

International Journal of Agriculture Extension and Social Development

Volume 9; Issue 2; February 2026; Page No. 422-425

Received: 20-11-2025
Accepted: 25-12-2025

Indexed Journal
Peer Reviewed Journal

An Analysis of Factors Influencing the Knowledge Level of Turmeric Farmers

¹Dhivya C, ²Arunkumar R, ³Balamurugan V and ⁴Thirumal A

¹Assistant Professor (Agricultural Extension), SRS Institute of Agriculture and Technology, Veda sandur, Dindigul, Tamil Nadu, India

²Assistant Professor (Agricultural Extension), RVS Agricultural College, Thanjavur, Tamil Nadu, India

³Senior Research Fellow, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India

⁴Research Scholar (Agricultural Extension), University of Agricultural Sciences, Bangalore, Karnataka, India

DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i2f.3134>

Corresponding Author: Dhivya C

Abstract

Turmeric (*Curcuma longa* L.), an important spice and medicinal crop, contributes significantly to the agricultural economy of Tamil Nadu. The present study was conducted in Kodumudi block of Erode district to examine the factors influencing the knowledge level of turmeric growers. An ex post facto research design was employed, and data were collected from 120 turmeric farmers selected through proportionate random sampling across six villages. A structured interview schedule was used to gather information on socio-personal, economic, and extension-related characteristics, as well as farmers' knowledge of recommended turmeric cultivation practices. The data were analyzed using correlation and multiple regression techniques to identify the strength and significance of relationships between independent variables and knowledge level. Correlation analysis revealed that age, educational status, social participation, mass media exposure, and risk orientation were positively and significantly associated with knowledge, with social participation showing the highest association. Multiple regression analysis confirmed that the same five variables significantly influenced knowledge, with risk orientation being the most influential factor. The regression model was significant ($F = 7.849$, $p < 0.01$) and explained 51.4% of the variation ($R^2 = 0.514$) in knowledge level. Other variables, including farm size, occupational status, farming experience, extension contact, innovativeness, scientific orientation, economic motivation, and training exposure, were non-significant. The study highlights that personal, social, and psychological characteristics are more important than farm or economic factors in determining turmeric growers' knowledge. The findings suggest that extension interventions should focus on enhancing education, promoting social participation, improving access to mass media, and fostering proactive and risk-taking attitudes to strengthen farmers' knowledge and support effective cultivation practices.

Keywords: Turmeric farmers, Knowledge level, Correlation and Regression Analysis

1. Introduction

Turmeric (*Curcuma longa* L.) is an important spice crop belonging to the family Zingiberaceae and is widely cultivated in tropical and subtropical regions of the world (Kaliyadasa and Samarasinghe, 2019) ^[1]. It is valued for its use as a spice, natural coloring agent, and medicinal ingredient due to the presence of curcumin, which exhibits antioxidant, anti-inflammatory, and antimicrobial properties (Verma *et al.*, 2018) ^[2]. At the global level, turmeric is cultivated in several countries including India, China, Myanmar, Bangladesh, Indonesia, Sri Lanka and Thailand (Adhimoolam *et al.*, 2025) ^[3].

Global production of turmeric is estimated to exceed 1.1 million tonnes annually, with increasing demand driven by growing awareness of its health benefits and expanding use in functional foods and herbal medicines (Nguyen *et al.*, 2024) ^[4]. India occupies a dominant position in the global turmeric scenario, accounting for nearly 75-80 per cent of the world's production and consumption (Turmeric Outlook, 2025) ^[5]. Turmeric is cultivated across various states such as

Telangana, Andhra Pradesh, Tamil Nadu, Maharashtra, Odisha, Karnataka, and West Bengal. The crop supports millions of small and marginal farmers and contributes substantially to export earnings.

