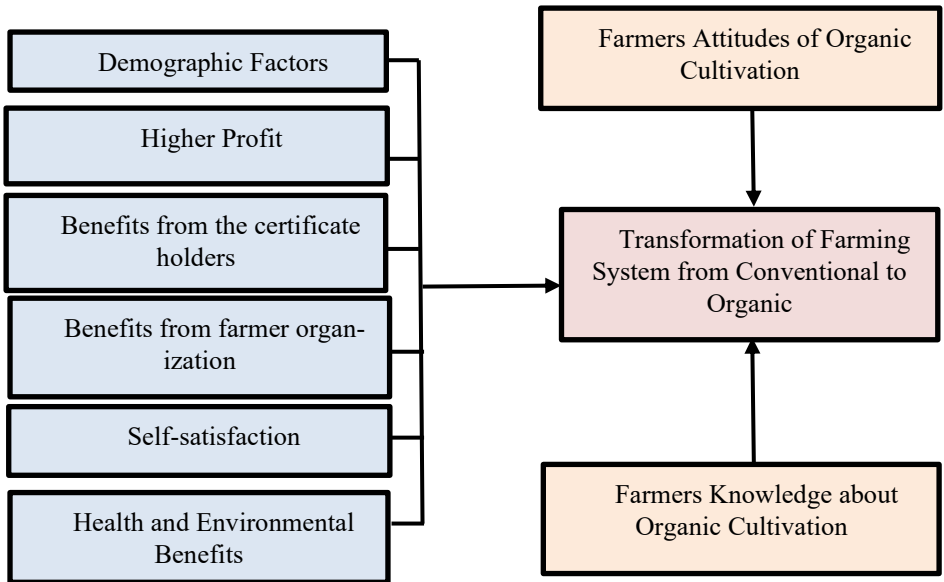
Despite the rising demand for organic tea, many farmers hesitate to shift from conventional to organic cultivation due to several factors. Transitioning entails significant changes in farming methods, requiring new knowledge and resources, which farmers may find daunting and risky for their yields and profits [Koesling et al, 2018]. Additionally, conventional practices rely on easily accessible chemical inputs, and the perceived effectiveness and cost of organic alternatives can discourage farmers from making the switch.

Market access and the complexities of obtaining organic certifications further complicate this transition, as farmers often struggle to secure premium prices for organic products [Jouzi et al, 2017]. Lastly, a lack of awareness of the long-term benefits of organic farming may lead farmers to favor the short-term advantages of conventional methods, such as higher yields and lower pest pressures. These factors collectively highlight the challenges in encouraging a broader adoption of organic tea cultivation.

## 1.2 Research Objectives

The main objective of this study is to identify the factors for transformation from conventional to organic tea cultivation.

## 1.3 Conceptual Framework



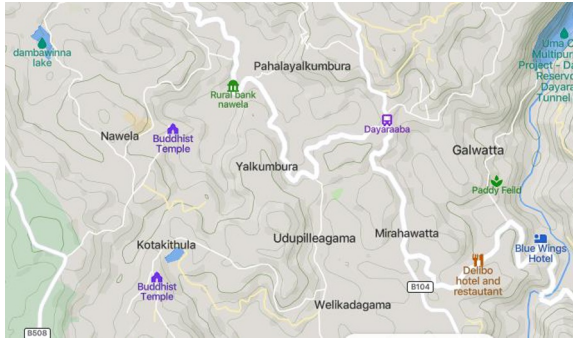
**Fig. 1.** Conceptual Framework of the study [Karalliyadda1 et al., 2019]

This conceptual framework (Fig. 1) was used to explain the relationship between dependent and independent variables.

## 2 Methodology

### 2.1 Study Location

The study was conducted in the Uva High-Growing Region, specifically in the villages of Mirahawatta, Mahaulpatha, Kotakithula, Nawela, and Kirinda. These areas are situated at an elevation of approximately 1300 meters above mean sea level. The average annual rainfall in this region ranges from 1100 to 1400 mm, while the monthly average temperature varies between 15°C and 27°C [Department of Meteorology, 2012].



