

ASSESSMENT OF CROP SHIFTING IN CHHOTAUDEPUR DISTRICT

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ABSTRACT

*Agricultural production in tribal regions is increasingly influenced by climatic variability, resource constraints and changing market conditions, leading farmers to modify their cropping patterns to improve profitability and reduce production risks. The present study was undertaken to assess the extent of crop shifting among farmers and to examine the relationship between selected socio-economic, communication and psychological characteristics of farmers and their crop shifting behaviour in Chhotaudepur district of Gujarat. An ex-post-facto research design was employed for the study. Out of seven talukas of the district, Sankheda and Bodeli talukas were selected randomly. A total of 120 farmers were selected through random sampling techniques. Primary data were collected through personal interviews using a structured and pre-tested interview schedule. The extent of crop shifting was measured using the Crop Shifting Index (CSI), which quantified changes in area allocation under different crops between the base year (2022) and the current year (2026). The collected data were coded, classified and analysed using Statistical Package for Social Sciences (SPSS). Frequency, percentage and Pearson's correlation coefficient were employed for data analysis. The findings revealed that 48.34 per cent of the respondents belonged to the moderate crop shifting category, followed by 42.50 per cent in the low crop shifting category and 5.83 per cent in the high crop shifting category. A substantial increase in the area under pigeon pea cultivation was observed from 2.66 per cent in 2022 to 51.25 per cent in 2026, whereas the area under maize declined from 22.90 per cent to 14.21 per cent during the same period. Correlation analysis indicated that landholding ($r = 0.754^{**}$), annual income ($r = 0.366^{**}$) and market orientation ($r = 0.260^{**}$) had a positive and highly significant relationship with crop shifting. Farming experience ($r = 0.228^{*}$), mass media exposure ($r = 0.211^{*}$), innovativeness ($r = 0.221^{*}$) and adaptation to climate change ($r = 0.201^{*}$) exhibited a positive and significant relationship with crop shifting behaviour. The study highlights the importance of economic resources, market access and information exposure in influencing crop shifting decisions among farmers.*

Keywords: crop shifting, cropping pattern, pigeon pea, climate adaptation

INTRODUCTION

Agriculture plays a vital role in the socio-economic development of rural India and serves as the primary source of livelihood for a majority of farming households. However, changing climatic conditions, water scarcity, fluctuating market prices and increasing production costs have compelled farmers to modify their cropping patterns. Crop shifting, which refers to the replacement of one crop by another over time, has emerged as an important adaptation strategy adopted by farmers to improve profitability and reduce production risks (Hazra, 2001).

Crop diversification and changes in cropping patterns have received considerable attention in agricultural research because of their potential to enhance farm income, reduce production risks and improve resource-use efficiency. Previous studies have indicated that diversification decisions

are influenced by market opportunities, infrastructure availability, profitability and resource endowments (Kumar & Mittal, 2003). Diversification towards high-value crops has also been identified as an important source of agricultural growth and income enhancement in India (Minot, Joshi & Birthal, 2006).

Chhotaudepur district of Gujarat is a predominantly tribal region where agriculture is highly dependent on climatic conditions and available natural resources. Farmers frequently alter their crop choices in response to changing environmental and economic situations. Understanding the extent of crop shifting and the factors influencing such changes is important for developing suitable agricultural policies and extension interventions.

Research gap

Although several studies have examined crop

diversification in India, limited empirical evidence is available regarding crop shifting behaviour among tribal farmers of Chhotaudepur district and the socio-economic factors influencing their crop selection decisions.

Future scope

The findings of the study may assist policymakers and extension agencies in designing location-specific strategies for sustainable crop planning and climate-resilient agriculture. Future studies may focus on the long-term economic and environmental impacts of crop shifting in tribal regions.

OBJECTIVES

- (1) To identify the extent of crop shifting among the farmers
- (2) To ascertain the relationship between selected characteristics of farmers and their extent of crop shifting

MATERIALS AND METHODOLOGY

The present study was conducted in Chhotaudepur district of Gujarat State. The district was selected because agriculture is the primary occupation of the tribal population and considerable changes in cropping patterns have been observed in recent years due to climatic, economic and market-related factors. Therefore, the district was considered appropriate for studying crop shifting behaviour among farmers.

An *ex-post-facto* research design was employed for the study, as the phenomenon under investigation had already occurred and the researcher had no control over the independent variables. Chhotaudepur district comprises seven talukas, out of these, Sankheda and Bodeli talukas were selected randomly for the study.

The target population consisted of farmers engaged in crop cultivation in the selected talukas. A total of 120 respondents were selected through random sampling techniques and constituted the sample for the study.

Primary data were collected through personal interviews using a structured and pre-tested interview schedule. Prior to the final survey, the interview schedule was pre-tested to ensure clarity, relevance and suitability of the questions. The respondents were personally contacted and information related to their socio-economic, communication, psychological and farming characteristics was collected.

The extent of crop shifting was considered as the dependent variable. The selected independent variables included age, education, family size, farming experience, landholding, annual income, animal possession, social participation, mass media exposure, extension participation, achievement motivation, innovativeness, scientific orientation, market orientation and adaptation to climate change.

The extent of crop shifting was measured using the Crop Shifting Index (CSI), which quantifies the magnitude of change in area allocation under crops between the base year (2022) and the current year (2026). Based on the obtained CSI scores, the respondents were categorized into different levels of crop shifting.

$$CSI = \frac{A_{it} - A_{i(t-1)}}{2}$$

Where,

CSI= Crop Shifting Index

A_{it} = Area under i^{th} Crop in current year

$A_{i(t-1)}$ = Area under i^{th} crop in the previous year

RESULTS AND DISCUSSION

Extent of crop shifting among farmers

A. Season-wise crop shifting

The extent of crop shifting was analyzed on both seasonal and overall basis. The results are presented in Table 1.