Within India, Tamil Nadu is one of the major turmeric-producing states, and Erode district holds a prominent place in both cultivation and trade (Dhivya *et al.*, 2024) ^[6]. Erode is widely known for its high-quality turmeric, popularly referred to as Erode Turmeric, which has received Geographical Indication (GI) status due to its superior curcumin content and unique quality attributes. The district hosts one of the largest turmeric markets in South India and serves as a major center for domestic marketing and export. Despite its commercial importance, the productivity and profitability of turmeric in Erode district are strongly influenced by the farmer's knowledge of recommended turmeric cultivation practices. Factors such as educational attainment, farming experience, extension contact, training exposure and access to information sources significantly influence the knowledge level of farmers. A systematic

examination of these factors using appropriate statistical tools, particularly correlation and regression analysis, is essential to understand their relative contribution to farmers' knowledge. Therefore, the objective of the study is to analyze the factors influencing the knowledge level of turmeric growers in Erode district.

2. Research Methodology

2.1. Research Design and Locale of the Study

The study adopted an ex-post facto research design, as the variables under investigation had already occurred and were beyond the control of the researcher (Rohwer, 2022) [7]. The research was conducted in Erode district of Tamil Nadu, with Kodumudi block purposively selected due to its prominence in turmeric cultivation and the presence of a substantial number of turmeric growers.

2.2. Sampling Procedure

From Kodumudi block, six villages namely Unjalur, Kollathupalayam, Punjai Kollanali, Kodumudi and Vengampur were selected for the study based on the concentration of turmeric-growing farmers. A total of 120 turmeric growers were selected using proportionate random sampling. The sampling ensuring fair representation of respondents from each village and minimizing sampling

bias (Kothari, 2004) [8].

2.3. Data Collection

Data were collected through a structured interview schedule developed specifically for the study. The interview schedule was pre-tested to ensure clarity, validity and reliability of the items and was personally administered to the respondents, which helped in obtaining accurate and complete information.

2.4. Statistical Analysis

The collected data were coded, tabulated and analyzed using appropriate statistical tools. Correlation analysis was employed to determine the relationship between independent variables and the knowledge level of turmeric growers. Multiple regression analysis was used to assess the combined and individual contribution of the independent variables.

3. Results and Discussion

3.1. Correlation Analysis

Correlation analysis was conducted to examine the nature and strength of the relationship between selected independent variables and the knowledge level of turmeric growers.

Table 1: Correlation Analysis between the profile characteristics of turmeric farmers and their knowledge level

Variable No.	Independent variable	Correlation coefficient 'r' value
X ₁	Age	0.198*
X ₂	Educational status	0.191*
X ₃	Occupational status	-0.135 ^{NS}
X ₄	Farm size	-0.020 ^{NS}
X ₅	Farming experience	0.086 ^{NS}
X ₆	Social participation	0.265**
X ₇	Extension agency contact	-0.144 ^{NS}
X ₈	Mass media exposure	0.197*
X ₉	Information seeking behaviour	-0.027 ^{NS}
X ₁₀	Innovativeness	-0.015 ^{NS}
X ₁₁	Risk orientation	0.244*
X ₁₂	Scientific orientation	0.016 ^{NS}
X ₁₃	Economic motivation	-0.071 ^{NS}
X ₁₄	Training programme undergone	0.168 ^{NS}

** - Significant at 1 per cent level

* - Significant at 5 per cent level

NS -Non-Significant

The results presented in Table 1 and Fig. 1 indicate that out of the fourteen variables studied, five variables, namely age (X₁), educational status (X₂), social participation (X₆), mass media exposure (X₈) and risk orientation (X₁₁), exhibited a positive and significant relationship with the knowledge level of the respondents.

Among these, social participation (X₆) was found to be highly significant at the one per cent level of probability. The remaining significant variables age (X₁), educational status (X₂), mass media exposure (X₈) and risk orientation (X₁₁) were significant at the five per cent level of probability. All other variables included in the study did not show a significant relationship with the knowledge level of turmeric growers.