**Fig. 2.** Map of Study Area

## 2.2 Study Population and sample

The population for this study includes registered organic tea smallholders affiliated with Stassen Natural Foods, totaling 679 farmers, as well as conventional tea smallholders from the Walimada Secretarial Division. The research utilized random sampling techniques to gather primary data from organic tea farmers located within the Walimada Secretariat range. Organic tea smallholders were selected from various Grama Niladhari (GN) divisions within the Walimada Divisional Secretariat, including Nawela, Mirahawaththa, Wegoda, and Kirinda.

For detailed data collection, the selected organic tea farmers comprised 50 registered farmers from Stassen Bio Tea Garden and an additional 50 farmers who were interested in transitioning to organic cultivation.

## 2.3 Data Collection

Key informant interviews and interviewer-administered questionnaires were used to gather primary data for the study. Key informant interviews involve in-depth conversations with individuals who have expert knowledge or experience in the field of organic tea cultivation. These individuals could include tea farmers, extension officers, and field officers.

The study will also utilize secondary data from the database of Stassen Natural Foods (Pvt.) Ltd. Secondary data refers to information that has been previously collected and is available from sources such as company records,

## 2.4 Data Analysis

Separate questionnaires were prepared for conventional and organic farmers and validated by conducting a pilot survey and applying a reliability test. The questionnaires were designed to capture basic information on farmers' socio-demographic characteristics such as household size, age, gender, experience, and education. To understand farmers' decision-making, organic farmers were further asked about their motives for

converting to organic production. Farmers' attitudes and motives towards organic farming were assessed through a series of statements which farmers were asked to score on a Likert scale from strongly disagree (1) to strongly agree (5).

**Table 1.** Operationalization of variable

Independent Variable	Component	Measurement
The Demographic Factors	Age(X1)	No of Years
	Gender(X2)	Male (1)
		Female (0)
	Education Level(X3)	Years
	Family Size(X4)	No of family members
	Land Area(X5)	Hectares
Factors for transformation	Experiences in Tea Cultivation (X6)	No of Years in tea cultivation
	Higher Profit(X7)	Yes (1), No (0)
	Benefits from the certificate holders (X8)	Yes (1), No (0)
	Benefits from farmer organization (X9)	Yes (1), No (0)
	Self-satisfaction (X10)	Yes (1), No (0)
	Health and Environmental Benefits (X11)	Yes (1), No (0)
Attitude on Organic Cultivation(X12)	10 Statements	Five-Point Likert Scale
Farmer's Knowledge about organic cultivation(X13)	10 Statement	Five-Point Likert Scale

Dependent Variable	Component	Measurement
Transformation of Farming System from Conventional to Organic (Y)	Type of cultivation	Organic (1), Conventional (0)

Firstly, the data was coded and entered into Excel. This process involves collecting the necessary information and accurately inputting it into Excel for further analysis. Once imported, the data were analyzed using SPSS software. Qualitative data were collected using dummy variables and Likert scales. Subsequently, an index number was generated to measure the farmers’ knowledge about organic cultivation and farmers' attitudes of organic cultivation [Amarathunga et.al., 2021].

$$\text{Index of Variables} = \frac{\text{Marks achieved by farmer}}{\text{Total potential marks}} \times 100\% \tag{1}$$

Descriptive analysis, Correlation analysis and t test were performed using SPSS to measure the degree of variation and relationships among the tested parameters. Binary logistic regression was specifically employed to identify the independent variables that significantly influence factors of organic cultivation.

**2.5 Reliability Test Results**

**Table 2.** Reliability Test Result

Variable	N of Items	Cronbach’s Alpha
Attitude on organic cultivation	10	0.736
Farmer’s Knowledge about organic cultivation	10	0.786

The reliability test results (Table 2) indicate satisfactory internal consistency for the variable “Farmer’s Knowledge about Organic Cultivation,” implying that it measures the construct consistently. The variable “Attitude towards Organic Cultivation” shows a moderate level of internal consistency reliability.

**2.6 Binary Logistic Regression Analysis**

**Empirical Model**

An empirical model for the study was developed to identify the relationship between dependent and independent variables.

