

RELATIONSHIP BETWEEN PROFILE OF THE FARMERS OF *BHAL* REGION AND THEIR ADOPTION OF PROBLEMATIC SOIL RECLAMATION PRACTICES

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ABSTRACT

This study investigates the relationship between the profile of farmers of Bhal region and their adoption of problematic soil reclamation practices. Using a simple random sampling method, data were collected from 160 farmers across selected talukas in Ahmedabad and Botad districts. The research employed an ex-post-facto design to analyze the impact of various factors on adoption practices. The results indicate that the majority of respondents were older, had primary education and possessed 11 to 20 years of farming experience. They belonged to joint families, held medium-sized land holdings and reported poor irrigation facilities. Extension participation was very low, while social media exposure was moderate. Respondents exhibited high scientific orientation, average knowledge of soil reclamation practices and a highly favorable attitude towards Soil Health Card (SHC). Additionally, high levels of risk orientation and innovation proneness were observed. Of the sixteen independent variables analyzed, only irrigation facility/status, extension participation, scientific orientation, knowledge about soil reclamation practices and risk orientation had a positive and significant influence on the adoption of reclamation practices. Conversely, all other variables did not significantly impact adoption. These findings provide valuable insights for designing targeted interventions to enhance the adoption of soil reclamation practices among farmers in the Bhal region.

Keywords: adoption, soil reclamation practices, profile, soil health card, innovation proneness

INTRODUCTION

Soil health is critical for sustaining agricultural productivity, especially in regions affected by problematic soil conditions such as salinity and alkalinity. The *Bhal* region of Gujarat, characterized by its salt-affected soils, presents a unique challenge for farmers striving to enhance soil fertility and crop yield. The adoption of soil reclamation practices is crucial for mitigating soil degradation and improving agricultural output. However, the effectiveness of these practices often depends on various factors including the socio-economic profile and personal characteristics of the farmers.

Understanding the relationship between the profile of farmers and their adoption of problematic soil reclamation practices can provide valuable insights into the factors influencing soil management decisions. This research investigates how different aspects of farmers profile including their age, education, farming experience, family structure, social participation, and economic conditions affect their adoption of soil reclamation practices.

Previous studies have highlighted that the adoption of agricultural innovations and practices is influenced by a range of variables such as knowledge, scientific orientation,

and risk orientation. However, specific regional studies focusing on the *Bhal* region's unique soil issues and farmers profile remain limited. By examining the profile of farmers in the *Bhal* region and their adoption patterns, this study aims to fill this gap and offer targeted recommendations for enhancing soil reclamation efforts.

OBJECTIVES

- (1) To study the profile of the farmers of *Bhal* region
- (2) To explore the relationship between profile of the farmers and their adoption of problematic soil reclamation practices

METHODOLOGY

The study was conducted in the *Bhal* region of middle Gujarat, targeting the Ahmedabad and Botad districts due to their prevalent salt-affected soils and lack of prior research on soil reclamation practices. An *ex-post-facto* research design (Kerlinger, 1976) and multistage sampling technique were employed for the study. Three talukas from Ahmedabad (Dholka, Dhandhuka, Dholera) and one from Botad (Barvala) were purposively chosen, and from these, sixteen villages were selected. Ten farmers from each village were randomly selected, resulting in a sample size of 160 farmers. Data were collected through personal interviews

using a specially designed and pre-tested interview schedule, initially prepared in English and then translated into Gujarati. The schedule was refined based on pre-testing with 20 non-sampled respondents. The study measured sixteen independent variables, including age, education, farming experience, type of family, social participation, land holdings, annual income, herd size, irrigation facility/status, extension participation, social media exposure, scientific orientation, knowledge about soil reclamation practices, attitude towards soil health cards, risk orientation and innovation proneness. The aim was to provide feedback to local agricultural organizations, with tool development and validation guided by scientists from Anand Agricultural University, ensuring reliable and valid data collection.

RESULTS AND DISCUSSION

Personal characteristics

The personal characteristics of the respondents

play an important role in the adoption of problematic soil reclamation practices. Some of the following personal variables were selected, analysed and are presented in Table 1. From the Table 1, it can be concluded that nearly half (45.62%) of the respondents were from old age group (Noorjehan, 2014), followed by 39.38 per cent and 15.00 per cent of them were from middle and young age group, respectively. Slightly less than one third (32.50%) of the were having primary education, followed by 27.50 per cent, 18.75 per cent, 14.38 per cent and 6.87 per cent of them had secondary education, graduation and above, higher secondary education and illiterate, respectively. These results are in line with Chavai *et al.* (2012). More than one third (35.63%) of the respondents were having 11 to 20 years of farming experience, followed by 28.75 per cent, 23.12 per cent, 10.62 per cent and 1.88 per cent of them had 21 to 30 years, up to 10 years, 31 to 40 years and above 40 years of farming experience, respectively.