Social participation (X₆) exhibited a positive and significant relationship with knowledge level ($r = 0.265$). Higher involvement in social organizations and group activities

provides farmers with greater opportunities for interaction and exchange of agricultural information, which may have facilitated the acquisition of knowledge on recommended turmeric production technologies. This finding is in agreement with the results reported by earlier studies (Shanthya and Premavathi, 2018) [10]

Age (X₁) exhibited a positive and significant relationship with the knowledge level ($r = 0.198$) of turmeric growers at the five per cent level of probability. This may be attributed to the fact that older farmers, owing to their longer experience in turmeric cultivation, had acquired greater knowledge of recommended cultivation practices.

Educational status (X₂) was positively and significantly correlated with knowledge level ($r = 0.191$), indicating that educated farmers were better able to gain and update their knowledge on turmeric cultivation practices. This may be attributed to their greater ability to comprehend technical

information and effectively utilize various sources of agricultural knowledge. Higher educational attainment also enhances farmers' capacity to interpret extension messages and scientific recommendations related to turmeric cultivation (Shashank *et al.*, 2017) ^[9].

Mass media exposure (X_8) exhibited a positive and significant relationship with the knowledge level ($r = 0.244$) of turmeric growers. This indicates that access to mass media channels such as farm broadcasts and telecasts, agricultural magazines, farm pages in newspapers, radio, television, and mobile-based platforms had a direct influence on enhancing farmers' knowledge of recommended turmeric cultivation technologies. Regular exposure to these information sources enables farmers to receive timely and diverse technical information, thereby improving their awareness and understanding of improved production practices (Prashanth and Jahanara, 2018) ^[11].

Risk orientation (X_{11}) exhibited a positive and highly significant relationship with the knowledge level ($r = 0.244$) of the respondents. Acquiring information on improved technologies from various sources often involves a certain degree of risk and therefore, farmers with higher risk orientation tend to actively seek information and possess greater knowledge of recommended turmeric production technologies.

Variables such as occupational status, farm size, farming experience, extension agency contact, information-seeking behaviour, innovativeness, scientific orientation, economic motivation and training programme undergone were found to have non-significant relationships with the knowledge level of turmeric growers. The non-significant relationship of extension agency contact and training exposure may be attributed to limited frequency, content relevance or effectiveness of extension activities in the study area.

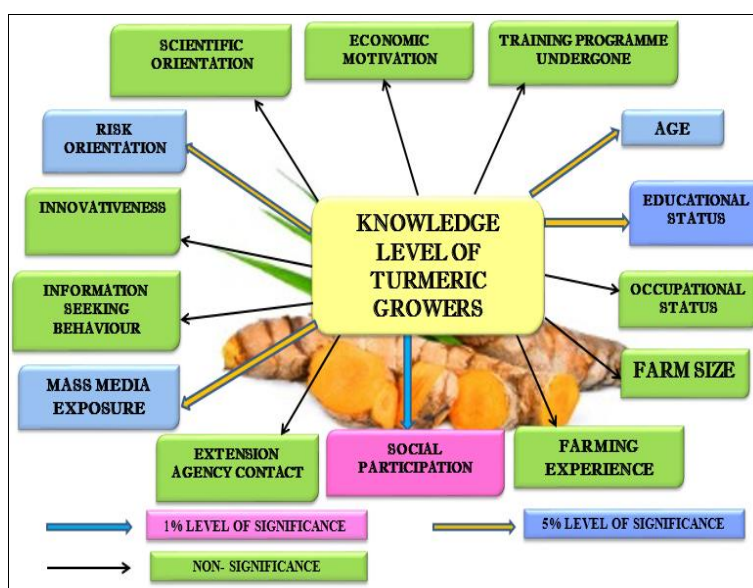


Fig 1: Empirical Model representing the relationship between profile characteristics of turmeric farmers and their knowledge level

3.2. Regression Analysis: Multiple regression analysis was carried out to determine the combined and individual

contribution of selected independent variables to the knowledge level of turmeric growers.