Where;

$$\text{Logit (p)} = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4 + \beta_5 * X_5 + \beta_6 * X_6 + \beta_7 * X_7 + \beta_8 * X_8 + \beta_9 * X_9 + \beta_{10} * X_{10} + \beta_{11} * X_{11} + \beta_{12} * X_{12} + \beta_{13} * X_{13}$$

**logit(p)** represents the log-odds (logarithm of the odds) of the outcome variable (Organic or Conventional tea cultivation)

**$\beta_0$**  - Intercept or constant term

**$\beta_1, \beta_2, \beta_3, \dots, \beta_{13}$** - Coefficients or regression weights associated with the predictor variables

- X1- Gender
- X2 - Age
- X3 - Education Level
- X4 - Family Size
- X5 - Land Extent
- X6 - Experiences in Tea Cultivation
- X7 - Higher Profit
- X8 - Benefits from the certificate holders
- X9 - Benefits from the farmer organization
- X10 - Self-Satisfaction
- X11 - Health and Environmental Benefits
- X12 - Attitude on Organic Tea Cultivation
- X13 - Farmers' Knowledge about Organic Tea Cultivation

### 3 Result and discussion

#### 3.1 Descriptive Analysis

##### **The Socio-economic Characteristics of Respondents.**

In this study of 100 cultivators, comprising 50 organic and 50 conventional farmers, gender distribution showed slight differences: 48% of organic farmers identified as male and 52% as female, indicating a slight female majority, while 56% of conventional farmers identified as male and 44% as female, reflecting a slight male majority. The sample, with an average age of approximately 58 years, moderate education (around high school level), small to medium family sizes (4-5 members), small land holdings (average 0.85 units), and substantial cultivation experience (average 24 years).

**Table 3.** Descriptive Analysis

	Minimum	Maximum	Mean	Std. Deviation
Age	36	83	57.70	9.76
Education Level	1	24	10.67	5.28
Family Size	2	8	4.80	1.38
Land Extent	0.25	5.00	0.85	0.73
Experience in tea Cultivation	10	60	23.67	9.48
Experience in organic tea cultivation	4	28	8.72	4.15

**3.2 Main Factors for Transformation**

**Table 4.** Main factors for transformation to organic cultivation

Factor	Rank
Higher profit	1
Self-Satisfaction	2
Health and Environmental Benefits	3
Benefits from the farm organization	4
Benefits of the certificate holders	5

The result shows that five different motivational factors for the conversion were found. The primary factors influencing the choice of organic tea cultivation are the potential for increased profits and its environmentally friendly nature. Self-satisfaction is another factor in the transformation process. Organic tea cultivation is perceived to offer the potential for increased profitability. This is often due to several factors. These are premium pricing, reduced input cost, and market demand.

Organic teas often command higher prices in the market due to their perceived quality, health benefits, and environmentally friendly production methods. Consumers are willing to pay more for products they perceive as healthier and more sustainable [Badu, 2023]. Farmers are primarily motivated by the potential for increased income through organic farming, as highlighted in studies from Pu’er and northern Vietnam [Li et al., 2024; Bui & Nguyen, 2021]. The growing global demand for organic products encourages farmers to consider organic practices as a viable alternative to conventional methods [Karki et al., 2011]. Organic farming typically involves the use of fewer synthetic pesticides and fertilizers, which can lead to reduced input costs. Additionally, organic farming practices may promote soil health and long-term sustainability, reducing the need for costly inputs [Varma et al., 2024].

There is a growing consumer trend toward healthier and more environmentally conscious choices, which has led to increased demand for organic products, including tea.

This rising demand can translate into higher sales and profitability for organic tea producers. Organic tea cultivation is seen as a more environmentally friendly approach compared to conventional tea cultivation. Organic farming avoids the use of synthetic chemicals and pesticides, which can have adverse effects on the environment, such as soil and water contamination, harm to non-target species, and ecosystem disruption.

Organic farming practices often focus on building and maintaining soil health through methods like composting and crop rotation. This helps preserve soil fertility, reduce erosion, and minimize the environmental impact of agriculture [Badu, 2023; Pandey et al., 2023]. Organic farms often promote biodiversity by avoiding the use of chemical pesticides that can harm beneficial insects and wildlife. This supports a healthier and more balanced ecosystem. Organic farming typically emphasizes sustainability and long-term environmental stewardship, aligning with global efforts to reduce the ecological footprint of agriculture [Pandey et al., 2023]. Awareness of the health and environmental advantages of organic farming positively influences farmers' decisions, although this awareness alone may not lead to widespread adoption [Bui & Nguyen, 2021; Karki et al., 2011].

