Factors Influencing Crop Diversification in Chitradurga district of Karnataka

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ABSTRACT
The study aimed to assess the relationship between selected profile characteristics of farmers and their level of crop diversification. Data were collected and analyzed using correlation analysis to determine the strength and direction of association between various socio-economic, psychological, and communication variables and crop diversification. The results revealed that variables such as family size, land holding, distance to market, innovative proneness, risk orientation, economic motivation, training, and extension contact showed a significant positive correlation with crop diversification at the 0.001 level. These findings suggest that farmers who possess better access to resources, market proximity, and greater exposure to training and extension services are more likely to adopt diverse cropping systems. On the other hand, characteristics such as age, education, farming experience, income, credit orientation, decision-making ability, and social participation were found to have no significant association with crop diversification. The study highlights the importance of capacity building, market access, and extension support in promoting crop diversification among farmers.
Keywords: Crop Diversification, Annual income, Decision making ability , Social participation

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INTRODUCTION

Agriculture plays a central role in shaping the livelihood of farmers, particularly in a country like India where a majority of the rural population depends on farming for income, employment, and food security. It serves not only as a means of sustenance but also as the foundation for rural economic activity and social well-being (Ashfaq, et al. 2008). In India, small farm sizes characterize agriculture. The average farm size is about 1.57 ha. About 93 per cent of the farmers have farm size smaller than 4 ha. and contribute about 55 per cent of total cultivable land. Only 1.6 per cent of farmers having farm size of more than 10 ha and they contribute about 17.4 per cent of total cultivable land (Mohammed & Nazreen, 2020). After Green revolution, continuous rush for diversified agriculture in terms of crops, Indian agriculture shifted towards non-cereal crops in order to increase the income and agricultural sustainability to reduces the risk to farmer from total crop failure by providing alternative means of income through other crops grown. It also helps in conservation of natural resources.

Crop diversification refers to the practice of cultivating a variety of crops on a farm to improve productivity, income, and sustainability. In India, where agriculture is a primary livelihood for more than half of the population, crop diversification plays a pivotal role in enhancing farm resilience, optimizing resource use, and ensuring food and nutritional security. One of the key benefits of crop diversification is risk reduction. By growing multiple crops instead of relying on a single one, farmers can mitigate the adverse effects of unpredictable weather conditions, pest infestations, and market price fluctuations. This is particularly important in rainfed regions and climate-sensitive areas like parts of Karnataka, where mono-cropping increases vulnerability to crop failure. Crop diversification also contributes to soil health and fertility. The inclusion of legumes, oilseeds, and green manures in crop rotations helps in nitrogen fixation, pest and disease control, and reduction of chemical input dependency. This leads to sustainable farming practices and better yields over time (Lawin, K. & Tamini, 2017 and Mithiya, Mandal, & Datta, 2018).

In the Indian context, diversification towards high-value crops such as fruits, vegetables, spices, medicinal plants, and plantation crops has opened up opportunities for higher income and employment generation (Kasem and Thapa, 2011). It supports allied sectors like agro-processing, marketing, and rural entrepreneurship, particularly when backed by Farmer Producer Organizations (FPOs), cooperatives, and rural value chains. In this paper an attempt was made to study the factors influencing crop diversification in **Chitradurga district of Karnataka.**

MATERIAL AND METHODS
The study was conducted in chitradurga district of Karnataka in 2023, based on the primary data collected among the selected respondents. A sample size of 150 farmers was fixed as respondents. The 150 respondents were identified from the selected ten villages from three taluks by applying proportionate random sampling method. A list of 15 independent variables that could possibly influence the crop diversification was prepared. The variables were Age (X_1), Educational status (X_2), Family size (X_3), land holding (X_4) Farming experience (X_5), Annual income (X_6), Distance to market (X_7), Innovative proneness (X_8), Risk orientation (X_9), Credit orientation(X_{10}), Economic motivation (X_{11}), Decision making ability (X_{12}), Training (X_{13}), extension contact (X_{14}), Social participation (X_{15}) (Birthal et al, 2005).
To find out the degree of relationship between the variables and crop diversification Pearson's product moment correlation co-efficient was calculated. It was calculated by using the following formula.

$$ r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sqrt{(\sum x^2 - \frac{(\sum x)^2}{n}) \times (\sum y^2 - \frac{(\sum y)^2}{n})}} $$

Where,

N = Sample size
$\sum xy - \frac{(\sum x)(\sum y)}{n}$ = Sum of product of x and y
$(\sum x^2 - \frac{(\sum x)^2}{n})$ = Sum of square of x
$(\sum y^2 - \frac{(\sum y)^2}{n})$ = Sum of square of y
The 't' test of significance was used to test the significance of the 'r' value, using the formula
$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \sim t_{(n-2)} \, df$
Where,
n- Sample size
r - Correlation co-efficient value

RESULTS AND DISCUSSION
Correlation analysis was performed to find out the association of independent variables with crop diversification. The results are presented in the table 1
It could be seen from the table, where the correlation value of the variables, family size(X_3), land holding (X_4), Innovative proneness (X_8), Risk orientation(X_9) economic motivation (X_{11}), Training (X_{13}), Extension contact (X_{14}) and Distance to market (X_7) positive and significant association with crop diversification at one per cent level of probability.
The rest of the variables age (X_1), educational status (X_2), farming experience (X_5), annual income (X_6), social participation (X_{15}), decision making (X_{12}), credit orientation (X_{10}), showed non-significant association with crop diversification**.**
The result might be due to the fact that the, majority of the farmers visit nearby town for their personal work and to get agricultural, horticultural and other information like market price, new verities from extension personnel of various developmental department like Krishi Vigyana Kendra, Non-governmental organisations (NGO) and Agriculture produce market committee (APMC), etc., farmers are showing interest towards extension programmes like Krishimela, training programmes in order to learn and adopt new technique in their own farm conditions. Most of the farmers were enthusiastic to learn innovative techniques in different crop cultivation by their neighbour farmers and other nearby agencies. Taking risk in order to cultivate various crops, this might have contributed to improvement in crop diversification among the farmers (Basavaraj, et al. 2016, Benin et al, 2004).

Table 1. Association of Profile Characteristics with Crop Diversification

S. No	Characteristics	Coefficient of correlation (r)
1	Age	0.081[NS]
2	Educational status	0.040[NS]
3	Family size	0.649**
4	Land holding	0.333**
5	Farming experience	-0.073[NS]
6	Annual income	-0.044[NS]
7	Distance to market	0.346**
8	Innovative proneness	0.315**
9	Risk orientation	0.385**
10	Credit orientation	0.066[NS]
11	Economic Motivation	0.319**
12	Decision making ability	0.117[NS]
13	Training	0.438**
14	Extension contact	0.632**
15	Social participation	0.023[NS]

*Significant at 0.005 level   **Significant at 0.001 level   NS - Non significant

CONCLUSION

The study reveals that crop diversification is significantly influenced by factors like family size, land holding, market access, risk-taking ability, economic motivation, and innovation, training, and **extension services.** However, basic demographic variables such as age, education, and income do not appear to have a direct association**.** This suggests that behavioural and situational factors (like motivation, training, and external support) are more critical drivers of crop diversification than mere socio-economic background.

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