Table 1: Personal characteristics of farmers in adoption of problematic soil reclamation practices (n = 160)

Variables	Categories	Measurement	Frequency	Per cent
Age	Young group (up to 35 years)	Years	24	15.00
	Middle group (36 to 50 years)		63	39.38
	Old group (above 50 years)		73	45.62
Education	Illiterate	Standards	11	06.87
	Primary education (1 st to 8 th std)		52	32.50
	Secondary education (9 th to 10 th std)		44	27.50
	Higher secondary education (11 th to 12 th std)		23	14.38
	Graduation and above		30	18.75
Experience in farming	Up to 10 years	Years	37	23.12
	11 to 20 years		57	35.63
	21 to 30 years		46	28.75
	31 to 40 years		17	10.62
	Above 40 years		03	01.88

Social characteristics

Social characteristics are attributes related to an individual’s social environment, including family structure and community involvement. From the Table 2, it can be observed that more than two thirds (69.38%) of respondents were from joint family and 30.62 per cent of them were from

nuclear family. More than half (53.12%) of the respondents were having membership in one organization, followed by 20.63 per cent, 20.00 per cent, 4.37 per cent and 1.88 per cent of them had membership in two organizations, no membership, membership in more than two organizations and holding position in organization, respectively.

Table 2: Social characteristics of farmers in adoption of problematic soil reclamation practices (n = 160)

Variables	Categories	Measurement	Frequency	Per cent
Type of family	Nuclear family	Structure of family	49	30.62
	Joint family		111	69.38
Social participation	No membership	Involvement	32	20.00
	Membership in one organization		85	53.12
	Membership in two organizations		33	20.63
	Membership in more than two organizations		07	04.37
	Holding position in organization		03	01.88

Economic characteristics

In adoption of problematic soil reclamation practices economic characteristics like land holding and annual income play major role. In the study Table 3, specify the economic characteristics of the farmers of *Bhal* region. From the Table 3, it is implicit that, nearly half (45.62%) of the respondents were medium farmers, followed by 35.00 per cent, 15.00 per cent, 4.38 per cent and 0.00 per cent of them were semi-

medium, large, small and marginal farmers, respectively. More than one third (36.88%) of the respondents were having annual income up to ₹ 1,00,000 (in line with Yarazari *et al.*, 2019), followed by 31.88 per cent, 18.12 per cent, 8.75 per cent and 4.37 per cent had annual income of ₹ 1,00,001 to ₹ 2,00,000, ₹ 2,00,001 to ₹ 3,00,000, ₹ 3,00,001 to ₹ 4,00,000 and above ₹ 4,00,000, respectively.

Table 3: Economic characteristics of farmers in adoption of problematic soil reclamation practices (n = 160)

Variables	Categories	Measurement	Frequency	Per cent
Land holding	Marginal farmer (up to 1.00)	Hectares	00	00.00
	Small farmer (1.01 to 2.00)		07	04.38
	Semi-medium farmer (2.01 to 4.00)		56	35.00
	Medium farmer (4.01 to 10.00)		73	45.62
	Large farmer (above 10.00)		24	15.00
Annual income	Up to ₹ 1,00,000	Rupees	59	36.88
	₹ 1,00,001 to ₹ 2,00,000		51	31.88
	₹ 2,00,001 to ₹ 3,00,000		29	18.12
	₹ 3,00,001 to ₹ 4,00,000		14	08.75
	Above ₹ 4,00,000		07	04.37

Situational characteristics

In adoption of problematic soil reclamation practices situational characteristics like herd size and land holding play an important role. From the Table 4, it can be elaborated that

great majority (93.13%) of the respondents were having up to 3 animals, followed by 6.25 per cent and 0.62 per cent of them had 4 to 6 animals and more than 6 animals, respectively. All respondents (100%) had poor irrigation facilities/status.