While certification can offer benefits such as access to premium markets and price premiums, farmers may be driven to adopt organic cultivation methods for a variety of other reasons, including environmental concerns, health and safety, long-term sustainability, and personal values, making certification benefits a secondary consideration in their decision-making process.

While farm organizations and certifications can provide benefits and support to farmers, they may not be the primary drivers for transitioning to organic tea cultivation.

### 3.3 Farmers' Knowledge about Organic Tea Cultivation

Farmers' knowledge about organic tea cultivation typically includes a combination of traditional and modern practices that promote sustainability, environmental responsibility, and the production of high-quality tea. Organic and conventional farmers have distinct knowledge and practices when it comes to tea cultivation, particularly in the context of organic tea farming

**Table 5.** Farmers' Knowledge about Organic Tea Cultivation

Rank	Statement	Organic Farmers (%)	Conventional Farmers (%)
1	Increases the prices of the end product	73%	65%
2	Provides benefits for producers and consumers	73%	65%
3	Protects biodiversity	58%	10%
4	Facilitates weed control, fungal disease control, and insect control insect control	50%	20%
5	Simplifies tea field practices	50%	20%
6	Simplifies finding agricultural inputs	50%	20%

7	Reduces cost of production	48%	10%
8	Strengthens traditional knowledge	47%	28%
9	Reduces nutrient deficiencies	47%	20%
10	increases demand for healthy tea products	42%	30%
11	Increases yield	16%	20%

*Strong Agreement on Economic Benefits:* Both organic and conventional farmers highly agree that organic tea cultivation increases the prices of the end product and provides benefits for producers and consumers (73% for organic, 65% for conventional). This suggests a shared recognition of the market premium for organic tea, driven by consumer demand for healthier, sustainable products, as well as economic advantages for farmers (e.g., higher income) and consumer benefits (e.g., perceived health advantages). The slightly lower agreement among conventional farmers (65% vs. 73%) may reflect skepticism about the consistency of these benefits, possibly due to their reliance on conventional methods or less exposure to organic markets. Perceptions of economic benefits are primary motivators for farmers to transition to organic practices. Farmers who recognize the potential for higher profits from organic tea are more likely to adopt these methods [Li et al., 2024; Simkhada et al., n.d.].

*Environmental Benefits Are Polarizing:* Organic farmers show moderate to strong support for environmental benefits, particularly biodiversity protection (58%), facilitated weed, fungal, and insect control (50%), and reduced nutrient deficiencies (47%). This reflects their alignment with organic principles, which prioritize ecological sustainability and non-chemical practices. In contrast, conventional farmers show significantly lower support for these environmental benefits, with only 10% agreeing that organic methods protect biodiversity and 20% supporting pest/disease control and nutrient management. Increased awareness of environmental and health benefits associated with organic farming also plays a significant role in farmers' willingness to adopt organic practices [Li et al., 2024]. This stark contrast suggests conventional farmers may prioritize yield and efficiency over environmental concerns or lack knowledge about organic methods' ecological impacts.

*Mixed Views on Operational and Traditional Benefits:* Organic farmers moderately support statements about reduced production costs (48%), strengthened traditional knowledge (47%), simplified tea field practices (50%), and simplified access to agricultural inputs (50%). Most organic farmers believe in lower costs associated with organic practices, likely due to reduced reliance on synthetic inputs [Siddique et al., 2014]. These perceptions indicate confidence in organic methods as practical and culturally valuable, potentially due to their experience integrating traditional and modern practices. Conventional farmers are less convinced, with only 10% supporting cost reduction, 28% valuing traditional knowledge, and 20% agreeing on simplified practices or inputs. Conventional farmers believe organic practices simplify farming, suggesting a view that conventional methods are more efficient due to synthetic inputs [Siddique

et al., 2014]. This suggests they may view organic methods as more labour-intensive or resource-constrained compared to conventional approaches, which often rely on synthetic inputs for efficiency.

*Low Confidence in Yield Increases:* The statement “Increases yield” has the lowest support among organic farmers (16%), indicating skepticism about organic methods’ ability to match or exceed conventional yields. This may reflect challenges like slower soil fertility improvements or pest management without chemicals. Surprisingly, conventional farmers show slightly higher support (20%) for yield increases, possibly because they compare organic yields to their own without fully understanding organic constraints or because they assume organic methods could work in specific contexts. However, this remains the least supported statement overall, highlighting a common concern about productivity.