Table 1: Season-wise distribution of respondents according to crop Shifting

(n = 120)

Sr. No.	Level of shifting	Season					
		Kharif	%	Rabi	%	Summer	%
1	No shifting (0)	26	21.67	13	10.83	50	41.67
2	Low shifting (0.1 to 10.00)	76	63.33	91	75.83	68	56.67
3	Moderate shifting (10.01 to 30.00)	18	15.00	16	13.34	02	01.66
4	High shifting (Above 30.00)	00	00.00	00	00.00	00	00.00

The data reveal that the majority of respondents exhibited low crop shifting during Rabi (75.83%), Kharif (63.33%) and Summer (56.67%) seasons. No respondent reported a high level of crop shifting in any season. This indicates that seasonal changes in cropping patterns were generally gradual and limited.

B. Overall crop shifting

The findings indicate that nearly half of the respondents (48.34%) belonged to the moderate crop shifting category, followed by low crop shifting (42.50%). Only 05.83 per cent of the respondents exhibited high crop shifting. This suggests that farmers in the study area are gradually changing their cropping patterns in response to prevailing economic and environmental conditions.

Table 2: Distribution of respondents according to overall crop shifting (n = 120)

Sr. No.	Level of shifting	Frequency	Per cent
1	No shifting (0)	04	03.33
2	Low shifting (0.1 to 10.00)	51	42.50
3	Moderate shifting (10.01 to 30.00)	58	48.34
4	High shifting (Above 30.00)	07	05.83

To understand the nature of crop shifting, the percentage change in gross cropped area under major crops was examined.

Table 3: Per cent change in gross cropped area (bigha per farmer) under crop shifting in the study area (n = 120)

Sr. No.	Crop	% Area under crops (2022)	% Area under crops (2026)
1	Pigeon Pea	02.66	51.25
2	Maize	22.90	14.21
3	Other crops	74.44	34.54
Gross Cropped Area		100 (07.71)	100 (07.18)

The results clearly indicate a remarkable increase in the area under pigeon pea cultivation from 02.66 per cent in 2022 to 51.25 per cent in 2026. In contrast, the area under maize declined from 22.90 per cent to 14.21 per cent, while the area under other crops also decreased substantially. The observed shift towards pigeon pea cultivation may be

attributed to its higher profitability, lower water requirement and better market opportunities

2. Relationship between selected characteristics and extent of crop shifting

The relationship between selected characteristics of farmers and the extent of crop shifting was analyzed using correlation coefficient and presented in Table 4.

The findings revealed that land holding ($r = 0.754^{**}$), annual income ($r = 0.366^{**}$) and market orientation ($r = 0.260^{**}$) had a positive and highly significant relationship with the extent of crop shifting. Farmers possessing larger landholdings, higher income and better market orientation were more likely to adopt crop shifting practices.

Table 4: Relationship between the selected characteristics of the farmers and extent of crop shifting (n = 120)

Sr. No.	Independent variable	Coefficient of correlation (r)
X ₁	Age	0.037
X ₂	Education	0.008
X ₃	Family size	0.047
X ₄	Farming experience	0.228*
X ₅	Land holding	0.754**
X ₆	Annual income	0.366**
X ₇	Animal possession	-0.026
X ₈	Social participation	0.175
X ₉	Mass media exposure	0.211*
X ₁₀	Extension participation	0.142
X ₁₁	Achievement motivation	0.145
X ₁₂	Innovativeness	0.221*
X ₁₃	Scientific orientation	0.167
X ₁₄	Market orientation	0.260**
X ₁₅	Adaptation to climate change	0.201*

*Significant at 5% level **Significant at 1% level

Further, farming experience ($r = 0.228^*$), mass media exposure ($r = 0.211^*$), innovativeness ($r = 0.221^*$) and adaptation to climate change ($r = 0.201^*$) showed a positive and significant relationship with crop shifting. These results suggest that experienced and innovative farmers with better access to information and adaptive capacity are more willing to modify their cropping patterns.

On the other hand, age, education, family size, social participation, extension participation, achievement motivation and scientific orientation exhibited non-significant relationships with crop shifting. Animal possession showed a

negative and non-significant relationship.

CONCLUSION

The study concluded that the majority of farmers in Chhotaudepur district exhibited a moderate level of crop shifting. A substantial shift from maize and other traditional crops towards pigeon pea cultivation was observed during the study period. The relationship analysis revealed that landholding, annual income and market orientation were the most influential factors affecting crop shifting behaviour. The findings emphasize the importance of economic strength, market access and information exposure in promoting crop shifting among farmers. Strengthening extension services, market linkages and climate adaptation measures may further support sustainable crop diversification in the region.

IMPLICATIONS

Based on the findings of the study, the following implications can be drawn:

- (1) The significant influence of socio-economic and communication characteristics on crop shifting indicates the need for strengthening extension education, training programmes and information dissemination systems to support informed decision-making among farmers.
- (2) The observed shift towards profitable and less water-intensive crops highlights the importance of promoting climate-resilient and market-oriented cropping systems through appropriate policy support, institutional assistance and technological interventions.
- (3) Strengthening market linkages, input supply systems and financial support mechanisms can facilitate sustainable crop shifting, enhance farmers' adaptive capacity and improve livelihood security in tribal farming communities.

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CONFLICT OF INTEREST

This is to declared that there is "No conflict of interest" among researcher.

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