Table 4: Situational characteristics of farmers in adoption of problematic soil reclamation practices (n = 160)

Variables	Categories	Measurement	Frequency	Per cent
Herz size	up to 3 animals	Number of animals	149	93.13
	4 to 6 animals		10	06.25
	above 6 animals		01	00.62
Irrigation facility/status	Poor (up to 4.33 score)	Arbitrary method	160	100.00
	Fair (4.34 to 8.66 score)		00	00.00
	Good (above 8.66 score)		00	00.00

Communicational characteristics

The communicational characteristics of the respondents play an important role in the adoption of problematic soil reclamation practices. The Table 5, showed that majority (81.25%) of the respondents were having very low extension participation, followed by 15.00 per cent and 3.75 per cent of them had low and medium extension

participation, respectively, whereas on one has high or very high extension participation. Slightly less than two thirds (63.75%) of the respondents were having medium level of social media exposure, followed by 18.75 per cent, 16.88 per cent, 0.62 per cent and 0.00 per cent of them had very low, low, high and very high level of social media exposure, respectively.

Table 5: Communicational characteristics of farmers in adoption of problematic soil reclamation practices (n = 160)

Variables	Categories	Measurement	Frequency	Per cent
Extension participation	Very low (up to 4.00 score)	Arbitrary method	130	81.25
	Low (4.01 to 8.00 score)		24	15.00
	Medium (8.01 to 12.00 score)		06	03.75
	High (12.01 to 16.00 score)		00	00.00
	Very high (above 16.00 score)		00	00.00
Social media exposure	Very low (up to 4.80 score)	Arbitrary method	30	18.75
	Low (4.81 to 9.60 score)		27	16.88
	Medium (9.61 to 14.40 score)		102	63.75
	High (14.41 to 19.20 score)		01	00.62
	Very high (above 19.20 score)		00	00.00

Table 6: Psychological characteristics of farmers in adoption of problematic soil reclamation practices (n = 160)

Variables	Categories	Measurement	Frequency	Per cent
Scientific orientation	Very low (up to 25.20 score)	Arbitrary method	00	00.00
	Low (25.21 to 36.40 score)		01	00.63
	Medium (36.41 to 47.60 score)		08	05.00
	High (47.61 to 58.80 score)		133	83.12
	Very high (above 58.80 score)		18	11.25
Knowledge of the farmers about reclamation of problematic soil	Low (up to 4.20 score)	Arbitrary method	03	01.88
	Below average (4.21 to 8.40 score)		17	10.62
	Average (8.41 to 12.60 score)		112	70.00
	Above average (12.61 to 16.80 score)		28	17.50
	High (above 16.80 score)		00	00.00
Attitude of farmers towards SHC	Highly unfavourable (up to 14.40 score)	Arbitrary method	00	00.00
	Unfavourable (14.41 to 20.80 score)		00	00.00
	Neutral (22.81 to 27.20 score)		01	00.63
	Favourable (27.21 to 33.60 score)		21	13.12
	Highly favourable (above 33.60 score)		138	86.25
Risk orientation	Very low (up to 18.00 score)	Arbitrary method	00	00.00
	Low (18.01 to 26.00 score)		01	00.62
	Medium (26.01 to 34.00 score)		11	06.88
	High (34.01 to 42.00 score)		142	88.75
	Very high (above 42.00 score)		06	03.75
Innovation proneness	Very low (up to 10.80 score)	Arbitrary method	00	00.00
	Low (10.81 to 15.60 score)		11	06.88
	Medium (15.61 to 20.40 score)		49	30.62
	High (20.41 to 25.20 score)		61	38.12
	Very high (above 25.20 score)		39	24.38

Psychological characteristics

In adoption of problematic soil reclamation practices psychological characteristics like scientific orientation, knowledge of the farmers about reclamation of problematic soil, attitude of farmers towards SHC, risk orientation and innovation proneness play major role. In the present study, Table 6, showed the psychological characteristics of the

farmers of *Bhal* region. From the Table 6, it is implicit that, majority (83.12%) of the respondents were having high scientific orientation, followed by 11.25 per cent, 5.00 per cent, 0.63 per cent and 0.00 per cent of them had very high, medium, low and very low scientific orientation, respectively. More than two thirds (70.00%) of the respondents were having average knowledge about problematic soil reclamation practices, followed by 17.50 per cent, 10.62 per cent and 1.88

per cent of them had above average, below average and low knowledge about problematic soil reclamation practices, respectively, whereas no one has high knowledge about problematic soil reclamation practices. Majority (86.25%) of the respondents were having highly favourable attitude towards SHC, followed by 13.12 per cent and 0.63 per cent of them had favourable and neutral attitude toward SHC, respectively, whereas no one has unfavourable or highly unfavourable attitude towards SHC. Majority (88.75%) of the respondents were having high risk orientation, followed by 6.88 per cent, 3.75 per cent, 0.62 per cent and 0.00 per cent of them had medium, very high, low and very low risk orientation, respectively. Slightly less than two fifths (38.12%) of the respondents were having high innovation proneness, followed by 30.62 per cent, 24.38 per cent, 6.88 per cent and 0.00 per cent of them had medium, very high, low and very low innovation proneness, respectively.