*Demand for Healthy Products:* Organic farmers (42%) are more likely than conventional farmers (30%) to agree that organic cultivation increases demand for healthy tea products. This difference likely stems from organic farmers’ direct engagement with health-conscious markets, while conventional farmers may have less exposure to these trends or doubt their scale.

Organic farmers demonstrate stronger confidence in the economic, environmental, and operational benefits of organic tea cultivation, particularly regarding price premiums, consumer benefits, and biodiversity protection. Conventional farmers acknowledge some economic advantages but are skeptical about environmental and cost-related benefits, likely due to their reliance on conventional methods. The low support for yield increases across both groups highlights a key challenge for organic adoption. These findings suggest that promoting organic tea cultivation requires addressing knowledge gaps, improving yield reliability, and ensuring market and resource support, particularly for conventional farmers considering a transition

### 3.4 Correlation Analysis

**Table 6.** Correlation analysis of independent variables

Independent Variable	Pearson Correlation	Sig.(2-tailed)	Relationship between Dependent and Independent Variables
Gender	- 0.080	0.428	Weak negative relationship
Age	0.134	0.184	Weak positive relationship
Education Level	0.025	0.807	Weak positive relationship
Family Size	-0.073	0.473	Weak negative relationship
Land Extent	- 0.284**	0.004	Moderate negative relationship
Experience in Tea Cultivation	0.035	0.730	Very weak positive relationship

Attitude on Organic tea Cultivation	0.221*	0.027	Moderate positive relationship
Farmers Knowledge about Organic tea Cultivation	0.322*	0.022	Moderate positive relationship
Higher profit	0.263**	0.008	Moderate positive relationship
Benefits from the certificate holders	0.021	0.834	Very weak positive relationship
Benefits from farmer organization	0.145	0.150	Weak positive relationship
Self-satisfaction	-0.041	0.687	Very weak negative relationship
Health and Environmental Benefits	0.221*	0.010	Moderate positive relationship

\*Correlation is significant at the 0.05 level (2-tailed).  
 \*\*Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation analysis revealed that the transformation from conventional to organic tea cultivation is significantly associated with several farm, economic, and perceptual factors. Land extent showed a moderate and significant negative relationship with organic conversion ( $r = -0.284$ ,  $p < 0.01$ ), indicating that farmers with larger landholdings are less likely to adopt organic practices. In contrast, farmers' attitudes towards organic tea cultivation ( $r = 0.221$ ,  $p < 0.05$ ), knowledge of organic farming practices ( $r = 0.322$ ,  $p < 0.05$ ), perceived higher profitability ( $r = 0.263$ ,  $p < 0.01$ ), and awareness of health and environmental benefits ( $r = 0.221$ ,  $p < 0.05$ ) exhibited moderate and significant positive relationships with organic transformation. Socio-demographic factors such as gender, age, education level, family size, and farming experience, as well as institutional and personal factors including benefits from certification, farmer organizations, and self-satisfaction, showed weak and statistically non-significant relationships.

### 3.5 Factors Affecting the Likelihood of Transformation of Farming System from Conventional to Organic

A binary logistic regression analysis was conducted to identify the factors affecting the likelihood of transforming the farming system from conventional to organic tea cultivation. The model summary indicates that the  $-2$  Log Likelihood value of the fitted model was 107.351, suggesting an acceptable model fit. The Cox and Snell  $R^2$  value of 0.269 indicates that approximately 26.9% of the variation in the likelihood of transformation is explained by the model, while the Nagelkerke  $R^2$  value of 0.358 suggests that about 35.8% of the variance in the dependent variable is accounted for by the selected explanatory variables. These values demonstrate a moderate explanatory power of the model.

The overall significance of the model was assessed using the Omnibus Test of Model Coefficients. The test results show that the model is statistically significant ( $\chi^2 = 31.278$ ,

df = 12, p = 0.002), indicating that the inclusion of the independent variables significantly improves the prediction of the transformation from conventional to organic farming compared to the intercept-only model. This confirms that at least one of the predictors makes a meaningful contribution to explaining the likelihood of organic adoption among tea farmers.