Table 2: Regression Analysis between the profile characteristics of turmeric farmers and their knowledge level

S. No	Variables	Regression co-efficient	Standard error	't' value
X ₁	Age	1.450	0.700	2.072*
X ₂	Educational status	0.162	0.085	1.916*
X ₃	Occupational status	-0.053	0.085	-0.549NS
X ₄	Farm size	0.275	0.038	-1.009NS
X ₅	Farming experience	0.013	0.080	0.158NS
X ₆	Social participation	0.900	0.490	1.836*
X ₇	Extension agency contact	-0.146	0.132	-1.723NS
X ₈	Mass media exposure	0.466	0.235	1.976*
X ₉	Information seeking behaviour	0.071	1.092	0.761NS
X ₁₀	Innovativeness	0.047	0.033	0.423NS
X ₁₁	Risk orientation	2.100	0.800	2.626**
X ₁₂	Scientific orientation	-0.192	0.016	-1.947NS
X ₁₃	Economic motivation	-0.045	0.337	-0.526NS
X ₁₄	Training programmes undergone	-0.192	0.015	-1.947NS

$R^2 = 0.514$ $F = 7.849^{**}$

** - Significant at 1 per cent level

* - Significant at 5 per cent level

NS - Non-Significant

From the Table 2, the regression model was found to be significant ($F = 7.849$, $p < 0.01$), and the coefficient of determination ($R^2 = 0.514$) indicated that about 51.4% of the variation in knowledge level could be explained by the independent variables included in the study.

Among the fourteen variables studied, age (X_1) ($\beta = 1.450$; $t = 2.072$), educational status (X_2) ($\beta = 0.162$; $t = 1.916$), social participation (X_6) ($\beta = 0.900$; $t = 1.836$), mass media exposure (X_8) ($\beta = 0.466$; $t = 1.976$), and risk orientation (X_{11}) ($\beta = 2.100$; $t = 2.626$) had a positive and significant influence on the knowledge level of turmeric growers.

Risk orientation was the most influential factor, showing high significance at the one per cent level, while the other four variables were significant at the five per cent level of probability. All other variables were found to be non-significant.

The findings suggest that personal, social and psychological characteristics play a more decisive role in shaping the knowledge level of turmeric growers than farm or economic factors. Age (X_1) and educational status (X_2) indicate that both experience and formal education help farmers understand, retain, and interpret technical information related to turmeric cultivation. Social participation (X_6) highlights the importance of group interactions, community involvement, and peer learning in knowledge acquisition, as farmers engaged in social networks have greater opportunities to exchange information and discuss improved practices.

Similarly, mass media exposure (X_8) emphasizes the role of information dissemination through radio, television, newspapers and mobile-based platforms in keeping farmers informed about recommended cultivation techniques. Risk orientation (X_{11}) being the most influential factor, suggests that farmers willing to take calculated risks are more likely to explore new practices, seek out information and adopt innovative ideas, which enhances their knowledge levels (Chigadolli *et al.*, 2020) [12].

The remaining variables namely occupational status, farm size, farming experience, extension agency contact, information-seeking behaviour, innovativeness, scientific orientation, economic motivation and training programme undergone did not show a significant influence on knowledge level, suggesting that these factors contributed minimally to variations in the respondents' knowledge.

Conclusion

The study revealed that the knowledge level of turmeric growers in Erode district is significantly influenced by certain personal, social, and psychological factors. Among the fourteen variables studied, age, educational status, social participation, mass media exposure and risk orientation emerged as significant determinants of knowledge, with risk orientation being the most influential factor. The findings highlight that farmer's knowledge is shaped more by socio-personal traits and access to information than by farm or economic characteristics. These results suggest that extension interventions should focus on enhancing educational opportunities, promoting social participation, improving access to mass media and information channels, and encouraging proactive and risk-taking attitudes among farmers to effectively improve their knowledge of recommended turmeric cultivation practices.

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