Contrary to these results the adoption was found medium level in Pokar *et al.* (2023) Desai *et al.* (2024).

Relationship between profile of farmers and their adoption of problematic soil reclamation practices

A farmer’s level of adoption of problematic soil reclamation practices varies due to differences in their personal characteristics, socio-economic conditions, situational factors, communication characteristics and psychological traits. Thus, the extent to which farmers adopt soil reclamation practices can be influenced by these diverse factors. Hence, considering the importance of these characteristics, an attempt was made in this investigation to ascertain the relationship, if any, between personal, social, economic, situational, communicational and psychological characteristics of farmers and their level of adoption of problematic soil reclamation practices.

A statistical method of Karl Pearson’s coefficient correlation (r) was used to calculate relationship between the characteristics of farmers and their adoption of problematic soil reclamation practices. The results obtained are depicted in Table 7.

It is evident from the data presented in Table 7 that, among the sixteen selected variables in the study, two variables had a positive and highly significant influence and three variables had a positive and significant influence on the adoption of problematic soil reclamation practices, while all other eleven variables had a non-significant relationship. The independent variables like knowledge of the farmers about reclamation of problematic soil (0.479**) and risk orientation (0.379**) (in line with Patel *et al.*, 2018; Chaudhary *et al.*, 2024) had positive and highly significant relationship with

the adoption of problematic soil reclamation practices, whereas variables like irrigation facility/status (0.181*), extension participation (0.166*) (Ngango and Hong, 2021) and scientific orientation (0.171*) had positive and

Table 7: Relationship between profile of farmers and their adoption of problematic soil reclamation practices (n = 160)

Sr. No.	Independent variables	‘r’ value
X ₁	Age	-0.029
X ₂	Education	-0.037
X ₃	Experience in farming	0.084
X ₄	Type of family	-0.110
X ₅	Social participation	0.050
X ₆	Land holding	-0.132
X ₇	Annual income	-0.095
X ₈	Herd size	-0.029
X ₉	Irrigation facility/status	0.181*
X ₁₀	Extension participation	0.166*
X ₁₁	Social media exposure	0.081
X ₁₂	Scientific orientation	0.171*
X ₁₃	Knowledge of the farmers about reclamation of problematic soil	0.479**
X ₁₄	Attitude of farmers towards SHC	0.148
X ₁₅	Risk orientation	0.379**
X ₁₆	Innovation proneness	-0.014

* Significant at 0.05 per cent level of probability

** Significant at 0.01 per cent level of probability

Significant relationship with the adoption of problematic soil reclamation practices. The variables like age, education, experience in farming, type of family, social participation, land holding, annual income (contrary to Turyahabwe *et al.* 2021), herd size, social media exposure, attitude of farmers towards SHC and innovation proneness failed to show any significant influence on the adoption of problematic soil reclamation practices.

CONCLUSION

It can thus be concluded from the above findings that the majority of respondents were from the old age group with primary education and have 11 to 20 years farming experience. They belonged to joint families, had membership in one organization and were having medium size of land holding with annual incomes up to ₹ 1,00,000. They typically had up to 3 animals and reported poor irrigation facilities/status. Their participation in extension activities was very low and they had a medium level of social media exposure. They exhibited high scientific orientation, average knowledge about problematic

soil reclamation practices and a highly favourable attitude towards soil health cards. Additionally, they demonstrated high risk orientation and innovation proneness. Out of sixteen independent variables, five variables viz., irrigation facility/status, extension participation, scientific orientation, knowledge of the farmers about reclamation of problematic soil and risk orientation, exerted a positive and significant influence on the adoption of problematic soil reclamation practices. Whereas age, education, experience in farming, type of family, social participation, land holding, annual income, herd size, social media exposure, attitude of farmers towards SHC and innovation proneness failed to show any significant influence on their adoption of problematic soil reclamation practices.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest

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