The goodness-of-fit of the model was further evaluated using the Hosmer and Lemeshow test. The test yielded a non-significant result ( $\chi^2 = 4.738$ , df = 8, p = 0.785), indicating no significant difference between the observed and predicted values of the dependent variable. This suggests that the logistic regression model fits the data well and is appropriate for interpreting the estimated coefficients of the explanatory variables.

**Table 7.** Binary logistic regression analysis results

Independent Variables	B	S.E.	Wald	Sig.
Gender	0.283	0.502	0.319	0.572
Age	0.051	0.029	3.034	0.082
Education Level	0.073	0.050	2.134	0.144
Family Size	- 0.181	0.194	0.875	0.350
Land Extent**	- 1.206	0.492	6.010	0.014
Experience in Tea Cultivation	-0.033	0.029	1.309	0.253
Attitude on Organic tea Cultivation*	0.030	0.034	0.798	0.027
Farmers Knowledge about Organic tea Cultivation*	-5.398	1.321	16.690	0.027
Higher profit*	1.341	0.517	6.729	0.009
Benefits from the certificate holders	0.020	0.524	0.002	0.969
Benefits from farmer organization	0.946	0.543	3.037	0.081
Self-satisfaction	0.270	0.578	0.218	0.641
Health and Environmental Benefits*	-1.079	0.579	3.479	0.010
Constant	-0.370	2.817	1.726	0.189

Table 7 presents the estimated logistic regression coefficients and corresponding test statistics for the variables included in the model. The constant term reflects the expected log-odds of transforming from conventional to organic farming when all explanatory variables are held at zero, indicating a baseline predicted probability of approximately 0.370 (Hosmer & Lemeshow, 2000).

Land extent exhibits a statistically significant negative influence on the likelihood of transforming to organic cultivation (B = -1.206, p = 0.014). This result implies that, holding other factors constant, an increase in land extent reduces the log-odds of adopting organic farming, suggesting that farmers with larger landholdings are less inclined to convert their farming systems.

In contrast, higher profit demonstrates a statistically significant positive effect on the transformation decision ( $B = 1.341, p = 0.009$ ). This indicates that farmers who perceive greater profitability from organic cultivation are more likely to shift from conventional practices, as the log-odds of adoption increase with higher profit expectations.

Attitudes toward organic tea practices also show a positive and statistically significant association with the likelihood of transformation ( $B = 0.030, p = 0.027$ ). This finding suggests that favorable perceptions and positive attitudes toward organic farming contribute to an increased probability of adopting organic tea cultivation.

Farmers’ knowledge of organic tea cultivation practices is found to have a statistically significant effect on the transformation decision ( $B = 5.398, p = 0.027$ ). The magnitude of this coefficient indicates that knowledge plays a substantial role in influencing farmers’ adoption behavior, highlighting the importance of awareness and technical understanding in facilitating the transition to organic farming systems.

**3.6 Comparison of Farmer Knowledge on Organic Tea Practices between Organic farmers and Conventional farmers**

The t-test results indicate statistically significant differences in farmers' knowledge regarding various aspects of organic cultivation practices. Knowledgeable farmers tend to have significantly higher mean scores than non-knowledgeable farmers across all aspects. The t-values are large, and all p-values are very small ( $p < 0.001$ ), indicating strong evidence of significant differences.

**Table 8.** Comparison of Farmer knowledge on Organic Tea Practices between Organic farmers and Conventional farmers

Farmers' Knowledge on Organic Cultivation Practices	t	Sig. (2-tailed)	Mean Difference
Organic cultivation protects soil fertility in the long run	114.812	0.000	4.780
Organic cultivation increases the demand for healthy tea products	102.048	0.000	4.700
Organic tea cultivation increases the prices of the end product	80.910	0.000	4.600
Organic tea cultivation protects biodiversity	87.640	0.000	4.670
Strengthens the traditional knowledge	99.824	0.000	4.680
Reduces the cost of production	56.589	0.000	4.020

The Table 8 represents the results of a comparison of farmer knowledge on organic tea cultivation practices between organic farmers and conventional farmers. The table included several statements related to organic tea cultivation practices, along with statistical information such as the mean difference and the significance level (p-value).

*Organic Cultivation Protects Soil Fertility in the Long Run.* Organic farmers have significantly higher knowledge and belief that organic cultivation practices protect soil fertility in the long run compared to conventional farmers. The results suggested (t value 114.812, mean difference value 4.780) that organic farmers are more aware of the benefits of organic practices for soil health, which is a fundamental aspect of sustainable agriculture. They likely understood the importance of avoiding synthetic pesticides and chemical fertilizers that can harm soil microorganisms and overall soil quality.

*Organic Cultivation Increases the Demand for Healthy Tea Products.* Organic farmers have significantly higher knowledge and believe that organic cultivation practices increase the demand for healthy tea products compared to conventional farmers. This result highlights that organic farmers perceive a stronger market demand for tea produced through organic methods. This may be due to the increasing consumer preference for organic and healthy products, as organic farming practices are often associated with reduced pesticide residues and environmentally friendly approaches.

*Organic Tea Cultivation Increases the Prices of End Products.* Organic farmers have significantly higher knowledge and believe that organic tea cultivation increases the prices of end products compared to conventional farmers. The result suggested that organic farmers recognize the potential economic benefits of organic tea cultivation. Organic products often command higher prices in the market due to their perceived quality, environmental benefits, and consumer willingness to pay more for organic products.

*Organic Tea Cultivation Protects Biodiversity.* Organic farmers have significantly higher knowledge and belief that organic tea cultivation practices protect biodiversity compared to conventional farmers. Organic farming methods typically involved fewer synthetic chemicals and promote practices that benefit biodiversity. Organic farmers are likely more informed about how their cultivation methods can help preserve local ecosystems and support wildlife.

*Strengthens Traditional Knowledge.* Organic farmers have significantly higher knowledge and belief that organic tea cultivation strengthens traditional knowledge compared to conventional farmers. The results indicated that organic farming practices may be seen as more aligned with traditional agricultural knowledge and practices. Organic methods often emphasize traditional, sustainable farming techniques, which can help preserve cultural and historical practices.

*Reduces the Cost of Production.* Organic farmers have significantly higher knowledge and belief that organic tea cultivation reduces the cost of production compared to conventional farmers. Contrary to a common misconception that organic farming is more expensive, this finding suggests that organic farmers are aware of potential cost-saving benefits associated with reduced chemical inputs and reliance on natural processes.

### 3.7 Mean Comparison of Attitude of Organic Farmers vs. Conventional Farmers

The t-tests indicate statistically significant differences in mean scores between respondents who agree and disagree with each statement related to organic tea cultivation. In all cases, the p-values are very small ( $p < 0.001$ ), suggesting strong evidence of significant differences.

**Table 9.** Mean comparison of attitude of organic farmers vs. conventional farmers

Attitudinal statement	t-value	Sig (2-tailed)	Mean Difference
Organic tea cultivation is kinder to the environment	89.766	0.000	4.510
It is not possible to control weeds, pests, and diseases without the use of chemicals	23.185	0.000	2.520
Organic tea cultivation is more profitable than conventional ones	55.844	0.000	4.200
Premiums on organic tea products are a strong incentive to convert	26.386	0.000	3.130
I am interested in organic tea cultivation because it is popular among local farmers	57.056	0.000	4.190
The organic standards are too restrictive to be practical	23.621	0.000	2.040
Changing to an organic system is an exciting new challenge	28.007	0.000	2.010

The table 9 represented compare the attitudes of organic farmers and conventional farmers towards various aspects of organic tea cultivation. The table included statements related to these attitudes, along with statistical information such as the mean difference and the significance level (p-value).

*Organic Tea Cultivation is Kinder to the Environment.* Organic farmers had a significantly more positive attitude towards the environmental benefits of organic tea cultivation compared to conventional farmers. According to t test, reflected that organic farmer are more likely to embrace the environmentally friendly aspects of their farming practices. Organic tea cultivation typically involves fewer synthetic chemicals and emphasizes practices that support soil health, reduce pollution, and conserve biodiversity, aligning with an environmentally conscious mindset.

*It is Not Possible to Control Weeds, Pests, and Diseases without the Use of Chemicals.* Conventional farmers have a significantly stronger belief that chemicals are necessary for controlling weeds, pests, and diseases compared to organic farmers. The results highlighted the fundamental difference in pest and disease management approaches between organic and conventional farming. Conventional farmers often rely on chemical pesticides, while organic farmers employ alternative methods such as biological controls and crop rotation to manage these challenges.

*Organic Tea Cultivation is More Profitable than Conventional Tea Cultivation.* Organic farmers have a significantly more positive perception of the profitability of organic tea cultivation compared to conventional farmers. The results suggested that organic farmers may have experienced or believe in the economic viability of organic tea farming. While organic farming can have higher upfront costs and may require transition periods, it can lead to higher profits due to premium prices and potentially lower input costs.

*Premiums on Organic Tea Products are a Strong Incentive to Convert.* Organic farmers are significantly more motivated by the prospect of premiums on organic tea products compared to conventional farmers. The results underscored the role of economic incentives in encouraging farmers to adopt organic practices. The prospect of higher prices for organic tea products is a compelling reason for farmers to consider transitioning to organic cultivation.

*I am Interested in Organic Tea Cultivation because it is Popular among Local Farmers.* Organic farmers express a significantly higher interest in organic tea cultivation due to its popularity among local farmers compared to conventional farmers. The results suggested that organic farming may have gained popularity within local farming communities, and organic farmers may be influenced by the practices and experiences of their peers.

*The Organic Standards are Too Restrictive to be Practical.* Conventional farmers are more likely to view organic standards as being too restrictive compared to organic farmers. The results reflected a common perception among conventional farmers that transitioning to organic farming involves adhering to stringent organic standards. However, it's worth noting that these standards are in place to ensure the integrity of organic products and the sustainability of farming practices.

*Changing to an Organic System is an Exciting New Challenge.* Organic farmers express a significantly higher level of excitement about the challenge of changing to an organic system compared to conventional farmers. The results suggested that organic farmers may be more motivated by the prospect of embracing a new and challenging approach to farming. The transition to organic farming often requires learning new techniques and practices, which can be viewed as an exciting opportunity for some.

In summary, the data showed clear differences in attitudes between organic and conventional farmers regarding various aspects of organic tea cultivation. These attitudes were influenced by factors such as environmental concerns, profitability perceptions,

economic incentives, and the challenges associated with transitioning to organic farming. Understanding these attitudes is crucial for promoting sustainable agriculture and encouraging farmers to adopt organic practices where appropriate

## 4 Conclusion

Organic tea production may play a vital role in the economy of the developing country in the long run. The conversion of a conventional farm into an organic tea farm needs at least three years. If a whole farm is not converted at one time, it may be done progressively from the start of conversion. There are sufficient opportunities to increase the area under organic tea farming. It depends on the appropriate conversion method of conventional farming into organic farming, the establishment of the national certification program and government support. The fertility and biological activity of the soil should be maintained or increased by the cultivation of legumes, green manuring or deep-rooting plants in an appropriate multi-annual rotation program.

Based on the model output, it is evident that the primary drivers behind the shift towards organic tea cultivation are the prospects of increased profitability and personal satisfaction. The analysis of significance levels strongly indicates that specific variables such as "Attitude towards Organic Tea Cultivation" and "Knowledge about Organic Cultivation" play a substantial and statistically significant role in influencing this transformation process

According to the findings from the descriptive analysis, a notable proportion of female farmers are actively engaged in organic tea cultivation, displaying both a high level of education and a strong awareness of organic farming practices.

The "organic" group, there are 24 males and 26 females, while in the "conventional" group; there are 28 males and 22 females. A significant portion of the sample falls within the age ranges of 50-59. The distribution indicates that a significant portion of the respondents completed education up to the secondary level, with a smaller proportion reaching the advanced A/L level.

The impact of organic tea cultivation extends positively across multiple dimensions, including heightened demand for health-oriented tea products, safeguarding biodiversity, reinforcing traditional wisdom, and mitigating nutrient deficiencies. This conclusion is drawn from the mean comparison analysis.

Furthermore, it is evident that organic farmers exhibit a notably more favorable disposition towards organic cultivation in contrast to their conventional farming

Based on the results of the mean comparison analysis, it is apparent that organic farmers hold a notably more favorable perspective on organic cultivation when juxtaposed with conventional farmers.

Furthermore, the correlation analysis table underscores significant relationships between several factors and the dependent variable. Specifically, the extent of land, attitude towards organic cultivation, and knowledge about organic practices emerge as notable predictors, substantiating their influence on the outcome variable.

**Disclosure of Interests.** The authors declare that they have no competing interests that are relevant to the content of this article.

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